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Urdu as a First Language: The Impact of Script on Reading in the L1 and English as a Second Language

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Urdu as a First Language: The Impact of Script on Reading in the L1 and English as a Second Language

By

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Abstract

Urdu is a classic example of digraphia, a linguistic situation in which different scripts are used to write the same language (Ahmad, 2011). The analysis of orthographic practices of reading and writing Urdu in Arabic script versus in Urdu script reveals that Muslims learning to read the Quran in Western countries are not explicitly aware of the features specific to Urdu script. The present study examined awareness of script similarity; suggesting that bilinguals who read both scripts, Urdu and Arabic would have an advantage in acquiring L1 through the same scripts. Fifty Canadian bilingual children (6-10 years) were tested for language ability, cognitive and phonological processing skills in two languages: Urdu their L1 and English their L2. In contrast to English, Urdu was written in an adapted version of Arabic script. Groups were created based on whether they were above or below the standardized mean on the Urdu and/or Arabic measures. A binary logistic regression showed that there was a significant difference between readers who are good and/or poor at one or both languages, in terms of L2 decoding. The correlations between L1 and L2 phonological awareness showed that phonological awareness is not a language specific mechanism (Comeau et al., 1999). These skills predict word recognition cross-linguistically as a result of the linguistic interdependence between L1 and L2. Recent research on L2 literacy development suggests the need to examine transfer of literacy skills on a case-by-case basis for each language, based on similarities and differences between L1 and L2 scripts, particularly if the readers show low levels of literacy in one script, in this case their L1 (Genesse et al., 2006).

Keywords: bilinguals, second language acquisition, script similarities and reading comprehension, word reading.

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The term **bilingualism** is defined as "knowing" two languages (Valdez & Figueora, 1994). However, it is considered hard to define: what it really means to "know" a language. Some bilinguals might be highly proficient in both languages they know and speak, while other bilinguals may have a dominant or preferred language out of two languages they know (Gottardo & Grant, 2008). Bilingualism has been conceptualized as being a binary category: whereby complete bilinguals know two languages fluently and monolinguals only know one language. However, bilingualism may be better understood as being on a continuum of varying levels of proficiency in two languages, regardless of how and when they were acquired (Brutt-Griffler & Varghese, 2004; Valdez & Figueora, 1994; Gottardo & Grant, 2008). In this research thesis, the role of bilingualism and how Urdu-English speaking bilinguals learn to read their two languages will be discussed. A unique feature of this group is they are also acquiring literacy in a third language, Arabic.

Literature Review

Urdu is the national language of Pakistan, and is the first language of 30 percent of immigrants in North America (National household survey (NH); Immigration and Ethno cultural Diversity in Canada, 2011). This makes Urdu the eighth most widely spoken language in the world (Rahman, 2004; Grimmes, 2000). The Canadian census from 2006 to 2011 counted approximately 1.8 million persons who reported speaking an immigrant language most often at home in Toronto. Approximately 9 in 10 Canadians who reported speaking an immigrant language most often at home reside in a census metropolitan area (CMA). Eighty percent of them lived in the major CMAs of Toronto, Montréal, Vancouver, Calgary, Edmonton and Ottawa – Gatineau. When persons living in the CMAs of Hamilton, Winnipeg and Kitchener - Cambridge -

Waterloo are included, this proportion increased to 86%. Among those speaking an immigrant language at home, about one-third spoke one of five languages: Cantonese (8.8%), Punjabi (8.0%), Chinese (7.0%), Urdu (5.9%) and Tamil (5.7%) (Census: Statistics of Canada, 2011). Many of these immigrants are from middle class or upper middle class backgrounds in their country of origin.

In sociolinguistic theory, Urdu is considered to be a classic example of digraphia: a linguistic situation in which different scripts are used to write the same language (Rizwan, 2011). Urdu is written in a cursive, context sensitive Farsi-Arabic script from right to left. Urdu orthography inherits some characteristics from Arabic such as the optional use of diacritic marks: a glyph added to a letter (Jain & Cardona, 2007). The Urdu language particularly belongs to the Muslim community of some south Asian countries such as Pakistan.

Urdu is an Indo-Aryan language widely spoken in Pakistan. In Pakistan after independence in 1947, Urdu became the National Language. This language has become very popular all over the world due to the wide spread emigration of people from South Asian through their movement from their original homeland. The Urdu language has borrowed its script from Arabic and Farsi and shared its morphological, syntactic and phonological structure with Hindi (national language of India). However, Hindi and Urdu differ in their script, as well as some of their phonology and vocabulary. These similarities or differences will be described in detail in later sections.

The recent analysis of the orthographic practice of reading and writing Urdu in Arabic script instead of Urdu script reveals that the original script of the Urdu language is no longer a necessary part of Urdu text. Muslims no longer seem to need to preserve the original script of the Urdu language. The current study explored the representation of script in more detail, that

is, whether the choice of a script is crucial in differentiating Urdu and Arabic for bilinguals or second language learners in North America specifically. This goal was accomplished by examining English, Urdu and Arabic reading skills in Muslim children from Pakistan who are living in Canada.

In Canada, Urdu speakers from Pakistan are the sixth largest national group immigrating to North America every year (National household survey (NH); Immigration and Ethno cultural Diversity in Canada, 2011). Given the large number of Urdu speaking immigrants, it is important to understand how children, who come to Canada at different ages or who are the second-generation immigrants with English as their second language, learn to read.

The present study examines the language and literacy skills of Urdu-speaking children who live in Canada, for whom English is their second language as well as being the medium of communication in schools. These children are enrolled in Muslim classes from kindergarten to Grade five and learn to read the Quran in Arabic on weekends. The unique features of the Urdu language and script similarities with Arabic and Farsi languages will be described. Research examining cognitive and phonological processing skills related to reading will be introduced in two sections dealing specifically with second language acquisition and the effects of the second language (L2) on the first language (L1) for six to ten-year-old Muslim children from Pakistan.

The following literature provides a framework for understanding the representation of Urdu historically and in the modern bilingual context as well as how script is learned and used by L2 learners. In the literature review, literacy and its importance are discussed. In the next section of the literature review, children's oral language as well as word reading skills will be discussed. At last, the factors affecting language and literacy skill acquisition will be discussed with the possible explanations given for those differences. The mentioned ESL children's second

language acquisition is examined. Script differences and the levels of awareness about these differences among bilingual children will be discussed. Children's phonological awareness, reading abilities and vocabulary knowledge in the first and second language as well as script explicit and implicit knowledge about the L1 will be tested in this study.

The rationale for the matched design in psychological studies and then goals and three main research questions of the study will be introduced, followed by the proposed method, including participants, measures and procedure.

Oral Language and Literacy Development

First Language Acquisition

Language is a unique feature of humans, which is a characteristic that separates humans from all other species. The implications of speech can be realized in the following quotation:

"The limits of my language mean the limits of my world" (Wittgenstein, L. 1973).

Children differ in their language development abilities. However, the explanation of the underlying cause of these individual differences depends on the epistemological stance one adopts (McLaughlin, 1978). This can be demonstrated by the following two different views: rationalist and empiricist. According to the following explanation of language acquisition, the difference between the empiricist and rationalist positions is one of the degrees (McLaughlin, 1978).

The *rationalist* position suggests that experience does not teach directly, but in actuality, it activates an innate capacity. According to this view, all human beings acquire knowledge as they do because their brain is pre-structured to acquire it in this manner (McLaughlin, 1978).

The *empiricist* position focuses on the existence of non-observable, innate characteristics because all humans are born with the specific biological structure and unique capabilities. For example, if a child hears a language spoken around him, he starts speaking the same language.

Models of Language Acquisition

These philosophical ideas fit with models of language acquisition. The following models are the most currently acknowledged models of language acquisition:

The *transformational grammar approach* suggests that children acquire language from few sentences and proceed to a diverse number of meaningful sentences. According to Chomsky (1957), the grammar of a language is based on a structural component that depends on a set of transformations and a set of surface structures. This structure then forms a semantic component and a phonological component to form a grammatical structure of a language.

A variant of the grammar approach is the *linguistic approach.* This approach suggests that children have innate linguistic knowledge and it interacts with experience to produce knowledge of a particular knowledge (Goodluck, 2007).

The *domain general cognitive* approach refers to the internal cognitive processes. This approach focuses on domain general learning capacities that serve language development. This also describes the sources of information in the input used by those learning procedures (Saffran & Thiessen, 2007).

These approaches explain language development in early childhood as ninety percent of a child's speech becomes intelligible by the age of four and five (Brown, 1973). Children can develop an understanding of sentences based on the contextual surroundings. By the age of five, a child's vocabulary increases and becomes more complex. Children usually start perceiving time and space at this age (Piaget & Inhelder, 1969). These milestones have been used to describe language development in monolinguals.

Empirical research has examined many factors that contribute to skills in language and literacy. Gender, socioeconomic status, ethnicity, dialect (Byrnes & Wasik, 2009) and family background are the most common factors, which contribute to speech, language and literacy

(Bradley & Corwyn, 2002). During the process of language acquisition, preschool children's classroom quality plays a very significant role in children's vocabulary development (Guo, Piasta, Justice, & Kaderavek, 2010). Also, there appears to be a significant relationship between the classroom's quality and children's understanding about print awareness (Guo et al., 2010).

Literacy

Literacy refers to the ability to read, write and think critically about the written word (Byrnes & Wasik, 2009). Children's experiences with literacy do not begin with formal reading and writing instruction, which is usually considered when they start school. In fact, most children become familiar with the nature and role of written language long before their first day in school, through observing their parents and elder siblings and participating in literacy activities in their homes (Steensel, 2006). Considerable research has examined the development of children's language and literacy both for monolinguals and bilinguals (Ehri & Wilce, 1983; Gough & Hillinger, 1980). Among bilingual children, literacy is usually first acquired in children's native languages, followed by second language literacy when they start school. Multicultural societies are part of the almost every area of the world, but multiculturalism is most common in North America in contrast to the rest of the world (Hutington, 2004). The United States of America and Canada each have a large number of immigrants from all over the world (Castles, Miller & Ammendola, 2005). For immigrants to these two countries, English is often not their first language; therefore, second language (English) literacy becomes very important for their integration into society.

Second Language Acquisition

Bilingualism

Children become bilinguals by acquiring two languages at the same time or by acquiring them sequentially. In linguistics, research differentiates these two types of bilinguals based on

age of acquisition as simultaneous bilingualism and successive bilingualism, respectively. Children who acquire two languages by the age of four are typically considered to be simultaneous bilinguals. In contrast, if the second language is learned after turning five years old, children are considered to be successive bilinguals. Below, the two types of bilingualism are explained in more detail.

Simultaneous Bilinguals: The term simultaneous bilingualism was originally introduced to describe second language learners, whose parents each spoke one language to them as children (Diaz, 1983). In theory, simultaneous bilingual speakers would learn two and sometimes three languages at the same time with the same relative frequency of use. However, in practice, simultaneous bilingual speakers may have differences in fluency depending on the fluency of each parent, which language is used outside of the home, or the true level of distinct language use between parents and between parent-child interactions (Nicoladis, Mayberry & Genesee, 1999). The relative degree of fluency in each language is referred to as language dominance. Currently, the term simultaneous bilingual is used to describe many second-generation bilingual language learners within an immigrant family (Hammer, 2004).

Successive Bilinguals: Also referred to as sequential bilinguals, include those who learn one language at home and the second language at the school or sometime at some other place in the community (Grosjean, 2010). In this case, children must already have acquired one language before starting to learn the second one. It has been suggested that the brain is more malleable early in life and is more receptive to such tasks as learning language (Grosjean, 2010). Children often start acquiring a second language when they start school at the age of four and five. Some argue that children at this age handle second language acquisition easily (McLaughlin, 2013). However, Snow (1998) criticized this notion based on her work with English students learning Dutch. She found that fourteen to fifteen year olds did better than younger children in acquiring a

second language. Therefore, it is reasonable to say that second language acquisition is possible at early or later ages. At an older age, people can learn the second language but often retain their first language accent (Flege, 1992). However, age of second language acquisition does result in unique individual differences such as different accent and fluency.

First Language Loss

Previous research showed that bilingual children for whom English was not their first language lose their first language skills when they learn English as their second language (Fillmore, 1991). Two primary reasons for "first language loss" among bilinguals are a change in the medium of communication at home, and a loss of fluency in the L1 (Crawford, 1996). According to Fillmore (1991), almost 51 percent of families reported changes in the home language after their children entered English-only schools. As a consequence, less exposure to the L1 could lead to forgetting the L1 (Fillmore, 1991). Although these bilinguals failed to maintain their L1 and would be less proficient in their L1 as compared to their monolingual native speaking peers, they might not reach the level of English proficiency of native speakers of English (Twist, Schagen, & Hodgson, 2007). In order to see if these children maintain their L1 proficiency it is important to test children longitudinally in their L1, which could be the biggest limitation of the previous studies.

Dunn and Fox Tree (2009) suggested that the low reliability in bilingual language dominance assessment scales reduces cross-experiment comparisons. They assessed Spanish/English speakers, students from the California University. These students were tested with some open-ended and some closed questions. Participants were measured by their replies depending on how often they used their first language. They were asked at which age they started learning their second language, how often they speak their L1 and other related questions about their language use. Results of this study showed that children used their L1 only from the time of

birth until they start their schooling. By the time they started their schooling they often used their L2. These children preferred to use their L2 with their peers and big groups for communication (Dunn & Fox Tree, 2009). In some areas, children feel embarrassed to communicate in their first language based on the size of the group in which they are communicating.

In the present study, bilingual children will be defined as children who use an additional language (English) to their mother tongue after the age of 2 (Genesee, Paradis, & Crago, 2004). Based on Tabors (1997) stages of language use children in the study are expected to be in the *productive language use* stage. This stage consists of making sentences productively. At this stage productive sentence become a series of words that have not been memorized by the children (Tabors, 1997). These children are fluent in their L2 and often used English to communicate outside the home.

Second language literacy

L2 literacy acquisition usually starts when bilingual children start school and L2 literacy acquisition invariably occurs at school. First language proficiency and the nature of L1 script of these bilingual children contributes to their second language acquisition. When possible, bilingual children are tested in their L1 in order to assess their learning potential when they are newcomers to Canada (Westernoff, Nilssen-Lalla, & Bismilla, 2000). This is consistent with the Linguistic Interdependence Hypothesis (Cummins, 1983), which suggests that L1 proficiency is related to L2 proficiency either across general oral language skills (Siegel & Geva, 2000; Cummins, 1983) or across specific linguistic skills (Durgunoglu, 2002).

The Linguistic Interdependence Hypothesis refers to the L2 competence, which a bilingual child attains and is partially a function of the level of competence in the L1. It has been suggested that primary language skills are the same across languages and can be transferred between languages (Durgunoglu, 2002; Geva & Siegel, 2000). However, Geva and Siegel (2000)

found that reading skills are also the same across languages, but there are individual differences, which could be significant predictors of literacy. In contrast, Durgunoglu (2002) suggested that phonological awareness, syntactic awareness, knowledge of genres and meaning making strategies are highly related across languages. This idea was partially supported by research where L1 and L2 phonological processing were found to be separate but related factors (Branum-Martin, Mehta, Francis, Foorman, Crino, Miller, & Iglesias, 2006; Gottardo & Mueller, 2009). It was also suggested that oral language proficiency, specifically vocabulary knowledge and grammatical knowledge in L1 and L2 are not often highly correlated in young children (Genesse & Geva, 2006; Gottardo, 2002; Gottardo & Mueller, 2009; Verhoeven & Jong, 1992).

Languages vary in their degree of orthographic depth; the transparency of the relationship between spelling and sound (Frost, Katz & Bentin, 1987). Seidenberg (1992) explained that languages like Japanese kanji tend to weight visual reading processes strongly because they have deep orthography. On the other hand, languages such as Italian and Spanish have a shallow orthography where all the words share regular spelling-to-sound correspondence. Therefore, phonological awareness is more highly related to early reading in a shallow orthography. Ziegler and Goswami (2006) introduced the psycholinguistic grain size theory that emphasized the grain size of lexical units. These units were converted into phonological structures during visual word recognition in different orthographic systems. They proposed that reading in consistent orthographies involves small linguistic units, whereas reading in inconsistent orthographies requires the use of larger units. The Orthographic Depth Hypothesis (Frost et al., 1987), emerged from the classical dual-route models that assumed that words can be read through a lexical route or by letter sound decoding (Coltheart, 1987). The clear advantage of using the psycholinguistic grain size over the dual-route theory is that it examines the size of the computed phonological units.

There are some other factors that have an impact on relations across L1 and L2 skills: literacy in the L1, age of exposure to the language and script and linguistic features of each language. Literacy in the L1 might have an impact on the L2 literacy. Bilingual children usually make the same types of errors in both languages, which shows the strengths and weaknesses of specific processes (San Francisco, Carlo, August, & Snow, 2006). Also, the age of exposure to the second language might be another factor that effects L2 acquisition in some cases (Flege, Mackay, & Piske, 2002). Finally, script and linguistic features of the L1 and L2 could be another reason for interference with learning the L2 (Ziegler & Goswami, 2005). Therefore, these three factors, literacy in the L1, age of arrival, and script and linguistic features of each language have been recognized as influential components in the L1 and L2 relations.

However, there has been insufficient research on the Urdu language. In the Urdu language, the appropriate L1 measures are not available. Therefore, it is hard to determine standardized norms because of a lack of standardized measures in the L1. Because few studies exist examining Urdu-English speakers, research-examining reading across languages, some with different alphabetic scripts, is reviewed.

Literacy can also be acquired simultaneously. In a study by Geva and Siegel (2000), some alternative views of second language acquisition were examined by analyzing the reading skills of 245 children in grades one to five. They were tested for learning to read concurrently in English, their L1, and Hebrew, their L2. They were tested on a non-verbal intelligence task, parallel L1 and L2 memory tasks, and word recognition as well as pseudoword reading tasks in both languages. When the script was less complicated, young children appeared to develop their word recognition skills easily, even in the absence of sufficient linguistic proficiency. At the same time, a more accurate picture of L1 and L2 reading development appears when individual differences in underlying cognitive skills are considered. Results showed that a joint

consideration of both factors could provide a more productive framework for studying reading development in bilinguals.

Additionally, developmental proficiency and individual differences in L2 proficiency played a significant role in predicting performance on the Hebrew reading tasks. The concept of "L2 oral proficiency" can be mapped onto linguistic components such as knowledge and range of vocabulary, syntactic competence and sensitivity to psycholinguistic appropriateness of utterances (Carroll 1981; Geva & Ryan 1993; McLaughlin 1991; Johnson, 1992). It is expected that at each developmental stage children who performed better in L2 linguistic skills tests would also decode words in the L2 more easily and accurately than their less proficient counterparts. However, L2 oral proficiency plays only a limited role in explaining individual differences in L2 word recognition skills (Geva et al., 1993).

Learning to read and spell involves skills that are related to each other, but they are considered to be separate processes (Holmes & Castles, 2001). Word reading and spelling skills depend on knowledge of the alphabet and letter-sound correspondences in an alphabetic language such as English, Arabic, or Farsi. The familiarity with orthographic conventions of the language is an addition to this framework. However, the difference between learning to read and spell is that learning to read involves the pronunciation of the letters whereas spelling requires the writing of letters in a particular sequence (Ehri, 1997).

Positive and Negative Effects of Bilingualism

Bilingual minds are considered different not because bilingualism itself creates advantages or disadvantages, but because bilinguals use mental resources differently from monolinguals (Bialystok, 2013). The use of these resources may be critical for bilinguals, when they comprehend and produce sentences in the less dominant of their two languages. Especially, when they have to select the words to speak in one language from their stored vocabulary in their

brains, and when they switch from one language to the other in one conversation (Bialystok, 2013). In terms of general cognitive development, being bilingual can be beneficial. It can actually promote children's metalinguistic awareness (Baker, 1993; Baker, 1998; Campbell & Sais, 1995). In the following section, the possible positive and negative effects of bilingualism on children's language development will be discussed. Our understanding of the effects of bilingualism on language development has evolved considerably. For example, when immigrants completed intelligence tests in the early twentieth century in USA (Goddard, 1917), these bilinguals scored lower on these intelligence tests than monolinguals. The reason for this outcome varied but it was suggested that there could be genetic differences among these participants (Brigham, 1923; Goodenough, 1926). Later research showed that these intelligence differences between bilinguals and monolinguals disappeared when certain factors were controlled: age, gender, education, socio-economic background and fluency in both languages (Hakuta, 1986).

Bain and Yu (1980), Diaz (1983) and Peal and Lambert (1962) indicated that a balanced second language acquisition (completely proficient in both languages; L1 and L2) benefits bilinguals in their cognitive processes. These bilinguals were tested on a concept formation task, a symbol manipulation task and a mental flexibility task and scored higher than monolinguals (Hakuta, 1986). Being bilingual has not been demonstrated to be consistently beneficial or non-beneficial for improving cognitive processing among children. It is important to acknowledge that bilingualism can positively affect linguistic and cognitive performance among L2 learners. In contradiction of this positive effect of bilingualism, Bialystok (2008) found that bilinguals perform poorly on linguistic tasks in comparison to English monolinguals. Monolingual children performed better on some aspects of cognitive and phonological processing, such as speed of

lexical access, executive control, and working memory, compared to their bilingual peers on the same language.

Studies show that bilingual children are typically better at phonological awareness and at detecting grammatically incorrect sentences than monolingual children (Bialystok, 1988). However, they usually score poorly on L2 vocabulary measures. Although work has been conducted already in this area, in different languages (i.e., Chinese/English, Spanish/English) the performance of Urdu/English speakers has not been examined in detail. Cromdal (1999) found that Swedish – English bilinguals were significantly better than their monolingual peers on tests of symbol substitution and grammatically judgments. Galambos and her colleagues obtained similar results with Spanish /English bilingual children (Galambos & Goldin-Meadow, 1990; Galambos & Hakuta, 1988).

Three oral language components are considered as the most powerful factors in L2 acquisition, which are affected by L1 experiences; phonology, vocabulary, and grammar (Genesee et.al, 2004). However, the degree of similarity across languages can influence cross-linguistic transfer. Two languages that differ in oral and written language are Urdu and English. Urdu (L1) in this case, has a different morphological and syntactic structure from English. Therefore, it can be expected that children might commit mistakes in English based on their L1. For example, a word order error would be expected to occur when Urdu speakers create sentences in English. Therefore, it is reasonable to say that the effects can vary from language to language and be either positive or negative.

Effects of First Language on Second Language

Some researchers believe that the nature and experiences of the L1 after bilingualism but before L2 literacy has an influence on learning the L2 (Ziegler & Goswami, 2005; San Francisco, Carlo, August, & Snow, 2006). Bialystok (2013) suggested that bilinguals activate information

about both languages they know, when using one language alone. Parallel activation of the two languages has been proven for highly proficient bilinguals as well as second language learners.

The implicit assumption that there should be an innate special talent for second language learning defines people's hesitation towards the L2 acquisition (Skehan, 1998). Transferring skills has held a strong position in the research area of second language acquisition; however, there are mixed reviews available in the literature. Krashen and Odlin, (1989) suggested that transfer is the process of relying on first language rules while acquiring the second language. Gass and Selinker (1983) suggested a similar but more refined process of transferring skills; that learners usually transfer prior linguistic knowledge, which could be compared by the researcher to the target language norms. The result can be positive, negative or neutral. These views of transfer define: a) what is the set of rules, which has been transferred from L1 to L2, and b) whether first language knowledge is attached to the grasp of second language rules. According to these assumptions, the process of transferring skills stops when the learner has completed second language acquisition (Hernandez, Li & MacWhinney, 2005). The recent research work on second language literacy development suggests the broader definition of transfer; that it is considered the ability to learn new languages and literacy skills by relying on the previously acquired set of rules (Genesse et al., 2006). L1 skills are generally related to L2 aptitude and L2 learning (Sparks & Ganschow, 1993). Cummins (1979) considered L2 aptitude as a relic of L1 learning skills. His consideration was based on the fact that in learning both languages the L1 and L2 require the same capacity for learning, remembering and reproducing sounds and applying grammatical rules. Sparks and Ganschow (1993) suggested that L1 difficulties would interface individual's L2 learning.

The big challenge for the researcher in multilingual settings has been to identify the reading abilities of dual language learners. It is quite difficult to distinguish between reading

problems stemming from low levels of linguistic proficiency versus reading that is more general or learning difficulties (Durgunoglu, 2002). Literacy components that reflect language-independent metalinguistic processes show similarities across the two languages of students. Some examples are phonological awareness, syntactic awareness, knowledge of genres and meaning-making strategies. Children's exposure level to their L1 can be used to predict to their skills in L2. It is recommended that dual language learners use these skills in order to enhance their L2 because these skills are related across languages. If somehow, any student shows any kind of delay in the process of second language acquisition, it could refer to a delay in the L1 or some kind of disability (Durgunoglu, 2002).

Processes related to reading in the L1 and L2 and oral language acquisition

Phonological Awareness: In a study, Gomez and Reason (2002) examined the phonological and reading skills in English of Malaysian children, whose L1 was Bahasa Malaysian (BM). They tested 69 Malaysian grade two children (aged seven to eight years). These children had learnt English for 12 months. For the first step, they used the Phonological Assessment Battery (PhAB) and the Wechsler Objective Reading Dimension (WORD) to collect information about children's L1 and L2 language competencies. Results showed that the children's performance on PhAB were comparable to the UK norms. However, there were some limitations in terms of tests that had not been developed and standardized in Bahasa Malaysian. The above study has implications for identifying children with phonologically-based reading difficulties. Phonological skills across languages have been examined in several languages: with Portuguese–Canadian children between the age of nine and twelve (Da Fontoura & Siegel, 1995), English-speaking kindergarten students attending French schools (Bruck & Genesse, 1995), and English–Hebrew bilingual children (Geva, Wade-Woolley & Shany, 1997; Geva, 2000). Comeau, Cormier, Grandmaison, and Lacroix (1999) reported in a study that phonological

awareness is not a language-specific mechanism. They showed that phonological awareness skills could predict word recognition cross-linguistically as a result of the linguistic interdependence between the L1 and L2.

Literacy can be inextricably linked to the transmission of culture; some research suggests that phonological skills assessed in the language in which they have been taught relate to achievement in both languages (Gomez et al., 2002). This suggests that children who experience reading difficulties in English can be assessed by tests of phonological processing skills in the L1. Past research has suggested that bilingualism may enhance metalinguistic awareness; as measured on phonological, syntactic, and concept of print tasks, because bilingualism requires early attention to the forms of the languages (Goswami & Bryant, 1990; Mcguinness, 2005).

Syntactic Awareness: Young children may be more likely to base their judgment of the correctness of a sentence on its meaning rather than on its grammatical context (Bialystok & Ryan, 1985). Children typically do not detect grammatical errors in sentences easily (e.g., I want water drink, compared to 'I want water to drink'). However, Davidson, Raschke, and Pervez (2009) suggested that bilingual children are better at phonological awareness and at detecting grammatically incorrect sentences than monolingual children. They discussed in their study whether bilingualism or differences in properties of the languages affect syntactic awareness. McDonald (2008) found in a study that nine-eleven-year-old monolingual children had difficulty identifying grammatically incorrect sentences. Davidson et al (2009) conducted a study on Urdu/English speaker's ages four to five years old. The findings were unique to bilingual Urdu-English children because of the structure of the Urdu language. Some examples of grammatically incorrect Urdu sentences were: "A boy is putting on "her" shirt" rather than "A boy was putting on his shirt" or "I want water drink" rather than; "I want water "to" drink". The limitations of this study suggested that future studies in the Urdu language examine the role of grammatical gender

in understanding Urdu nouns. This linguistic difference is a reason why Urdu bilinguals detected grammatical gender mistakes in English better than the English monolinguals.

Script Awareness: Script awareness refers to the knowledge of the orthography of the acquired language. It is important to discuss how children read in two different languages with two different scripts. However, another interesting factor is the kind of script that is given to the children in order to learn to read has an impact on the strategies used (Ziegler & Goswami, 2006). This suggests another question regarding what happens to our brain's connections when the brain deals with more than one script (Dulude, 2012). It is suggested that children can easily transfer their letter-sound and alphabet knowledge to their second language with minor differences in script (Levin, Shatil-Carmon, & Asif-Rave, 2006).

Socio-cultural Factors Involved in Speaking, Reading and Writing

The diversity of the student population is becoming reality within the educational context of most societies in all over the world (Griva & Chostelidou, 2014). There are a number of factors, which effect bilingual students' language development and educational attainment, such as students' personal characteristics, ethnic and linguistic basis, socio-economic factors, parents' education and basic skills, and also parental involvement (Lindholm-Leary, 2001). Conversely, despite the fact that school plays an important role in literacy development in these bilingual children, other effects that are likely to influence children's everyday life in and out of school cannot be underestimated (Griva & Chostelidou, 2014). Among all other mentioned factors gender, ethnicity and socio-economic status are the most common factors, which can affect the process of language, literacy, reading and writing skills in bilingual children.

Gender Differences in Language and Literacy Skill Acquisition: A common assumption is that girls are more verbal than boys (Byrnes & Wasik, 2009). Conversely, Maccoby and Jacklin (1974) found no gender differences before the age of 11 in verbal skills in

monolingual children. They did find gender differences after the age of 11 in verbal skills in favour of girls. When groups were divided based on the verbal skills and the effect of vocabulary was separated from the other measures, results favored girls only when they were six years old and younger. Between the age of six and eleven, boys scored significantly higher on vocabulary tests. There were no significant gender differences found in vocabulary for the age of 11 – 18 (Hedges & Nowell, 1995; Hyde & Linn, 1988).

Fenson, Renzick, Bates, Thal and Pethick (1994) suggested that girls in preschool are ahead of boys in vocabulary acquisition. These differences were visible in other areas as well, such as sentence complexity and expressive language. Girls showed significantly higher results than boys when they were two years old (NICHD, 2000). These participants were tested again at the age of three on Reynell Language Scales (expressive language) and showed significant gender differences. It was also concluded that girls are capable of combining words together in more complex syntactic constructions than boys. However, results of large-scale studies of reading showed different results; that gender differences in reading comprehension are very subtle in early grades and become prominent by the 12th grade (Grigg, Daane, Jin, & Campbell, 2003).

Furthermore, these children were tested on some challenging tasks (NAEP, 2002) the differences were prominent (Grigg et al., 2003). Hyde and Linn (1988) found that boys perform better than girls on SATs as well as on analogical reasoning tasks.

Observed gender differences have been accounted for in a variety of ways. For example, Leaper, Anderson, and Saunders (1998) demonstrated in meta-analyses of parent-child communication that parents communicate more frequently with their daughters than their sons. This study may help to explain gender differences in the ability of preschoolers to create complex sentences, but is not very supportive of findings of gender differences in preschoolers'

vocabularies. There could be another possible reason for these gender differences, which is that parents talk about certain topics such as science with boys more often than with girls (Crowley, Callanan, Tenebaum, & Allen, 2001). The same is the case for girls, with parents discussing emotional topics more frequently with girls than boys (Fivush, Brotman, & Buckner, 2000). Therefore, the overall amount of the vocabulary for an adolescent boy and girl might be similar.

No differences exist in the number of opportunities for reading books for girls versus boys; but girls engage in more daily hours of leisure reading than boys (Greany, & Hegarty, 1987; Neuman, 1986). In a study by Diamond, and Onwuegbuzie, 2001; Kush and Watkins (1996) suggested that girls hold more positive attitudes towards reading than boys. In a brain imaging study involving young adults, there was no major gender difference for letter recognition and semantic category tasks. In this study, females showed bilateral frontal activation for rhyme judgment and males showed left frontal activation (Shaywitz et al., 1995). Therefore, it is suggested that genes and biology play a role in explaining gender differences, but the environment and motivation are also important factors to consider. There is a lack of research in context of gender differences in bilinguals reported in literature that is why overall gender differences were discussed in this section.

The role of SES in Second Language and Literacy Skill Acquisition: Little research has focused on the development of bilingual and biliteracy skills in young children of low-socio-economic status (low-SES) especially in terms of a bilingual versus English environment (Lindholm-Leary, 2013). Universal preschool programs, which are available in many other countries, have been addressed as an assuring approach for closing the large achievement gap that divides children across ethnic, racial, linguistic and economic backgrounds (Frede & Barnett 2011; Haskins & Rouse 2005). While the achievement gap problem has received significant attention, the school-aged population has been discussed on a large scale. However, researchers

have proposed that the gap actually begins in the preschool years (Barnett & Hustedt 2003; Frede & Barnett 2011; Haskins & Rouse 2005). In addition, Paez, Tabors, and Lopez (2007) found that Spanish-speaking preschoolers begin preschool with low levels of phonological awareness, letter identification and emergent literacy skills in English, and performed below monolingual children of the same age in both languages (English and Spanish).

In terms of spoken language, Hart and Risley (1995) examined the mothers and children from three socio economic groups: high SES, middle income and low SES and on welfare in United States of America. At the age of 20 months, they found a minor difference in children's vocabulary. This difference was prominent after the age of two years. Children in the high SES group had an increase of two words per day in their vocabulary compared to an increase of 1.5 words per day for children in the middle-income group. The children who lived in families who were on welfare had an increase of less than one word a day. This gap was wider when the same children were tested at the age of four.

Hart and Risley (1995) provided some clues in order to explain these differences. Results showed in a follow up study that parents of 11-18 months old children from high SES communicated on an average of 642 times with their children within an hour. This number was reduced to 535 times for middle class mothers and 394 times for lower SES mothers. Furthermore, there were qualitative differences in the style of communication used by three SES groups of parents. It was noticed that high SES parents listen to their children more actively and encourage them more frequently than other two groups. They gave their children frequent choices in the form of questions. It was also observed that parents from high SES group use behavioral management techniques during their everyday activities. They used questioning statements and gave their children choices in order to teach them daily routine activities. The difference was also large when comparing on reading book strategies, used by three groups of parents. Oakes (2005)

described in a study that children from high SES are more likely to be picked by their teachers and placed in classroom reading groups than children from low SES.

In terms of reading and writing, small and large-scale studies showed a significant difference in children from high SES and low SES. Children from high SES perform significantly better on reading measures than children from low SES, at all age levels (NAEP, 2002). SES plays a very important role in reading and writing skills of children from different socio-economic groups. Considering these differences, it is very important to look at the possible explanations of these differences. As was discussed earlier, it may be that any skill acquisition is only possible when opportunities that promote the development of those skills are provided. It is also very important to know whether the higher SES parents converse more with their children than lower SES parents and whether there is any difference between higher and lower SES parents in the amount of time spent reading books to their children.

The Role of Ethnicity in Second Language and Literacy Skill Acquisition: In the United States of America, ethnic differences are strongly associated with SES differences because there are clear ethnic differences in family income and years of education. Pan, Rowe, Spier and Tamis-LeMonda (2004) reported that white mothers used larger productive vocabularies with their two-year-old children than black and Hispanic mothers. According to Roberts, Burchinal, and Durham (1999), this ethnic difference in spoken language skills kept African American black children on the 53rd percentile for measures of productive vocabulary at the age of 18 months. At the age of 24 months, they were at the 45th percentile and reached at the 27th percentile when they were 30 months old. These ethnic differences were also prominent when children were tested on reading and writing measures (Perie, Grigg, & Donahue, 2005). It was also reported that these ethnic differences stay quite small before the age of two and

gradually increase from that point. This difference is very prominent by fourth grade for both categories; reading and writing (Berliner, 1995)

In order to explain these differences the previous questions arise again: Are all the ethnic groups of children given the same opportunities? Are children in other groups willing or able to take advantage of these opportunities? In this case, there are some more important questions, which should be studied: Do Caucasian and Asian parents communicate more often with their children than parents from other groups? Do certain ethnic groups tend to read more books to their children than others? Answers to these questions are linked to the SES differences.

Introduction to Urdu Language

In sociolinguistic theory, Urdu is considered to be a classic example of digraphia: a linguistic situation in which different scripts are used to write the same language (Rizwan, 2011). The Urdu language particularly belongs to the Muslim community of some south Asian countries such as Pakistan and some parts of India. Urdu and Hindi are Indo-Aryan languages widely spoken in Pakistan, Jammu and Kashmir, India and some parts of Bangladesh. The language family tree of the Urdu language can be described as: Indo-European ➔Indo-Iranian ➔Indo-Aryan ➔Urdu (Masica, 1993). It has been used in South Asian countries for almost 500 years. After independence in 1947, Urdu became the National Language in Pakistan, and in India, Urdu became the official language in five states. India has Hindi as its National Language. Urdu and Hindi are used by many people all over the world due to the movement of people from their original homeland in South Asia. Hindi and Urdu differ in their phonology and vocabulary. Despite their similar linguistic roots, Urdu and Hindi are written using very different scripts. Due to religious reasons, the Urdu language borrowed the script from Arabic and Farsi but continues to share its morphological, syntactic and phonological structure with Hindi (national language of India).

Urdu is a challenging language because of the combination of Farsi-Arabic script as well as its morphological system having inherent grammatical forms based on its linguistic roots. The Urdu language has been mixed with the vocabulary of Arabic, Farsi and the native languages of South Asia. Therefore, the Farsi and Arabic vocabulary as well as English vocabulary have influenced Urdu vocabulary.

Urdu Script

Urdu script is written "in a cursive", context-sensitive Farsi-Arabic script from right to left. Urdu has an alphabet of 57 letters (Afzal, & Hussain, 2001) and 15 diacritic marks. Urdu orthography inherits some characteristics from Arabic such as the optional use of diacritic marks: a glyph added to a letter (Jain & Cardona, 2007). In Urdu, short vowels are not considered as letters of their own but applied above or below a consonant by using appropriate diacritics (Humayoun, & Hammarstrom, 2006).

The primary orthographic structure of Urdu is similar to Arabic and depends on the three forms of letters, which can be written according to their position in the word: initial, middle and final form. In Urdu language, all letters represent consonants and diacritics represent vowels (Delacy, 2003). The Urdu language uses only lower case letters and can be written in paragraph indentation.

Urdu Language

In Urdu, all nouns are divided by gender, masculine and feminine (Schmidt, 2004). Urdu verbs have different forms as well depending on gender and number of subject. Urdu is classified as a subject, object and verb (SOV) language because subject, object and verb appear in this order (Ahmed, & Alvi, 2002). The Urdu language marks more than one version of past tense like absolute past, near past and distinct past, and it is possible to translate English sentences to any one of these Urdu tenses.

Arabic Language

The Arabic language is ranked sixth among languages used in North America. According to an estimate, there are about 186 million Arabic native speakers throughout the world (Katzner, 1990). In addition to learning spoken Urdu, Muslim children from Pakistan learn to read Arabic script. As the language of the Quran, the Holy book of Islam, Arabic is also widely used throughout the Muslim world and attached to the Muslim community. Arabic belongs to the Semitic group of languages, which also includes Hebrew and Amharic, the main language of Ethiopia (Abu-Rabia & Siegel, 1995; Heywood & Nahmad, 1965; Ryan & Meara, 1991).

Arabic Dialect

"Dialect" is a social variety of a language, which can be distinguished by its pronunciation, grammar, and vocabulary and is recognized as different from the standard literacy, language and speech pattern of the specific culture in which it exists (Schiling-Estes, 2006). The next important issue to consider is whether dialect affects language and literacy skill acquisition. To answer the above question, researchers conducted studies by controlling the role of SES, race, phonological processing and vocabulary size (August, 2003). There are few studies in this area, which support the effect of dialect in reading skill acquisition. Hart and Risley (1995) did not find any significant differences between different races.

There are many Arabic dialects such as **Classical Arabic**, which refers to the language of the Quran. It was originally the dialect of Makkah, the present dialect of Saudi Arabia (Abu-Rabia & Siegel, 1995).

The other commonly used dialect of Arabic is **Modern Standard Arabic.** It refers to the adapted form of the classical Arabic; and is used in books, newspapers, on television and radio, in the mosques, and in conversation between educated Arabs from different countries (e.g., at international conferences and business meetings). Local dialects vary from region to region,

which means that a Moroccan Arab may face difficulty understanding an Iraqi dialect, even though the language is considered to be the same (Abu-Rabia & Siegel, 1995).

Arabic Script

Arabic script depends on a consistent letter-sound alphabetical system with 28 letters in it. All are consonants, but some also serve as long vowels. In Arabic, vowels are not part of the alphabet, and skilled readers usually read non-vowelized text. Short vowels are represented with additional diacritics but can be omitted. Short vowels patterns are dependent on a word's meaning, inflection and its function in a sentence (Abu-Rabia & Siegel, 1995). Arabic words are based on trilateral (three letters) roots, and various derivatives are formed by the addition of affixes and vowels. Among all of them, many look very identical (homographs) if they are written without vowels (Abu-Rabia & Siegel 1995; Heywood & Nahmad, 1965; Ryan & Meara, 1991). It is recommended that poor readers read text with vowels because without them, most of the isolated words may be read in different ways and have different meanings. Context is important for both poor and good readers in the Arabic language because in Arabic, a verb usually comes at the beginning of the sentence and the word order in a sentence is VSO (Abu-Rabia & Siegel 1995; Heywood & Nahmad, 1965; Ryan & Meara, 1991).

Arabic Versus Urdu Script: similarities and differences

As described above Arabic and Urdu scripts have many similarities. Arabic and Urdu are written from right to left in cursive form, and letters within words must be combined when possible (Afzal, & Hussain, 2001). There are six letters in the alphabet, which cannot be joined to a following letter and there are spaces within words when these letters appear. Mostly, letters have three forms to appear in the word; word-initial, word-medial, and word-final in both Urdu and Arabic scripts (Abu- Rabia, 2001; Bauer, 1996). Both languages are written in deep orthographic scripts, when written without vowels, and a shallow orthography when written with

vowels (Abu-Rabia & Siegel, 2003; Frost et, al., 1987). The main difference is that un-vowelized Arabic preserves the root word while un-vowelized Urdu results in a word written in consonants and long vowels. Therefore, there is a good match between the morphology of Arabic and its script. For Urdu, the script and its representation of vowelized and un-vowelized forms do not necessarily match the morphology of the language.

Objectives

Past, research has been conducted in context of good and poor bilingual readers. It was suggested that poor readers depend on the reading context more often than skilled readers (Bruck, 1990; Perfetti, 1985; Schwantes, 1985). These studies were conducted in a Latin alphabetic orthography, while other orthographies were not studied such as Arabic, Hebrew and Chinese. To address this gap a study was done by Abu Rabia and Siegel (1995) to look at the differences between the Arabic orthography and an alphabetic orthography. They also examined whether context of reading affected poor and skilled readers. A lot of studies have been conducted in the Arabic language where good and poor readers were tested on reading Arabic script with and without vowels (Abu-Rabia, 2001). Some research has been conducted in the Urdu language on the effect of Urdu vocabulary size on the acquisition of single word reading in English (Mumtaz & Humphreys, 2002). Bilingual Urdu-English children's vocabulary knowledge in relation to their phonological awareness was compared to the English monolinguals. Despite previous research, there is still a gap in the literature regarding the script similarities and script awareness in Urdu bilinguals. As mentioned earlier, Urdu borrows its script from Arabic and Farsi. There is a gap in the research in this realm as to whether bilingual children who have Urdu as their first language and learn to read Arabic to be able to read Quran (Muslim's Holy book) are also able to read Urdu because of the languages having similar orthographic structures. These children can benefit from the same orthographic structure in reading Urdu from Arabic while learning to read

Arabic. The current research is designed to fill that gap and contribute in the area of psycholinguistics in order to understand the script similarities awareness and language transfer skills among bilinguals. This study examined reading in Urdu (L1) with both Urdu and Arabic script and English (L2) reading and language skills in children from grade one to four. The findings of this study will assist in the creation of future interventions and techniques, which can help bilingual Urdu speaking children to retain their L1 (Urdu) at higher levels.

The Present Study

In this study, the participants attended weekend Islamic school to fulfill their Islamic education requirements. They learn the Arabic language as a subject in order to understand the Quran (The Holy book) of Muslims. These children speak Urdu at home as their first language. These children do not receive any explicit instruction in the Urdu language and are not introduced to the Urdu script, but are able to read the Urdu script because of their familiarity with Arabic and the similarity between the scripts.

Research Questions

The current study has two primary purposes:

1. To examine at the relationship between English (L2) and Urdu (L1).
2. To examine at whether Urdu/Arabic (L1) reading predicts reading in English (L2),
    a. To evaluate whether there are reciprocal effects for skills between Arabic and English, and Urdu and English.
    b. To look at the differences in reading skills based on the script in which the child is taught: Arabic/Urdu and English.
    c. To examine whether children who are good at reading in other scripts (Arabic) are good at reading in English (L2)

Method

Participants

A sample of 50 Muslim (6 – 10 year old) Urdu-speaking children participated from the region of Waterloo, Ontario Canada. The average age of the children was 97 months (range from 72 to 126; *SD* = 14.78). Twenty-five of the participants were male and 25 of them were female (see Table 2 for details). Being Muslim was not a specific criterion of the study; it is only mentioned because the Urdu language particularly belongs to the Muslim community of some south Asian countries. Also, most Urdu speaking children who attend "heritage" language classes do so through Islamic studies schools. Participants were recruited from two different Islamic Weekend Schools; Al-Huda Islamic School and Waterloo Masjid Islamic School and were in the range of grade 1 to 4 in their public school. The average time in language school was 19 months (range from 6 to 60; SD = 13.71). Children and their parents self-selected to either participate or not in the study. That is, they decided based on the information they received about the program, whether or not they wished to participate. For the children, informed consents from parents were used and the children assented before starting the tasks for each session. Demographic information was collected through a questionnaire completed by the parents of each participant. This questionnaire was designed to identify the percentage of usage of their L1 (Urdu) at home, country of origin, number of books in L1 at home, and other information about their home environment.

The children were compensated with $10 Chapters gift card and stickers on completing each testing session and at completion of the study.

Demographics

Self-Report Questionnaire

Demographic/ Family Language Questionnaire: was given to the parents along with the consent forms in order to determine what language(s) the parents and children spoke at home. See the discussion of the findings below. This questionnaire also helped to get the information about the factors that influence a child's ability to learn a second language and their verbal ability (see Appendix A).

The following is the summary of information collected from the family language questionnaire.

1. There was an equal number of families in this study in which the children were born in Canada or immigrated to Canada. Out of the total of 50 children, 25 of them were born citizens of Canada and 25 of them were immigrants. Among the families who were Canadian citizens, 13 of the children were second generation and 12 were third generation in Canada.
2. When parents were asked which language they speak with their children at home, 11% of the families reported that they speak in their first language (Urdu) at home with their children. The rest, 76 percent, reported that they speak in English and with 23 percent reporting that they speak both languages (English and Urdu) at home. This response was further analyzed in relation of the family's working status; either or both parents work. Thirteen percent of the families who reported that they speak both languages (English and Urdu) with their children had both parents working outside of their home.
3. Overall, results of the family language questionnaire show that 87 percent of the families belonged to middle socio-economic class and 13 percent belonged to upper middle socio-

economic class in Canada as defined by Dunn (2000) in a study when he examined the social determinants of health.

4. When the parents were asked how often their child speaks in his/her native language at home with the family members and siblings, just 6% of the families' reported that their child speaks with his/her mother in their first language. None of the families reported that their child speaks in native language with their older siblings or their father. There was no reporting of children speaking their native language with their friends either in school or at home in social gatherings.
5. Parents were also asked whether their children watch TV in their native language, and if they do then how often. Only 9 families reported that their children watch TV in their native language for almost 5 – 6 hours a week, and all of the participants in that group were females.
6. Only three families reported that they have books in the Urdu language at home and that they read Urdu to their children during summer vacations. They also reported that they face problems in finding books in their native language.
7. Parents were also asked to report the reason why they send their child to this weekend school (children's weekend school, they were recruited from). Their response was: to be able learn and read Quran and to fulfill their Islamic education.

The overall results of this language questionnaire suggest that these families are unaware of their children being able to read their LI (Urdu) in this case because the purpose of choosing this weekend school was not to learn the Urdu language, but to gain Islamic education in Arabic language. Also, they did not report that these children received any instructions in their first language but rather that they occasionally spoke in Urdu with their mothers at home.

Measures

A battery of English and Urdu measures was administered to each participant. It assessed the following areas: word reading, reading comprehension, vocabulary knowledge and oral language skills. All of the English measures are standardized tests that exhibit high reliability and validity. Unfortunately, Urdu measures are not available in standardized form, therefore, they were translated from the English tests by the principle investigator in order to maintain the high reliability and validity. All the measures and tasks used for both languages can be seen in Table 1.

English Measures

The four different types of skills that were measured in this study are discussed in the following section. The measures included reading components, oral language skills, phonological processing and vocabulary knowledge and self-report questionnaires.

English Word Reading: Woodcock Reading Mastery Test; Word identification and word attack subtest (Woodcock, 1991) were used to measure the English reading ability of words and non-words.

The Woodcock Word Identification: This task contains 106 words. The words in the list were according to the increasing difficulty level from high monosyllabic words (e.g. is) to low frequency multisyllabic words (e.g. zeitgeist). The word list was shown to children with all of the instructions including that this task was not timed. Participants were asked to read the words out loud. The experimenter stopped administering the task after six consecutive errors in a set were made by the participant. Raw scores on this test consisted of the number of words that were read correctly. A maximum score of 106 could be scored on this task. Raw scores were converted into standardized scores for final analyses. Based on the Word Identification manual (Woodcock, 1991) the reliability of this test is $\alpha = .92$ (Woodcock, 1991).

The Woodcock Word Attack: This task contains of 45 pseudo-words increasing difficulty level (e.g. dee) to (e.g. pnomocher). The word list was shown to the participants who were informed that this task was not timed. They had to read the pseudowords out loud. The experimenter stopped administering the task after the participant made six consecutive errors in a set. Raw scores on this task were the sum of words that were read correctly. A maximum score of 45 could be scored on this task. Raw scores were converted into standardized scores. The cronbach's alpha on this measure was .77 for the current sample.

Reading Comprehension

Grey Oral Reading Test – 4 (GORT – 4): This task was administered to assess the reading comprehension ability in English. This test helped to measure the four different areas of reading comprehension; oral reading rate, accuracy, fluency and comprehension.

Rate: is the amount of time taken by the participant to read a story. Time in seconds for each story was summed up at the end to get the rate score.

Accuracy: is the students' ability to pronounce each word in the story correctly. The total number of errors were compared to the given score range in the scoring manual. Accuracy scores from each story were summed up at the end to get the total scores in this category.

Fluency: refers to the student's rate and accuracy scores combined. Time taken by a participant on each story was added to the accuracy score in order to get the fluency score.

Comprehension: refers to the appropriateness of the student's responses to questions about the content of each story read. A score of one could be given for each correct response for each story and highest score on one story could be a score of five.

The GORT – 4 was developed to administer to children and adults 6-18 years old. It has two parallel forms; Form A and Form B including 14 stories in each form. Form B was used for this study. Five multiple-choice questions followed each story. Form B took 15-45 minutes to

administer, which varied from person to person according to their reading abilities. This test helps to identify the children's problems in reading comprehension, and also determines the strength and weaknesses of a student. The internal consistency on this measure was calculated and cronbach's alpha was .96.

Oral Language Skills

Expressive One Word Picture Vocabulary Test: This task was used to assess the expressive vocabulary in English (EOWPVT-SBE, Brownell, 2000). This test measured the ability to name pictures of objects, actions and concepts, and is appropriate to administer from the age of 4-12. A total of 170 pictures of different objects and actions were shown to the participants; one picture at a time and they were asked to name it. The pictures were presented with an increasing difficulty level. Participants were stopped from continuing the task after six consecutive errors in a set. This task usually takes 10 to 15 minutes to administer. Participants were assigned a full mark on labeling the picture correctly according to the manual (EOWPVT-SBE, Brownell, 2000). Raw scores were calculated using the basal and ceiling rules provided in the test manual and were converted into standardized scores. Based on the manual the reliability of this measure was .95 (EOWPVT-SBE, Brownell, 2000).

Phonological Processing Skills

The Elision Task: is a standardized subtest of the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999). It was used to measure phonological awareness skills in English. There were six practice items in the task that were given to the children in order to familiarize them with the task before starting the final 20 items. Children were asked to repeat a word (e.g. cup) without saying a part of the word (e.g. /k/) while the answer had to be a meaningful word in English e.g. (up). Participants were asked to stop the task after committing three consecutive errors. The maximum of 20 could be scored on this task. In

the first section, children had to delete the first word of the given word such as “tooth” from the word “tooth brush”. In the second section, they had to delete the middle letters from the given word and to read them out loud such as “sing” after deleting the letter “/l/” from the word “sling”. Raw scores were converted into standardized scores according to the instructions given in the manual. The internal consistency was calculated and cronbach’s alpha was .57.

Urdu Measures

Following the English tasks, there are four different parts in this section as well; reading components, oral language skills, phonological processing and vocabulary knowledge. (see Appendix B for Urdu measures)

Urdu Word reading: As was mentioned earlier, Urdu standardized measures were not available to administer, so the primary investigator of the study created a word list by taking words from children’s Urdu textbooks from the curriculum in Pakistan. There were a total of 20 words in the word list. First five words were taken from the textbook for Grade one. The next ten words were taken from the textbook for Grade two. The last five words were taken from the textbook for Grade three to gradually increase the level of difficulty. Participants were asked to continue reading the words until the end of the list. A score of one was given for each correct word read by the participants. A raw score of 20 could be obtained in this task. Standardized residuals were used as standardized scores in data analysis. The cronbach’s alpha was .83 on this measure. In some cases where children could not recognize the Urdu script, they were given the same items using the Arabic script.

Reading Comprehension

Grey Oral Reading Test – 4 (Translated Urdu Version Form – A) GORT - 4: This task was administered to assess reading comprehension ability in Urdu. This test helped to measure the four different areas of reading comprehension; oral reading rate, accuracy, fluency

and comprehension. Stories, which are used in Urdu version, were the exact translation of the GORT – 4 Form – A from the English standardized test. The primary investigator of this study also translated this task.

Rate: is the amount of time taken by the participant to read a story. Time in seconds from each story was summed up at the end to get the rate score.

Accuracy: is the student's ability to pronounce each word in the story correctly. The total number of errors were compared to the given score range in the scoring manual. Accuracy scores for each story were summed up at the end to get the total scores in this category.

Fluency: refers to the student's rate and accuracy scores combined. Time taken by a participant on each story was added to the accuracy score in order to get the fluency score.

Comprehension: refers to the appropriateness of the student's responses to questions about the content of each story read. A score of one could be given for each correct response for each story and highest score on one story could be a score of five.

This test is designed for children and adults 6-18 years old. It had two parallel forms; Form A and Form B including 14 stories in each form. Five multiple-choice questions followed each story in both forms. First ten stories from "Form A" were taken from the GORT- 4 and translated into the Urdu language. This task took 15-45 minutes to administer, which varied person to person according to their reading abilities. This test helped to identify the children's problems in reading comprehension, and also determined the strength and weaknesses of a student. The internal consistency was calculated and cronbach's alpha was equal to .94.

Vocabulary Knowledge

Expressive One Word Picture Vocabulary Test (Translated Urdu Version): This test was used to assess the expressive vocabulary in Urdu (EOWPVT-SBE, Brownell, 2000). A total of 170 pictures of different objects and actions were shown to the participants, one picture at a

time and they were asked to name the pictures in Urdu. The picture had an increasing difficulty. Because this measure was not standard, participants were not stopped from continuing the task at any particular number of errors. However, they were shown six pictures on a page and were asked if they know the names of the pictures. They were given a time of five seconds to decide whether they know the name of the picture, before they were moved to the next set of pictures. This procedure was used to avoid the frustration in this task. This task usually took 10 to 15 minutes to administer. Participants were assigned with a full mark for labeling the picture correctly according to the manual (EOWPVT-SBE, Brownell, 2000). The total number of "correctly named items" was the raw scores. Raw scores were then used to calculate the standardized residuals in SPSS and were then used in final analyses. The internal consistency on this measure was calculated and cronbach's alpha was .91.

Phonological Processing

There were two subtests used in this category to measure children's phonological awareness sin Urdu language.

The Elision Task (Translated Urdu Version): This subtest was based on the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999) and was used to measure phonological awareness skills in Urdu. These words were not the exact translation of English version. Real words from Urdu vocabulary were used to create a phonological task in Urdu by using the format of English CTOPP; Elision Task. There were four practice items in the task that were given to the children in order to get familiar with the task before starting the final 20 items. Children had to repeat a word (e.g. Daant) without saying a part of the word (e.g. /d/), while the answer had to be a meaningful word in Urdu such as (Aant). In the first list, children had to delete the first sounds of the given word such as; /Ba/ from the word (Bazaar). In the second section, they had to delete the last sounds from the given word and to

read them out loud such as; (Ho) after deleting the letter "/Wa/" from the word (Hawa). In the last part of the test participants had to replace the first letter with another letter in order to make it another real word such as; word (Aary) was changed into the word (Bhaary) by replacing /Aa/ with /Bha/. Participants were not asked to stop the task after committing any number of errors. The maximum of 20 could be scored on this task. Raw scores were then used to calculate the standardized residuals in SPSS and were used in final analyses. The internal consistency on this measure was calculated and cronbach's alpha was .90.

Odd One Out, Phonological Awareness: There were two parts of this subtest; in the first part, children were presented with three real words from Urdu vocabulary and they had to pick the one, which did not sound the same as other two such as; Jahaaz, Baaz, Naar. The correct answer was (Naar) in this item. The internal consistency of this measure was calculated and α was equal to .71.

Odd One Out, Semantic Awareness: In the second part of this subtest, they were given with three words items, and they had to pick one odd word, which did not match in the category such as Sher, Jungle and Pahaar. The correct response was the (Pahaar). There was a score of one for each correct item and the highest score on this task could be the score of ten. Cronbach's alpha on this measure was .501.

Script Awareness

In order to measure children's script awareness of Arabic and Urdu script, they were tested on an additional measure. There were ten identical words in this task, taken from the Arabic and Urdu vocabulary. They sounded the same with minor differences in script. These words were real words in Arabic language and as well as in Urdu vocabulary but some of them had different meanings and some of them had same meanings in both languages. For example, "ahmer" means red color in Arabic and in Urdu. Children were asked to read these words once in

Urdu script at the beginning of the Urdu testing session and mark it with a check mark if they thought they were real words.

They were given this task again at the end of the Urdu testing session but with the Arabic script and were asked to do the same task. The order of the script was counterbalanced. One mark was given for each correctly read word and an additional mark if they had marked it correctly; (real words/non-words) and one mark was given for giving the accurate meaning in Arabic and Urdu. The highest score in this task could be 20. Children were not informed that all the words in the list were real words in both Urdu and Arabic scripts with different meanings, also that scripts were either Urdu or Arabic. The internal consistency on this measure was calculated and cronbach's alpha was Arabic script $\alpha = .74$ and Urdu script $\alpha = .73$

Procedure

In this study, children were tested on English and Urdu measures in two testing sessions depending on their availability and the level of interest. All of the testing was conducted during individual based testing sessions.

The first step of this study prior to the data collection was to translate or adapt all the standardized English measures into the Urdu language. The second step involved the participants' recruitment for the study. Parents of the children gave their initial consent and filled out the demographic questionnaire. All of the testing was held individually at their weekend school. Children gave their verbal assent before starting each testing session. All of the tests in English had stopping rules that prevented the frustration by discontinuing the test if it became too difficult for them. Testing in the Urdu language had different stopping rules than English testing session. Children were given each item in each test for a maximum of three seconds to decide whether they knew the item or not and were moved to the next item to prevent frustration with the task.

Participants were tested in two testing sessions; the first session included the English measures and the second session involved the Urdu tasks. The order of administering the two different languages was counter-balanced. The second testing session was scheduled after one week of first testing session for every child. The experimenter provided the Urdu script to all of the participants at the beginning of their Urdu testing session. For participants who could not recognize the Urdu script, they were given the same tasks in Arabic script instead. Most of these participants were Canadian-born who did not have any exposure to the Urdu script. Each testing session lasted for 45 to 50 minutes.

Results

This study examined the strategies of phonetic and orthographic transliteration. It was expected that bilinguals who read two scripts (Urdu and Arabic) for one language would have an advantage in handling two languages through the same scripts. The evaluation of this study was conducted by using a within-subject design examining performance on English and Urdu measures of vocabulary, reading and phonological awareness. Additionally, regression based analyses were used to examine relationships among variables.

Correlations, t-tests, regression analyses were performed using the raw data. When the assumption of normality was violated, variables analyses were transformed. Furthermore, binary logistic regressions were performed using the good/poor readers in within-script and across-script variables as a method for removing the effect of script similarities as a potential confound. Unless otherwise specified, a significance level of .05 was used and all tests were two tailed.

Descriptive Statistics

All 50 participants were included in the analyses. Table 3 illustrates the means and standard deviations for each task for all of the participants. As mentioned earlier, Urdu measures were not available in standardized versions, therefore the primary investigator created Urdu

measures by translating them from English. For these measures, standardized residuals were calculated from the raw scores and were used in the analyses. There was a ceiling effect noticed for the measure of English phonological awareness task (CTOPP). To deal with this, raw scores from the CTOPP were transformed into Log (L*x*) scores in SPSS to normalize the distribution and reduce the ceiling effect. Analyses were the same for transformed variables and raw scores therefore raw scores were used. As can be seen, there was no difference in average ages of male and female participants: boys (M = 97.87 months, SD = 12.83) and girls (M = 96.92 months, SD = 16.62), $t(48) = .225$, $p = .823$.

Correlational Analyses

The associations between variables were analyzed and are presented in full in Appendix A. Due to the size of the correlation matrix was divided into five subsections which highlight significant correlations.

Word reading: Word level reading in English was significantly correlated with age in months for both Word identification, $r(48) = .617$, $p < .001$, and word attack, $r(48) = .489$, $p < .001$, respectively. In addition, a child who has a larger vocabulary in English as measured by EOWPVT, was expected to be more proficient in word reading as well word identification $r(48) = .70$, $p < .001$, and word attack $r(48) = .665$, $p < .001$, respectively. Word reading in Urdu was correlated with age in months $r(48) = .418$, $p = .003$, but was not correlated with time in language school $r(48)$ .26 = , $p = .070$. When script differences were examined through correlations, Urdu script words were slightly correlated to age in months, $r(48) = .306$, $p = .031$. Urdu word reading was also correlated with Urdu vocabulary $r(48) = .480$, $p < .001$. English word level reading was positively correlated with Arabic script word reading $r(48) = .446$, $p = .001$, word identification and $r(48) = .596$, $p < .001$, word attack, respectively (see Table 4)

Vocabulary Knowledge: English vocabulary was positively related to age in months $r(48) = .578$, $p < .001$. As mentioned above, English word reading was positively correlated with English vocabulary $r(48) = .70$, $p < .001$, word identification and $r(48) = .665$, $p < .001$, and word attack, respectively. Urdu vocabulary was associated with English vocabulary $r(48) = .317$, $p = .025$, (see Table 5).

Reading comprehension: Reading comprehension in Urdu was correlated with phonological awareness $r(48) = .382$, $p = .006$. Moreover, Urdu reading comprehension was negatively correlated with English word reading $r(48) = -.572$, $p < .001$, and $r(48) = -.477$, $p < .001$, respectively. English vocabulary knowledge was also negatively correlated with Urdu reading comprehension $r(48) = -.432$, $p = .002$.

Phonological awareness: Moderate correlations were found for the relationship between phonological awareness in English and age in months $r(48) = .450$, $p = .001$, as well as their school grade $r(48) = .417$, $p = .003$. Urdu phonological awareness was correlated with age in months and time in language school $r(48) = .326$, $p = .021$, as expected. Urdu phonological awareness was also correlated with Urdu reading comprehension $r(48) = .382$, $p = .006$, and Urdu vocabulary $r(48) = .522$, $p < .001$, and also with Urdu word reading $r(48) = .577$, $p < .001$, see Table 6.

Script awareness: Urdu script task was slightly correlated with age in months $r(48) = .306$, $p = .031$, but was not correlated with time in language school. Arabic script task was also correlated with time in language school $r(48) = .535$, $p < .001$, and age in months $r(48) = .543$, $p < .001$. The ability to understand the words written in Urdu script was correlated with the same skill using Arabic script $r(48) = .328$, $p = .020$, (see Table 7).

Research Question 1: Relationships of English (L2) into Urdu (L1)

The first research question of this study explored the relationship of L1 (Urdu) and L2 (English). To answer this question, a correlational analysis was done between the English and Urdu reading, phonological awareness and vocabulary measures. Results showed that (L2) English word reading was positively correlated with reading Urdu words when presented in Arabic script word identification $r(48) = .446$, $p = .001$, and word attack $r(48) = .596$, $p < .001$, respectively. As it was explained earlier in literature review that Urdu shares its vocabulary with Arabic, Farsi and English, this trend can be seen here that Urdu vocabulary was associated with English vocabulary $r(48) = .317$, $p = .025$. In the vocabulary measure EOWPVT, 39 out of 170 items were cognates, which may contribute to our findings. Moreover, Urdu reading comprehension was negatively correlated with English word reading as measured by word identification $r\ (48) = -.572$, $p < .001$, and word attack $r(48) = -.477$, $p < .001$, respectively. English vocabulary knowledge was also negatively correlated with Urdu reading comprehension $r(48) = -.432$, $p = .002$.

Regression Analyses

To explore the significant relationships among some of the variables for the different groups, regression analyses were conducted. Linear regression analyses were conducted because of the exploratory nature of the analyses. Regression analyses will be described by discussing the research questions in their order.

Research Question 2: Urdu/Arabic (L1) predicts reading in English (L2)

The second research question examined: whether reading in Urdu/Arabic predicts reading in English (L2). In total two regressions were conducted. The first linear regression analysis was performed to determine the predictors of reading real words in English (L2). This regression analysis examined the relationship between English Word Identification, as a dependent variable,

and three independent variables, Urdu word reading, Urdu script decoding and Arabic word reading as measured by the number items read correctly in Urdu script and Arabic script. Reading words in Arabic script significantly predicted English word reading, $b = 4.45$, $t(46) = 2.96$, $p = .005$. Arabic script word reading, Urdu script decoding and Urdu word reading also explained a significant proportion of variance in English word reading, $R^2 = .21$, $F(3, 46) = 4.086$, $p = .012$, (see Table 8a).

A second linear regression analysis was conducted to examine the predictors of reading pseudowords in English (L2). This regression analysis examined the relationship between Woodcock Word Attack, as a dependent variable, and three independent variables, Urdu word reading, Urdu script words and Arabic script words, as predictors for reading L2. Arabic script words significantly predicted English pseudoword reading, $b = 2.50$, $t(46) = 4.89$, $p < .001$. Arabic script word reading, Urdu script word reading and Urdu word reading also explained a significant proportion of variance in English pseudoword reading, $R^2 = .36$, $F(3, 46) = 8.74$, $p < .001$, (see Table 8b).

Research Question 2a: Reciprocal effects of Arabic and English and Urdu and English

The first subsection of the second research question of this study examined the reciprocal effects of the Arabic and English and Urdu and English. In total, two regressions were conducted. The regressions included simple linear regression analyses. The first regression analysis was performed to determine the predictors of reading in English (L2). This regression analysis examined the relationship between Woodcock Word Attack, as a dependent variable, and the two independent variables, Arabic word reading and Urdu word reading, as predictors for reading L2. Arabic script word reading significantly predicted English word reading (Woodcock Word attack), $b = 2.50$, $t(47) = 5.17$, $p < .001$. Arabic script word reading also explained a significant

proportion of variance in English pseudoword reading, $R^2 = .60$, $F(2, 47) = 13.39$, $p < .001$, see Table 9a.

To see the reciprocal effects, a second linear regression analysis was conducted with Arabic script decoding as dependent variable and English word reading (Woodcock Word Attack) as predictors for reading other language than L1. English word reading significantly predicted Arabic script word reading, $b = .16$, $t(47) = 3.43$, $p = .001$. English word reading also explained a significant proportion of variance in Arabic script word reading, $R^2 = .36$, $F(2, 47) = 13.18$, $p < .001$. These results showed the reciprocal effects of reading between English (L2) and Arabic as other language (see Table 9b).

To see the reciprocal effects between English and Urdu language, simple linear regression analyses were performed. This regression analysis examined the relationship between Woodcock Word Attack, as a dependent variable, and two independent variables, Urdu word reading and Urdu decoding, as predictors for reading L2. English word reading did not significantly predicted Urdu word reading, $b = .234$, $t(47) = .833$, $p =$ ns. English word reading also explained a non-significant proportion of variance in Urdu word reading, $R^2 = .17$, $F(2, 47) = .770$, $p =$ ns. To explore the reciprocal effects, Urdu word reading was entered as a dependent variable and a simple regression analysis was conducted. Urdu word reading did not significantly predicted English word reading, $b = .010$, $t(47) = .054$, $p =$ ns. Urdu word reading also explained a non-significant proportion of variance in English word reading, $R^2 = .21$, $F(2, 47) = 1.11$, $p = .336$. Results showed that there are no reciprocal effects between English and Urdu language (see Table 10a & 10b). This result support our prediction that these children are not aware of their skills of reading Urdu as their L1, but can read Urdu script because of their reading skills of Arabic language as other language.

Research Question 2b: Differences in reading skills based on the script

The second subsection of research question two examined the differences in reading skills based on the script in which the child has been taught; Arabic/Urdu and English. It was predicted that bilinguals who read two scripts (Urdu and Arabic) for one language L1 (Urdu) would have an advantage in handling two languages through the same scripts. In this case, the key variable was whether the children could read words using both scripts. Simply adding raw scores for the Urdu and Arabic measures could have resulted in high scores if the child performed very well on one measure and close to floor on the other. Therefore, a categorical variable was created. Binary logistic regression was used for these analyses. Binary logistic regression is a form of regression, which is usually used when the dependent variable is a contrast and the independent variables are continuous or categorical (King, 2008). Since the performance on script reading was a binary variable (good versus poor), to test this research question, binary logistic regressions were performed to determine the best predictors to include in the model. Logistic regression can be used for the following purposes: to predict a categorical dependent variable on the basis of continuous and/or categorical independent variables; to determine the effect size of the independent variables on the dependent variable; to rank the relative importance of independents; to assess interaction effects; and to understand the impact of covariate control variables (King, 2008). The impact of predictor variables is always explained in terms of the odds ratios and a logit is the natural log of the odds of the dependent variable equaling a certain value or not (usually 1 in binary logistic models: 1 is equal to good readers and 0 is equal to poor readers in this case).

Analyses for this step followed procedures used by Gottardo, Collins, Baciu and Gebotys (2008), especially in this case when binary logistic regression analyses can be effective in

establishing which variables are most strongly related to good reading skills. The goal of logistic regression is to correctly predict the category of outcome for individual cases using the most parsimonious model. To accomplish this goal, a model is created that includes all predictor variables that are useful in predicting the response variable. Variables can be entered into the model in the order specified by the researcher or logistic regression can test the fit of the model after each coefficient is added or deleted, called stepwise regression (Gottardo et al., 2008). A Forward stepwise Wald method was used for this analysis. A Wald test is used to test the statistical significance of each coefficient in the model.

As previously mentioned, script within language and across languages were adjusted according to the performance of the children classified as good/poor readers were used in these regression analyses to account for the slight script differences between the two-presented scripts. Participants who were good in both scripts were considered as good readers, whereas, readers who were unable to read either of the script were considered as poor readers. It has been suggested that children can easily transfer their letter-sound and alphabet knowledge to their second language if differences in scripts are minor (Levin, Shatil-Carmon, & Asif-Rave, 2006). Children's raw scores on Urdu script reading and Arabic script reading were transformed into standardized residuals on SPSS. These residuals were then used to determine if the children were good or poor readers. Children's scores with both positive residual values were considered as good readers and labeled as 1 and scores with negative residual value on both scripts or either of one were considered as poor readers and labeled as 0. Because the research question was whether children could use both scripts, it was necessary to perform well on both scripts to be classified as a good reader. This variable was named as script between languages and was entered as a predictor to assess whether the two scripts could be differentiated based on their scores from this

task.

Finally, script within-language variable was entered as a predictor because it is suggested that children are able to distinguish between one language and the other if the script and the vocabulary, in this case is shared (Afzal, & Hussain, 2001; Abu-Rabia & Siegel, 2003; Frost et, al., 1987). The same procedure was used to transform the raw scores into residual scores for the Urdu script decoding and providing meanings for Urdu words and Arabic script decoding and providing meanings for Arabic words. Participants who were good in decoding both scripts and were also able to provide the meaning of the word in both scripts were considered as good readers and who were poor in either of the script or were not able to provide meaning of the word in both languages were considered as poor readers. The positive residual value on both variables was considered as good readers and was labeled as 1 and the negative residual value on both or either of the one was considered as poor readers and was labeled as 0.

Table 11 presents the final result of these analyses. A model containing a predictor variable (Urdu word reading) was selected using the Forward stepwise Wald method $\chi^2(1, N = 50) = 10.79$, $p = .001$. This overall model correctly predicted awareness of script similarity or differences in 76% of the cases exhibiting excellent discriminant power. Nagelkerke R^2 was calculated to be .30, indicating that approximately 30% of the variance can be explained by these variables. Scores on the reading measure had an odds ratio of 1.581, meaning that children who had higher scores on Urdu word reading were 1.58 times more likely to be considered as good readers of both scripts, $p = .012$.

Research Question 2c: Children who are good in reading in other scripts (Arabic) are good at reading in English (L2)

The last research question examined the performance of good readers on both Arabic script and their L2 (English). It was predicted that children who are able to read Arabic script would perform better on their L2 reading task. The variable Arabic script reading was adjusted according to the performance of the children with good/poor readers. There were two scoring categories for Arabic word reading: decoding and meaning. Meaning refers to the ability to provide the meaning of the word in Arabic language. Their raw scores on both categories were transformed into standardized residuals using SPSS and were used to determine if the participant was a good or poor reader. Children with positive scores of both residual values on Arabic decoding and meaning were considered as good readers and labeled as 1 and those with scores of negative residual value on both decoding and meaning or either of one were considered as poor readers and labeled as 0. This variable was named as Arabic Good/Poor readers and was entered as a predictor to assess whether the word reading in different script could be differentiated based on their scores from this task. That is participants who were able to decode the words successfully and also reported the meaning of given word in Arabic language were considered as good readers, whereas, readers who were either unable to decode or tell the meaning of the word were considered as poor readers.

It has been suggested that children can easily transfer their letter-sound and alphabet knowledge to their second language if differences in scripts are minor (Levin, Shatil-Carmon, & Asif-Rave, 2006). However, in order to avoid reading being characterized as simply decoding or "word calling" the ability to understand the meaning of the words was considered part of word reading. Children's raw scores on Urdu script reading and Arabic script reading were transformed

into standardized residuals on SPSS. These residuals were then used to determine as good or poor readers. Children whose scores were positive for both residual values were considered as good readers and labeled as 1 and children whose scores were negative for the residual values on both scripts or either of script were considered as poor readers and labeled as 0. This variable was named as script between languages and was entered as a predictor to assess whether the two scripts could be differentiated based on their scores from this task.

Since the performance on reading Arabic script reading was a binary variable (good versus poor), to test this research question binary logistic regression was performed to determine the best predictors to include the model. To answer this question, binary logistic regression can be effective in establishing which variables are most strongly related to good reading skills in second language.

Table 12 presents the final results of this analysis. A model containing two predictor variables (English word reading: Word Attack and Word Identification) was selected using the Forward stepwise Wald method $\chi^2(1, N = 50) = 4.60$, $p < .05$. This overall model correctly predicted 60% of classification for the Arabic word reading exhibiting good discriminant power. Nagelkerke R^2 was calculated to be .12, indicating that approximately 12% of the variance can be explained by these variables. Scores on the English reading measure had an odds ratio of 1.19, meaning that children who had higher scores on English word reading were 1.19 times more likely to be considered as good readers, $p = .045$, as expected.

Discussion

The purpose of this study was to contribute the literature on psycholinguistics and literacy in bilinguals in order to understand awareness of script similarities and differences, and relations among language skills for Urdu speaking bilinguals. Six-ten-year-old bilingual children's reading and language skills in (L1) Urdu and Arabic script and English (L2) were examined. The following section discusses each of the two research questions with the sub-research questions of question two, followed by a section describing the implications of this study based on its findings. Limitations of this study and directions for future studies are discussed then. The last section of this paper offers final conclusion.

Relations Among Variables

The associations between variables were analyzed based on the correlational analyses. Although some of the expected correlations were not significant, it is important to look at them and consider why they were not significant.

1a. Word reading in English: word identification and word attack were significantly correlated with age in months. The older the child was the better he/she could read real words and pseudowords in English (L2). In addition, a child, who knows more words in English as measured by EOWPVT, was expected to be more proficient in word reading as well. Consistent with this expectation, a positive relationship was found between English word reading and English vocabulary. Share (1995) suggested in the *self-teaching hypothesis* that the ability to translate unfamiliar printed words into spoken equivalents ‘‘phonological recoding’’ or simply ‘‘decoding’’ is the central means to acquire orthographic representations. This model proposes that being able to successfully read a new word is using an opportunity to acquire the word-specific orthographic information that is the foundation of skilled visual word recognition. However, in English, the relationship between letters and sounds is not perfect, resulting in

partial phonological recoding. Therefore, children must rely on knowledge of specific words to assist when the words are not easily decoded (e.g., night, yacht). At last, English word reading was also positively correlated with Arabic script word reading. This correlational relationship is supported by the findings of Gass and Selinker (1983) that bilingual children usually transfer prior linguistic knowledge for acquiring reading skills in second language.

1b. Word reading in Urdu was correlated with age in months but was not correlated with time in language school. The same trend was seen in Urdu word reading that the older the child was the better he/she read in his/her first language. As it was mentioned in the literature review that these children do not receive explicit instruction in Urdu language at the weekend school and do not learn to read the Urdu language, therefore, being in the language school does not contribute in relation to be able to read better in Urdu (L1), regardless of their performance on the script awareness task. However, when script differences examined through correlations, Urdu script words were slightly correlated to age in months. Urdu word reading was also correlated with Urdu vocabulary suggesting that these children use their vocabulary knowledge of Urdu.

2a. Age and grade are considered to be powerful predictors of vocabulary knowledge and this outcome was supported in this case: English vocabulary was positively correlated to age in months. Older children performed better on vocabulary task. There were no significant differences between male and female participants. English vocabulary was significantly correlated to English word reading, pseudoword reading as well as to the phonological awareness task. The results of a number of studies examining the relative contributions of oral proficiency and phonological processing skills to word-level reading skills in English language learners, decreases noticeably as the effect of age and Grade level is controlled. Previous research has found a significant but relatively small association between English vocabulary knowledge and English word reading in primary-grade students (Adams, 1990; Ehri, 1998; Foorman, Francis,

Fletcher, Schatschneider, & Mehta, 1998; Mann, 1993; Moats, 1994; Stanovich & Siegel, 1994), and knowledge of letter names (Treiman & Cassar, 1997. Arab-Moghaddam and Sénéchal (2001) tested Farsi–English speakers in Grades 2 and 3 living in Canada. These bilingual children were attending instructions in English (L2) in their public school and in Farsi (L1) at the heritage language school. Results showed a moderately significant relationship between English vocabulary and English word reading, whereas, the correlation between phonological processing skills (pseudoword decoding) and English word reading skills were relatively high. Geva (2006) suggests that in English L2 learner's vocabulary knowledge might be a proxy for English oral language proficiency and is therefore related to reading. The results of the present study were consistent with the findings of above mentioned study and addressed one of the concerns related to English-language learners: whether they are at a disadvantage as compared to monolingual, native speaking peers in the development of word and pseudoword reading skills because of their limited English proficiency (Geva & Wade-Woolley, 2004).

2b. Urdu vocabulary was not correlated with age in months and time in language school, unexpectedly. This finding can be explained by examining responses to one of the questions on the family language questionnaire that these children barely use their L1 at home and in the gatherings with their friends either at school or at home. These findings were consistent with the findings of a study conducted by Dunn and Fox Tree (2009), which suggested that children use their L1 only from the time of birth until they start their schooling. By the time, they start their school they often use their L2 and prefer to speak in their L2 with their peers and big groups for communication. As it was explained earlier in literature review that Urdu shares its vocabulary with Arabic, Farsi and English, that trend can be seen here that Urdu vocabulary was associated with English vocabulary. In the expressive vocabulary measure, 39 out of 170 items were cognates, which may contribute to the outcomes found in the present study. It is likely that many

known Urdu items were English cognates. Additionally, the vocabulary measure used tapped expressive vocabulary. A measure of receptive vocabulary might have yielded different results. The list of cognates from EOWPVT can be seen in Table 15.

3a. English reading comprehension was slightly correlated with Urdu vocabulary but was not correlated with any of the other variables, unexpectedly. Jiménez, García, and Pearson, (1996) examined the influence of Spanish-speaking English-language learners' on their understanding of cognate relationships on reading comprehension. These findings suggested that bilingual students, who had a better awareness of the relationships between English and Spanish cognates, used successful strategies to infer word meanings, which helped them to comprehend texts on higher levels. This study explained the importance of considering individual differences among English-language learners from the same language backgrounds in explaining variances in reading comprehension. Furthermore, they suggested that language background might influence performance on the reading comprehension task; one of the examples could be the relationship of Spanish language with the English language. Spanish monolingual children from first-language backgrounds that do not share cognates with English would not be able to have this advantage. The findings of the study by Jimenez et al (1996), supports the results of the current study. The significant relationship between English reading comprehension and Urdu vocabulary verifies the benefit of cognates in two languages for second language learners.

3b. Reading comprehension in Urdu was correlated with Urdu phonological awareness Goswami and Bryant (1990). Mcguinness (2005) suggested that bilingualism enhances metalinguistic awareness, because bilingualism requires early attention to the forms of the languages. However, Urdu reading comprehension was negatively correlated with English word reading and English vocabulary knowledge. It is believed that this negative relationship was due to the absence of instruction given to the children in Urdu language at the weekend school and

the percentage of first language use at home, which was reported by parents in family language questionnaire: on average 1 hour per week. The small number of children with higher scores on Urdu likely had more experience with Urdu and less experience with English. Also, as mentioned in literature many of these children did not have exposure to L1 print, in their early years of language and literacy acquisition.

4a. Moderate correlations were found in the relationship between phonological awareness in English and age in months as well as their school grade. Phonological awareness was also slightly correlated with English word reading. Research suggests that phonological skills assessed in the language in which the bilingual children have been taught relate to achievement in both languages (Gomez et al., 2002). In this case, these children performed better in all areas of L2; reading, vocabulary, phonological awareness and reading comprehension, which suggests that English (L2) is the dominant language of these bilingual children.

4b. Urdu phonological awareness was correlated with age in months and time in language school as expected. Urdu phonological awareness was also correlated with Urdu reading comprehension and Urdu vocabulary as well as with Urdu word reading. Urdu phonological awareness was also correlated with English phonological awareness. These findings suggested that phonological awareness is not a language-specific mechanism (Comeau, Cormier, Grandmaison, & Lacroix, 1999). These skills could predict word recognition cross-linguistically as a result of the linguistic interdependence between L1 and L2.

5a. The Urdu script task was slightly correlated with age in months but was not correlated with time in language school. This finding results from the fact that the children did not receive instruction in Urdu language at their weekend school. Their exposure to the Urdu print was limited depending on their age and arrival time in Canada, if they are immigrants. It was analyzed through the information reported in the family language questionnaire that the children who

immigrated to Canada had already exposure to Urdu print in their native country. This group was slightly more comfortable reading Urdu words reading when presented in Urdu script.

5b. Performance on the Arabic script task was correlated with time in language school and age in months. This relationship supports our prediction that the more time children had attended their weekend school the more they were able to read Arabic script because they are attending instruction in Arabic and English at the weekend school. Urdu script meanings were correlated with Arabic script meanings. This relationship predicts the relationship between Urdu and Arabic script similarities and shared vocabulary. These children are learning to read Arabic and unintentionally gaining the benefit of learning to read Urdu script because of the similarities between both of the scripts and shared vocabulary. These findings answered one of the objectives of the current study: whether these children can benefit from the same orthographic structure to reading Urdu based on learning to read Arabic.

Relationship between English (L2) and Urdu (L1): The first research question examined the relationships between English (L2) and Urdu (L1). Correlational analyses showed that (L2) English word reading was positively correlated with (L1) Urdu words when presented in Arabic script. As explained earlier in literature review, Urdu shares its vocabulary with Arabic, Farsi and English and that trend could be seen in this correlational analysis between the Urdu and English vocabulary measure. In the vocabulary measure, the large number of English/Urdu cognates may explain these findings. It has been suggested that primary language skills are the same across languages and can be transferred between languages (Durgunoglu, 2002; Geva & Siegel, 2000). However, Geva and Siegel (2000) also suggested that reading skills are the similar across languages, but related to the scripts, as in the *script dependent hypothesis*. There are some other factors that have an impact on relations across L1 and L2 skills such as script and linguistic features of each language. Ziegler and Goswami (2006) proposed that reading in consistent

orthographies involves use of small linguistic units, whereas reading in inconsistent orthographies requires the use of larger units. The above explanation supports our findings of this research question: that script and linguistic features of each language are the influential components in the L1 and L2 relations. These findings were consistent with the Linguistic Interdependence Hypothesis (Cummins, 1983) that L1 proficiency is related to second language (L2) proficiency either across general oral language skills (Siegel & Geva, 2000), or across specific linguistic skills (Durgunoglu, 2002).

Urdu/Arabic (L1) predicts reading in English (L2): It was expected that L1 (Urdu/Arabic) would predict the reading in L2 (English). A simple linear regression analysis was performed to see the predictors of reading in English (L2). This regression analysis examined the relationship between English word reading, as a dependent variable, and Urdu word reading, Urdu script words reading and Arabic script words reading, as predictors for reading L2. Results showed that there was a significant relationship between word reading in English and Urdu word reading, but only when these words were presented in Arabic script. It is an interesting factor to look at the kind of script used when children read two different languages that share the same script and orthographic structure. Levin, Shatil-Carmon, and Asif-Rave (2006) suggest that children could easily transfer their letter-sound and alphabet knowledge to their second language with minor differences in script in the case of voweled and unvoweled Arabic reading.

As mentioned earlier, Arabic and Urdu scripts have many similarities. Both languages are written in deep orthographic scripts, when written without vowels, and a shallow orthography when written with vowels (Abu-Rabia & Siegel, 2003; Frost et, al., 1987). The main difference is that un-vowelized Arabic preserves the root word while un-vowelized Urdu results in a word written in consonants and long vowels. Therefore, there is a good match between the morphology of Arabic and its script. The children in this study learn to read Arabic at weekend Islamic school

but are able to read Urdu words list presented in Arabic script in its voweled shallow form because of the sharing orthographic features. Word reading and spelling skills depend on knowledge of the alphabet and letter-sound correspondences in an alphabetic language such as English, Arabic and Farsi. The familiarity with orthographic conventions of the language is an addition to this framework (Holmes & Castles, 2001). Durgunoglu (2002) suggest that dual language learners use their skills such as phonological awareness, syntactic awareness and script awareness in the L1 in order to enhance their L2 because these skills are related across languages. The above-mentioned literature supports our results that L1 reading skills predicts reading in the L2 regardless of the script differences between L1 and L2.

Reciprocal effects of Arabic and English and Urdu and English: This question explored the reciprocal effects of the Arabic to English and Urdu to English word reading. To answer this question simple regression analyses were conducted. The first pair of analysis examined the relationship between English word reading and Arabic word decoding. There was a significant linear relationship between reading in Arabic and English. Significant results supported the positive reciprocal effects between two languages: Arabic and English.

These reciprocal effects were absent when Urdu and English were compared to each other. There was no linear significant relationship between reading in Urdu and English. Phonology, vocabulary and grammar are the primary components of oral language and are considered as the most powerful factors in L2 acquisition, which are affected by L1 experiences (Genesee et al., 2004). However, the degree of similarity across languages can influence cross-linguistic transfer. Two languages that differ in oral and written language are Urdu and English. Urdu (L1) in this case, has a different morphological and syntactic structure from English. Therefore, it is reasonable to say that the effects can vary from language to language and can be

either positive or negative as results showed in this case. The lack of instruction in Urdu can have an influence on the relationship between reading in English and Urdu.

The biggest challenge for the researcher in multilingual settings has been to identify the reading abilities of dual language learners. It is quite difficult to distinguish between reading problems stemming from low levels of linguistic proficiency L1 (Urdu) versus reading that is more general or learning difficulties L2 (English) in this case (Durgunoglu, 2002).

Differences in reading skills based on the script: An important consideration was to explore the differences in reading skills based on the script in which the child has been taught; Arabic/Urdu and English. The two subsections of this question examined those children who are good at reading in other scripts (i.e., Arabic) to determine if they are good at reading in English (L2). It was predicted that bilinguals who read Urdu in two scripts (Urdu and Arabic) for one language L1 (Urdu) would have an advantage in handling two languages through the same scripts. Binary logistic regression was used to answer this research question. Afzal and Hussain (2001), Abu-Rabia and Siegel (2003), Frost et al., (1987) suggest that children are able to distinguish between one language and the other if the script and the vocabulary, in this case, is shared.

Overall, the findings of this research question were consistent with the initial prediction that children's reading skills are based on the script (Arabic/Urdu and English) in which they are taught. Children who were good in reading both Arabic and Urdu script were also good in English word reading. Their English word reading was moderately correlated with Arabic words. These children receive instruction in Arabic and learn how to read the Arabic language at their weekend school. These findings were supported by the findings of Comeau et al (1999) that decoding is not a language-specific mechanism. They suggested that decoding skills could predict word recognition cross-linguistically as a result of the linguistic interdependence of the

L1 and L2. Results of the current study were also supported by Gomez et al (2002) that skills assessed in the language in which children have been taught relate to achievement in both languages. Urdu decoding was also correlated with providing the meanings in Arabic, which refers to the children's knowledge of orthography of the acquired knowledge. It is easy for children to transfer their letter-sound and alphabet knowledge to their second language with minor script differences (Levin, Shatil-Carmon, & Asif-Rave, 2006). The contrast between voweled and unvoweled Arabic is similar to written Urdu and Arabic.

Limitations

This research was not a longitudinal study, which may be an important limitation. These children were tested at only one point in time which allowed for assessment of relations among variables across languages. In addition, it would be interesting to examine the development of differences over the period that could show improvement for these children in their L1 proficiency at a certain age or after a certain time in language school. A longitudinal design could also answer the possible assumption that: what happens after the completion of one school year at weekend school? Do these children achieve a higher level of oral proficiency and reading skills in their L1?

We also could not control the effect of time in language school for all of the children because of the small sample size of Urdu speaking children who go to these weekend Islamic schools to learn to read Arabic. Exposure to a language is an important variable in bilingual studies and a longitudinal approach will allow answering this issue.

Moreover, translating English measures into the Urdu language was also a challenge in this study. The structure of the Urdu language made translation difficult. The word choice for translating the reading comprehension task was one of the difficult tasks of this study. In any cross-linguistic language, it is a typical challenging task to translate the vocabulary task, which

was faced here in translating the vocabulary test into Urdu language. There were 39 pictures out of 170 in the picture vocabulary test, which were cognates in the Urdu and English language. In addition, 20 of the pictures were hard to translate in the Urdu language because those concepts do not exist in Urdu vocabulary such as the picture of "Racoon" and "Mermaid". It could be minimized if there was a standardized test available in the Urdu language. These cultural differences could be avoided if there were standardized tests available for the Urdu language.

An important challenge of this study was parental understanding for their children participation at the time of participant recruitment. It was hard for the parents to realize that their children could participate in the study if they attended the weekend Islamic school to learn how to read Arabic. According to the parental views, it was hard to conceptualize that their children will be able to use their Arabic reading skills in reading Urdu script, if they have not been introduced to the Urdu script.

Future Studies

The development of the assessment tool was an important contribution to the study. Although further work needs to be done, considering the fact that there are no standardized tests available in Urdu language, translating already existing tasks from English to Urdu language is considered as the biggest contribution of the study. Further work needs to be done to create reliable language tasks that measure phonological processing and reading comprehension. An interesting possible expansion of this study would be to examine the effects of teaching children to read Urdu using the Roman alphabet. This would challenge the traditional ideology that the choice of script (from the dominant language; (L2; English) can be helpful for bilinguals or second language learners. It has been observed that Muslims in North America use the strategies of transliteration to read the Quran in Arabic and Roman script in order to fulfill the requirements of their Islamic education. In the past, they learned the Quran through translations into their first

language or Arabic only, but currently the Quran has been transcribed using Roman letters to maintain the pronunciation in the original dialect. The importance of the original Arabic version is given priority over the translation even though it might be represented in a script other than Arabic. This practice has gained prominence as an essential part of their learning Quran and Islamic education in Western countries.

The results of the current research have also shown that it is easier for bilingual Urdu speakers to learn Urdu through transliteration because their L2 (English) is their dominant language in all structural areas of language; vocabulary, reading, writing and phonics. It can predict that using the strategies of phonetic and orthographic transliteration for bilinguals will make Urdu into Roman alphabet an advantage in handling the two languages as their medium of communication, although the difference is much more subtle. It would also be interesting to look at the differences between the good and poor readers in the L2, to determine if differences predict the significant differences in L1. Their better vocabulary and phonological knowledge in the L2 can also better predict performance on L1 measures. In future studies, Urdu monolinguals can also be compared with English monolinguals to determine whether there are any differences between two groups. Writing a child's L1 (Urdu) in a different script (Roman alphabet), which is their L2 in this case can also enhance their reading skills. These skills will be able to help bilingual children in differentiating between English words and pseudowords and would improve writing skills along with spelling knowledge. The expansion of this study through an intervention could also be helpful for bilinguals in order to maintain their mother tongue as their heritage in another linguistic culture for several years.

Conclusion

To summarize the major findings briefly: children who were good readers in L1 were good readers in L2 regardless of the script differences in L1 and L2 and similarities of Urdu (L1) and Arabic. Moreover, their word reading level in the L1 predicted their L2 word reading level. These bilingual children performed better in L1 reading measure when presented in Arabic script and were categorized as good and poor readers based on their performance. These results supported the main research question of this study about whether Urdu/Arabic (L1) reading predicts reading in English (L2) and if children who are good at reading in other script (Arabic) are good at reading in English (L2). The next research question was to look at the relationship of English (L2) into Urdu (L1) and Urdu into English. There were not significant differences found in regards of Urdu word reading done in Urdu script but significant differences were found when script was presented in Arabic. Therefore, these bilinguals should be examined on transfer of literacy skills on a case-by-case basis, which might be related to similarities and differences between L1 and L2 scripts as well as relative levels of proficiency in each language, especially if the bilingual readers show low levels of literacy in their L1. These language studies are important to study for the immigrant population who face these challenges in the upbringing of their children. The findings of these studies can help the immigrant parents to save the heritage of their language for their future generations. The current study will particularly help Urdu speaking Muslim community living in North America that it is possible to keep the Urdu language alive by relating it to the Arabic language, which has the same orthographic structure and also part of its vocabulary.

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Table 1
Measures and tasks table in English and Urdu Language

	English	Urdu
Word reading	WJ word ID	Urdu word reading
	WJ word attack	
Vocabulary Test	EOWPVT	EOWPVT
Phonological awareness	CTOPP	CTOPP
		Semantic categorization
Reading comprehension	GORT	GORT
Script awareness		Urdu script word reading
		Urdu script meaning
		Arabic script word reading
		Arabic script meaning

1. WJ = Woodcock Word Identification, Woodcock Word Attack

2. EOWPVT = Expressive One Word Picture Vocabulary Test

3. CTOPP = Comprehensive Test of Phonological Awareness

4. GORT = Grey Oral Reading Test

Table 2

Participants demographic

Variables	Mean	SD
Boys age in month	97.87	12.83
Girls age in month	96.92	16.62
Time in language school	19.52	13.71

N male = 25, N female = 25.

Table 3

Descriptive data from English and Urdu measures

Measures	Mean	SD
Urdu script words	7.60	1.26
Urdu script meanings	6.64	1.46
Arabic script words	8.76	.98
Arabic script Meanings	6.58	1.62
Woodcock Word ID	88.10	10.59
Woodcock Word Attack	36.92	4.01
GORT English	26.50	3.93
GORT Urdu	13.74	4.83
CTOPP English	16.68	2.68
CTOPP Urdu	15.54	6.15
Urdu word meaning	14.56	3.14
Semantic categorization	3.32	1.37
EOWPVT English	89.12	15.55
EOWPVT Urdu	48.98	12.81

Table 4

Correlations between English and Urdu word reading

	WID	WAT	Age	Time	Arabic Script	Vocab	CTOPP	Urdu word
WID	-							
WAT	.809**	-						
Age	.617**	.489**	-					
Time lang sch	.295*	.434**	.432**	-				
Arabic script	.446**	.596**	.543**	.535**	-			
Vocabulary	.697**	.665**	.578**	.390**	.535**	-		
CTOPP	.364**	.344*	.450**	.364**	.242	.535**	-	
Urdu word	.213	.177	.418**	.259	.323*	.319*	.235	-

Note: Sig ** = P < .01, * = p < .05

Table 5

Correlations between English and Urdu vocabulary measures

	EOWPVT	EOWPVT Urdu	Age	Time lang sch
EOWPVT	-			
EOWPVT Urdu	.317*	-		
Age	.578**	.254	-	
Time lang sch	.390**	.153	.432**	-

Note: Sig ** = p < .01, * = p < .05

Table 6

Correlations between English and Urdu phonological awareness measures

	CTOPP	CTOPP Urdu	Age	Time lang sch	Urdu word read
CTOPP	-				
CTOPP Urdu	.330*	-			
Age	.450**	.288*	-		
Time lang sch	.395**	.326*	.432**	-	
Urdu word read	.235	.577**	.418**	.259	-

Note: Sig ** = p < .01, * = p < .05

Table 7

Correlations between Urdu script and Arabic script measures

	Arabic script	Urdu script	Age	Time lang sch
Arabic script	-			
Urdu script	.185	-		
Age	.543**	.535**	-	
Time lang sch	.535**	.076	.432**	-

Note: Sig ** = p < .01, * = p < .05

Table 8a

Predicting English word reading

Model	*β*	*Std. Error*	*t*	sig
Urdu script words	.678	1.149	.590	.558
Arabic script words	4.459	1.504	2.96	.005
Urdu word reading	.195	.479	.408	.685

Table 8b

Predicting English pseudoword reading

Model	*β*	*Std. Error*	*t*	sig
Urdu script words	-.280	.391	-.716	.477
Arabic script words	2.50	.512	4.89	.000
Urdu word reading	.004	.163	.024	.981

Table 9a

Arabic predicting English word reading

Model	*β*	*Std. Error*	*t*	sig
Urdu word reading	-.278	.377	-.738	.464
Arabic script words	2.508	.485	5.171	.000

Table 9b

English predicting Arabic word reading

Model	*β*	*Std. Error*	*t*	sig
WID	-.010	.018	-.529	.599
WAT	.166	.049	3.43	.001

Table 10 (a)

English predicting Urdu word reading

Model	*β*	*Std. Error*	*t*	sig
Urdu word reading	-.074	.474	-.157	.876
Arabic word reading	.234	.190	.833	.226

Table 10 (b)

Urdu word reading predicting English word reading

Model	*β*	*Std. Error*	*t*	sig
WID	.060	.072	.833	.409
WAT	.010	.190	.054	.957

Table 11

Binary logistic regression predicting script awareness across scripts

Predictor	B	S.E.	Waldχ^2	Df	Odds Ratio	Sig.
Urdu word reading	.458	.183	6.279	1	1.581	.012
Constant	-5.240	2.504	4.381	1	.005	.036

% Correct Classified: 76%
Nagelkerke R^2: .24
$\alpha = .10$

Table 12

Binary logistic regression predicting English word reading

Predictor	B	S.E.	Waldχ^2	Df	Odds Ratio	Sig.
English word reading WAT	.172	.086	4.026	1	1.187	.045
Constant	-6.510	3.212	4.107	1	.001	.043

% Correct Classified: 60%
Nagelkerke R^2: .12
$\alpha = .10$

Table 13

List of cognates (English and Urdu) from EOWPVT

Item No	Name	Item No	Name
6	Telephone	72	Shield
9	Bus	75	Thermometer
11	Bicycle	83	Chess
12	Sofa	84	Tweezers
19	Truck	86	Stadium
20	Computer	90	Parachute
24	Wagon	93	Celery
26	Cup	97	Graph
33	Mermaid	104	Microscope
36	Penguin	106	Africa
38	Starfish	110	Battery
40	Tire	114	Bulldozer
44	Skateboard	117	Pillar
48	Aquarium	119	Stethoscope
49	Raccoon	132	Fungus
57	Cactus	135	Protector
60	Wrench	141	Thermostat
63	Stool	143	Poultry
70	Cheetah	153	Meter
71	Compass		

Appendices

Appendix A

Overall Correlations between all English and Urdu measures

	A	B	C	D	E	F	G	H	I	J	K	L
A	-											
B	.18	-										
C	.26	.32*	-									
D	.17	.44**	.21	-								
E	.02	.60**	.18	.81**	-							
F	-.25	-.042	.20	.17	.19	-						
G	-.25	-.51**	.20	-.57**	-.48**	.20	-					
H	.07	.53**	.26	.30*	.43**	-.09	-.28*	-				
I	.30*	.54**	.42**	.61**	.49**	-.27	-.47**	.43**	-			
J	.01	.24	.23	.36**	.34*	.22	-.19	.39**	.450**	-		
K	.08	.18	.57**	.19	.13	.10	.38**	.32*	.29*	.33*	-	
L	.08	.53**	.31*	.69*	.66**	.23	-.43**	.39**	.57**	.53**	.20	-
M	.19	.04	.48**	.35*	.18	.32*	.23	.15	.25	.36**	.52**	.31*

A = Urdu script words, B = Arabic script words, C = Urdu word reading,
D = Word identification, E = Word attack, F = GORT English,
G = GORT Urdu, H = Time in language school,
I = Age in months, J = CTOPP, K = Urdu CTOPP,
L = EOWPVT, M = Urdu EOWPVT

Appendix B

Family Language Questionnaire

In order to be able to better understand the factors that influence a child's ability to learn in a second language, we would like to obtain some information about language knowledge and language use in the home. We would greatly appreciate it if you would complete the following questions concerning your family and your child who is in the study.

Today's date: _____

Please answer these questions about the child in the study.

1. Name of child's current school _____

2. Did the child attend school in any country besides Canada?
No. Yes. How many years?
Which country?

3. When did your child learn to speak their native language?
First words _____
Sentences _____

4. Has your child ever received extra help in the following areas:

	Reading	Writing	Speaking	Math
In Canada				
In native country				

5. a) Was your child born in Canada? Yes No

b) If your child was not born in Canada, how old was he/she when you moved to Canada?
_____

c) In what grade did your child start school in Canada? _____

6. What language or languages are spoken at home?

Main language: _____
Other(s): _____

7. What is your child's first language? _____
What is your child's second language? _____
Other languages: _____

8. What is your child's best language? _____

9. a) How often does your child speak to the members of your household in **your native language**?

	Always	Frequently	Sometimes	Rarely	Never
Parent 1					
Parent 2					
Brothers & Sisters					
Grandparents					

9. b) How often does your child speak to the members of your household in **English**?

	Always	Frequently	Sometimes	Rarely	Never
Parent 1					
Parent 2					
Brothers & Sisters					
Grandparents					

10. a) How often does your child speak to friends in **English**?

	Always	Frequently	Sometimes	Rarely	Never
Friends at school					
Friends in community					

10. b) How often does your child speak to friends in **your native language**? Specify:

	Always	Frequently	Sometimes	Rarely	Never
Friends at school					
Friends in community					

11. How often does your child watch TV or videos in English and in your native language?

	More than 2 hours per day	1-2 hours per day	2-5 hours per week	Less than 2 hours per week	Never
English					
Native Language Specify:					

12. How often do you read at home in English and in your native language?

	More than 2 hours per day	1-2 hours per day	2-5 hours per week	Less than 2 hours per week	Never
English					
Native Language					

13. Approximately how many books do you have at your house that your child has read or might read (including library books) in English and in your native language?

	1-2	3-5	5-10	10-25	25-100	100+
English						
Native language Specify:						

Please answer these questions about yourself.

Circle who is completing this questionnaire: Mother Father Other: _____

14. What is your native language(s)? _____
What is your native country? _____
If you were not born in Canada, at what age did you move to Canada? _____

15. For each of the following **English** language skills, please rate how well you feel that you can currently perform the skill. (Circle one number per skill)

			ability								
			none								very fluent
Understanding			1	2	3	4	5	6	7	8	9	10
Speaking			1	2	3	4	5	6	7	8	9	10
Reading			1	2	3	4	5	6	7	8	9	10
Writing			1	2	3	4	5	6	7	8	9	10

16. For each of the following **native language** skills, please rate how well you feel that you can currently perform the skill. (Circle one number per skill)

			ability								
			none								very fluent
Understanding			1	2	3	4	5	6	7	8	9	10
Speaking			1	2	3	4	5	6	7	8	9	10
Reading			1	2	3	4	5	6	7	8	9	10
Writing			1	2	3	4	5	6	7	8	9	10

17. Please place an X beside the highest level of education that you have attained.

_____ Elementary school
_____ Some high school studies
_____ Completed high school
_____ Some college or university studies
_____ Completed college diploma
_____ Completed undergraduate degree

_____ Some postgraduate studies
_____ Completed graduate or professional degree

18. What is your occupation? : _____
If you are a new Canadian and were employed before immigrating to Canada, please indicate your occupation in your former country _____

Questions 19-24 are the same as Questions 14-18 but concern another adult with whom your child lives (for example, his or her other parent or a step-parent), or with whom your child has regular contact (for example, a parent no longer living in the household). If there are several people to whom this might apply, it should be filled out by (or for) the person who has most influenced the language abilities of your child. If there is no one to whom this applies, put a check on the following line _____ and leave Questions 19-24 blank.

19. Relationship of Adult 2 to the student _____

20. What is Adult 2's native language(s)? _____
What is Adult 2's native country? _____
If not born in Canada, at what age did Adult 2 move to Canada? _____

21. For each of the following **English** language skills, please rate how well Adult 2 can currently perform the skill. (circle one number per skill)

			ability								
			none								very fluent
Understanding			1	2	3	4	5	6	7	8	9	10
Speaking			1	2	3	4	5	6	7	8	9	10
Reading			1	2	3	4	5	6	7	8	9	10
Writing			1	2	3	4	5	6	7	8	9	10

22. For each of the following **native language** skills, please rate how well Adult 2 can currently perform the skill. (circle one number per skill)

			ability								
			none								very fluent
Understanding			1	2	3	4	5	6	7	8	9	10
Speaking			1	2	3	4	5	6	7	8	9	10
Reading			1	2	3	4	5	6	7	8	9	10
Writing			1	2	3	4	5	6	7	8	9	10

23. Please place an X beside the highest level of education attained by Adult 2:

_____ Elementary school
_____ Some high school studies
_____ Completed high school
_____ Some college or university studies
_____ Completed undergraduate degree
_____ Some postgraduate studies
_____ Completed graduate or professional degree

24. Adult 2's occupation: _____

If Adult 2 is a new Canadian and was employed before immigrating to Canada, please indicate occupation in your home country _____

Thank you for completing the Family Language Questionnaire. We look forward to sharing the findings of the project with you.

25. How many hours of the day your child receives instructions in his/her native language: ----------

26. What was the reason for you to select the instructions in L1: ----------

27. What was the reason for you to send your child to this weekend school: ----------

26. Why did you decide to send your child to a program to learn his/her native language?

_____

_____

27. Why did you decide to send your child to the specific weekend school you selected?

_____

_____

Thank you for completing the Family Language Questionnaire. We look forward to sharing the findings of the project with you.

URDU SCRIPT LETTERS

ٹ	ت	پ	ب	ا	آ
د	خ	ح	چ	ج	ث
ژ	ز	ڑ	ر	ذ	ڈ
ظ	ط	ض	ص	ش	س
گ	ک	ق	ف	غ	ع
ء	ہ	و	ن	م	ل
				ے	ی

ARABIC SCRIPT LETTERS

ح	ج	ث	ت	ب	ا
س	ز	ر	ذ	د	خ
ع	ظ	ط	ض	ص	ش
م	ل	ك	ق	ف	غ
ے	ی	ء	ه	و	ن

ا	آ	إ	أ
ب	بَ	بِ	بُ
ت	تَ	تِ	تُ
ث	ثَ	ثِ	ثُ
ج	جَ	جِ	جُ
ح	حَ	حِ	حُ
خ	خَ	خِ	خُ
د	دَ	دِ	دُ
ذ	ذَ	ذِ	ذُ
ر	رَ	رِ	رُ
ز	زَ	زِ	زُ
س	سَ	سِ	سُ
ش	شَ	شِ	شُ
ص	صَ	صِ	صُ
ض	ضَ	ضِ	ضُ
ط	طَ	طِ	طُ
ظ	ظَ	ظِ	ظُ
ع	عَ	عِ	عُ
غ	غَ	غِ	غُ

فَ	فِ	فَ	ف
قَ	قِ	قَ	ق
كَ	كِ	كَ	ك
لَ	لِ	لَ	ل
مَ	مِ	مَ	م
هَ	هِ	هَ	ه
وَ	وِ	وَ	و
هَ	هِ	هَ	ه
يَ	يِ	يَ	ى
ےَ	ےِ	ےَ	ے

URDU WORD READING LIST

آم	شمر	بکرا	تالا
بانو	ریل	زبان	شیر
طوطا	مور	پہاڑ	کافر
ناز	بستر	کہانی	باز
عقاب	پھل	بچہ	کشتی

بَاب	نَاضِي	مَدرَسَة
بَطّحة	شَجرَة	زَرَافَة
كُرسِي	سَيَارَة	أَحمَر
مُشكِل		

باب	مدرسہ	شجر
بلخ	زرافہ	معافی
غربی	ستارہ	احمر
مشکل		

URDU PHONOLOGICAL TEST

Read the following words:

بازار

دانت

ریل گاڑی

Now try reading these words after removing the first part of the word:

زار

آنت

گاڑی

Read the following words:

بازار

ہوا

گندا

Now try reading these words after removing the last part of the word:

باز

ہو

گند

Read the following words:

بھاری

آلو

وقت

ایک

Now try reading these words after changing the first letter of these words:

آری

بھالو

وقت

کیک

URDU PHONOLOGICAL TEST PART II

Pick odd one out (which does not match):

جہاز	باز	نار
آلو	بھالو	چھاڑو
پری	کری	بھاری
انڈا	گندا	ڈنڈا
کیک	ریت	ٹیک

Pick odd one out (does not sound going in the same group):

شیر	جنگل	پہاڑ
سکول	ہوم ورک	ٹی وی
پانی	کیلا	گلاس
کرسی	میز	الماری
پہیہ	گاڑی	کشتی

GORT - 4 FORM - A

STORY 1

دیکھو بابا ۔ بابا آگئے ۔ ہم کھیلنا چاہتے ہیں ۔ ماما! کیا آپ بھی کھیلوگی؟ ہم یہاں کھیل سکتے ہیں۔

QUESTIONS: STORY 1

س۱: کہانی میں کون بات کر رہا ہے؟

ا۔ ایک کتا ب۔ باپ

ج۔ بچہ د۔ ماں

س۲: ابھی ابھی کون گھر آیا؟

ا۔ ایک بلی ب۔ ایک لڑکا

ج۔ ماں د۔ باپ

س۳: باپ کیا کرنا چاہتا تھا؟

ا۔ ماں سے بات ب۔ کھیلنا

ج۔ کام کرنا د۔ دیکھنا

س۴: بچے کھیلنے کے لئے کس کو بولتے ہیں؟

ا۔ باپ ب۔ کھلاڑی

ج۔ ماں د۔ ایک لڑکا

س۵: اس کہانی کے لئے بہترین نام کیا ہو سکتا ہے؟

ا۔ بابا کام کر رہے ہیں ب۔ ماما کام کر رہی ہیں

ج۔ بابا کے لئے انتظار د۔ فیملی کے ساتھ مزہ

FORM - A STORY - 2

ہماری بلی میمی چھت پر بیٹھنا پسند کرتی ہے۔ میمی گھر سے اونچے درخت پر جاتی ہے۔ پھر چھت پر چھلانگ لگاتی ہے۔ وہ وہاں بیٹھ کر پرندوں کو دیکھتی ہے۔ لیکن ہمیشہ کھانے کے وقت واپس نیچے آجاتی ہے۔

QUESTIONS - STORY:2

س۱: کہانی میں بلی کہاں بیٹھتی ہے؟

ا۔ گھر کے ساتھ ب۔ گھر کے اوپر

ج۔ درخت میں د۔ آگ کے پاس

س۲: کہانی میں بلی۔۔۔۔

ا۔ پرندوں کو دیکھتی ہے ب۔ پرندے کھاتی ہے

ج۔ درخت کے نیچے سوتی ہے د۔ نیچے نہیں آسکتی

س۳: میمی کو سب سے زیادہ کیا پسند ہے؟

ا۔ درخت ب۔ گھاس

ج۔ چھت د۔ بستر

س۴: اس میں سے کیا کہانی میں نہیں ہوا؟

ا۔ چھت سے نیچے دیکھنے کے لئے بہت کچھ ہے ب۔ میمی کو چھت پر بہت مزہ آتا ہے

ج۔ چھت پر برف ہے د۔ کبھی کبھی میمی چھت پر سو جاتی ہے

س۵: آپ کو کیا لگتا ہے میمی کو چھت پر بیٹھنا کیوں پسند ہے؟

ا۔ وہاں ٹھنڈ ہے ب۔ وہاں کھانا ملنا آسان ہے

ج۔ وہاں بیٹھنا محفوظ ہے د۔ یہ ایک اچھا مزاق ہے

FORM - A STORY - 3

ایک آدمی گاڑی سے باہر آیا۔ اُس کے ہاتھ میں ایک ڈبہ تھا۔ ایک چھوٹی بچی اُس سے ملنے بھاگتی ہے۔ ہیلو ابا، وہ کہتی ہے۔ کیا آپ کے پاس میرے لئے تحفہ ہے؟ ابا کہتے ہیں یہ ایک اچھی بچی کے لئے ہے۔ لڑکی ہنستی ہے اور کہتی ہے، 'میں اچھی بچی ہوں'۔

QUESTIONS - STORY - 3:

س۱: آدمی کے ہاتھ میں کیا تھا؟

ا۔ ایک چھوٹی گاڑی
ب۔ ایک خوبصورت کھلونا
ج۔ ایک چھوٹی بچی
د۔ ایک تحفہ

س۲: آدمی سے ملنے کے لئے کون بھاگا؟

ا۔ ایک چھوٹی لڑکی
ب۔ ایک بڑی لڑکی
ج۔ ایک بڑا کتا
د۔ ایک چھوٹا کتا

س۳: آدمی ڈبے کے ساتھ کیا کرنا چاہتا تھا؟

ا۔ اس میں کچھ رکھنا چاہتا تھا
ب۔ چھوٹی لڑکی کو دکھانا چاہتا تھا
ج۔ اپنی چھوٹی بیٹی کو دینا چاہتا تھا
د۔ کسی کے لئے رکھنا چاہتا تھا

س۴: آپ کو کیا لگتا ہے ابا اپنی بیٹی کو کیوں تحفہ دینا چاہتے تھے؟

ا۔ کیوں کہ وہ اچھے ابا ہیں
ب۔ کیوں کہ اس کو کچھ برا بتانا چاہتے تھے
ج۔ کیوں کہ وہ اس سے سب سے زیادہ پیار کرتے تھے
د۔ اُس کو خوش کرنے کے لئے

س۵: لڑکی کو کیسا لگا جب اُس نے تحفہ دیکھا

ا۔ برا
ب۔ خوش
ج۔ مزاحیا
د۔ شرمائی

FORM - A STORY - 4

صبح سکول جانے کا وقت ہو گیا تھا۔ بچوں نے بستر ٹھیک کیا اور تیار ہوے۔ ایک بچے نے کہا مجھے میرے لال جوتے نہیں مل رہے۔ اماں نے کہا تو پھر آج تمہیں براون والے جوتے پہننے پڑھیں گے۔ دوسرے بچے نے کہا مجھے میری نیلی کتاب نہیں مل رہی۔ ابا نے کہا وہ میں نے کل رات کو فرش پر پڑی دیکھی تھی۔ جب بچے تیار ہوے تو انہوں نے ابا کی گاڑی کی چابیاں ڈھونڈنے میں مدد کی۔ اماں نے سب کو پیار کر کے خدا حافظ کیا۔

QUESTIONS - STORY - 4:

س۱: ابا نے کیا کھویا؟

ا۔ کتاب ب۔ جوتے

ج۔ ٹوپی د۔ چابی

س۲: اس کہانی کا بہترین نام کیا ہو سکتا ہے؟

ا۔ گمشدہ جوتے ب۔ ایک اچھا دن

ج۔ ایک نئے دن کا آغاز د۔ سکول کی تیاری

س۳: کیا اس کہانی میں سے نہیں ہے؟

ا۔ بچوں نے ناشتے میں انڈے کھائے ب۔ اماں نے بچوں کو سونے کے لئے بولا

ج۔ ابا نے نیلی قمیض پہنی د۔ بچے کھانا باندھنا بھول گئے

س۴: آپکو کیا لگا کہانی میں فیملی کو کیسا لگا؟

ا۔ جلدی میں ب۔ برا

ج۔ خوش د۔ خوشقسمت

س۵: آپ دن کے اس حصے کو کیسے بیان کریں گے؟

ا۔ جلدی میں ب۔ خاموش

ج۔ مزیدار د۔ مصروف

FORM - A STORY - 5

ایک پرندا پانی کی تلاش میں اڑ رہا تھا۔ کچھ فاصلے کے بعد وہ اور بھی پیاسا ہو گیا۔ اتنے میں اس کو ایک لوٹا کا برتن دکھائی دیا۔ اور وہ وہاں گیا پانی پینے کے لئے۔ لیکن برتن میں پانی بہت کم تھا۔ اس کو لگا وہ پیاس سے مر جائے گا۔ اتنے میں اس کو ایک ترکیب آئی۔ اس نے کنکر جمع کئے اور پانی میں ڈالنا شروع کر دئے۔ ایسے میں پانی اوپر آ گیا اور پرندا پانی پی کر اڑ گیا۔

QUESTIONS - STORY - 5:

س۱: پرندا پانی کیوں نہیں پی سکا؟

ا۔ برتن میں پانی بہت کم تھا
ب۔ برتن میں سراخ تھا
ج۔ پانی کا ذائقہ خراب تھا
د۔ پانی بہت گندا تھا

س۲: کہانی میں پرندا۔۔۔۔۔؟

ا۔ چالاک تھا
ب۔ تھکا ہوا تھا
ج۔ بھوکا تھا
د۔ بیوقوف تھا

س۳: کہانی کا کیا نتیجہ نکلتا ہے؟

ا۔ برا وقت ہمیشہ نہیں رہتا
ب۔ امید غصے سے بہتر ہے
ج۔ دماغ چلنے کا راستہ ہے
د۔ ہر کسی کو اچھا مزاق پسند ہوتا ہے

س۴: پرندے کو کیسا لگا جب وہ پانی نا پی سکا؟

ا۔ حیران
ب۔ پریشان
ج۔ گھبرایا
د۔ اُمید

س۵: جب پرندا پانی بھرنے کے قریب تھا تو؟

ا۔ سب کام سے تھکا ہوا تھا
ب۔ اپنی ترکیب پر فخر
ج۔ اپنے سفر سے تھکا ہوا
د۔ وقت ذائع کرنے پر ناراض

FORM - A STORY - 6

پارک کے قریب ایک خالی میدان میں لوگ بہت محنت سے کام کر رہے تھے۔ بہت سارے لڑکے میدان کی صفائی کر رہے تھے۔ انھوں نے سوکھی شاخیں، گتے اور گندا اٹھایا۔ کچھ لڑکوں نے گھاس کاٹی۔ پھر سب لڑکوں نے ہل چلایا۔ پھر سب کے والدین آ گئے۔ انہوں نے کچھ جھولے لگائے۔ اور ایک لکڑی کی کشتی درخت کے پاس رکھی۔ پھر انہوں نے ایک مظبوط باڑ لگائی۔ اب بچوں کے پاس ایک محفوظ میدان تھا جہاں سب کھیل سکتے تھے۔ جس تو بنانے میں سب نے مدد کی تھی۔

QUESTIONS - STORY - 6:

س۱: کہانی میں لڑکے کیا کر رہے تھے؟

ا۔ جھولے لگا رہے تھے
ب۔ پتے اٹھا رہے تھے
ج۔ باڑ لگا رہے تھے
د۔ میدان کی صفائی کر رہے تھے

س۲: باڑ کس نے لگائی؟

ا۔ والدین نے
ب۔ لڑکوں نے
ج۔ لڑکیوں نے
د۔ پڑوسیوں نے

س۳: کہانی کا بہترین نام؟

ا۔ ایک نیا کھیل کا میدان
ب۔ کھیل کا میدان کیسے بناتے ہیں
ج۔ خالی میدان
د۔ میدان میں پارٹی

س۴: کون سا جملہ کہانی سے نہیں ملتا؟

ا۔ دوپہر میں سب کھانے کے لئے رکے
ب۔ لوگوں نے سارا دن کام کیا
ج۔ لوگوں نے کام کا مزا لیا
د۔ جب لوگوں نے سب کام کر لیا تو ان کو پیسے ملے

س۵: لوگوں کو کیسا لگا جب انہوں نے سب کام ختم کر لیا؟

ا۔ نا اُمید
ب۔ خوش

ج۔ حیران د۔ پریشان