LANGUAGE ABILITIES IN BILINGUAL CHILDREN WITH AUTISM (CWA)

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JUNE 2011

CERTIFICATE

This is to certify that this dissertation entitled **"Language Abilities in Bilingual Children with Autism (CWA)"** is a bonafide work submitted in part fulfilment for the degree of Master of Science (Speech language Pathology) of the student (**Registration number: 09SLP014**). This has been carried out under the guidance of a faculty of this Institute and has not been submitted earlier to any other university for the award or any other diploma or degree.

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CERTIFICATE

This is to certify that the dissertation entitled ***"Language Abilities in Bilingual Children with Autism"*** has been prepared under my supervision and guidance. It is also certified that this has not been submitted earlier in any other university for the award of any Diploma or Degree.

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DECLARATION

I hereby declare that this dissertation entitled "**Language Abilities in Bilingual Children With Autism (CWA)"** is the result of my own study and has not been submitted earlier to any other university for the award of Diploma or Degree.

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Mysore,

June, 2011

या कुंदेंदु तुषारहार धवला, या शुभ्र वस्त्रावृता |
या वीणावर दण्डमंडितकरा, या श्वेतपद्मासना ||
या ब्रह्माच्युतशंकरप्रभृतिभिर्देवै: सदा वन्दिता |
सा मां पातु सरस्वती भगवती नि:शेष्य जाड्यापहा ||

God's gifts can put man's best dreams to shame. How profound is this statement was little realized by me when I landed myself in the field of Rehabilitation Services. The antidote to my initial frustration came as a calm faith, not in me, but in God's guidance.

"Faith is a bird that feels dawn breaking and sings while it is still dark."
Rabindranath Tagore

Today as I stand proud at the end of six years of my education the only prayer that I say in life is "Thank you". Thank you God for the wisdom and perseverance that you have bestowed upon me during all these years, and indeed, throughout my life. As for the rest of my life, I now know that God understands our prayers even when we can't find the words to say them. I have also learnt that that the best way to know God is to love many things. People see God every day, they just don't recognize him. The greatest lesson that my profession has taught me is that the sacred is in the ordinary. It is to be found in one's daily life, in one's neighbours, friends, family, and in every other life form.

"What is it that we all believe in that we cannot see or hear or feel or taste or smell - this invisible thing that heals all sorrows, reveals all lies and renews all hope? What is it that has always been and always will be, from whose bosom we all came and to which we will all return? Most call it Time. A few realize that it is God." Robert Brault

"God couldn't be everywhere, so he created parents" I love my parents as the trees love water and sunshine - they help me grow, prosper, and reach great heights.

My mother is the truest friend I have ever had. When trials, heavy and sudden have fallen; when adversity took the place of prosperity; when friends who rejoiced in sunshine, deserted when troubles thickened around me, I clang to her, and she endeavoured me by her kind precepts and counsels to dissipate the clouds of darkness, and returned the peace to my heart. My mother was not a person to lean on, but she has been a person who made leaning unnecessary. She reads me like a book, and wherever I have gone, people have read me like a glowing book review.

"There's something like a line of gold thread running through a man's words when he talks to his daughter, and gradually over the years it gets to be long enough to pick up in the hands and weave into a cloth that feels like love itself."

The greatest gift I ever had came from God, and I call him Dad. He has been a man of few words. He didn't tell me how to live; he lived, and let me watch him do it. He is more than a hundred schoolmasters!

"Those who educate children well are more to be honoured than parents, for these only gave life, those the art of living well." – Aristotle

My gratitude to my Guide, Dr. Y.V. Geetha, may be expressed in the following four lines. **The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires.**

The task of the excellent teacher is to stimulate "apparently ordinary" people to unusual effort. The tough problem is not in identifying winners: it is in making winners out of ordinary people. I thank Vibha Ma'am and Neeraj Sir for giving me guidance and counsel, and for having faith and confidence in me.

A teacher affects eternity; we can never tell where the influence stops. I take this opportunity to thank all my teachers for their support, patience, and encouragement throughout all my years of education.

"The love of a family is life's greatest blessing"
Grandparents are a family's greatest treasure; the founders of a loving legacy, the greatest storytellers, and the keepers of traditions that linger on in cherished memory.
Through their presence or their absence, my grandparents have left their indelible mark on me...
My Grandparents have bestowed upon me an abundance of indulgence, unwavering love and unconditional positive regard.

Grandchildren & Grandparents
Together they create a chain of love
linking the past with the future.
The chain may lengthen,
But it will never part....

Brothers and sisters are as close as hands and feet. To the outside world we all grow old, but not to brothers and sisters. We know each other as we always were: we know each other's hearts, we share private family jokes, we remember family feuds and secrets, family grief and joys. We live outside the touch of time.

My dear bro....it was nice growing up with someone like you - someone to lean on, someone to count on... someone to tell on! I am smiling because you are my brother and I am laughing because there is nothing you can do about it! We share a unique blend of love, comradery, and friendship.

“A sister is one who reaches for your hand and touches your heart.”

My dear kid sisters are a little bit of my childhood that can never be lost. My older sisters are my friend and defender - listener, conspirator, a counsellor and a sharer of delights & sorrows too. They are a gift to my heart, friend to the spirit, a golden thread to the meaning of life.

“Even though we've changed and we're all finding our own place in the world, we all know that when the tears fall or the smile spreads across our face, we'll come to each other because no matter where this crazy world takes us, nothing will ever change so much to the point where we're not all still friends.”

For some of my special friends I dedicate the next few lines:

“A true friend sees the first tear... catches the second... and stops the third...” Love you Shree.....

"The most I can do for my friend is simply to be his friend." Can never forget you Tithi....

“However rare true love may be it is less so than true friendship.” Words meant for you Subodh.....

“Your friend is the one who knows all about you, and still likes you.” Thanks Jyoti...

“A friend is someone who knows the song in your heart and can sing it back to you when you have forgotten the words.” Nobody can replace you Hema..

"A friend can tell you things you don't want to tell yourself." You always do that Anshul...

“A friend is someone who can see the truth and pain in you even when you are fooling everyone else.” Still remember your understanding Swapnaja....

The words that escape a friend's mouth are "I'll be there when you say you need me" but the words that are unheard from a true friend's heart are "I'll be there... whether you say you need me or not." That’s you Daksh...

“Friendship isn't about whom you have known the longest... It's about who came, and never left your side.” For me it’s both Priyanjali...

“The proper office of a friend is to side with you when you are in the wrong. Nearly anybody will side with you when you are in the right.” You always do that Shruti...

“A true friend is the greatest of all blessings, and that which we take the least care of all to acquire.” You are my unexpected blessing Pragya....

"If you're alone, I'll be your shadow. If you want to cry, I'll be your shoulder. If you want a hug, I'll be your pillow. If you need to be happy, I'll be your smile... But anytime you need a friend, I'll just be me." Those words describe my feelings for you Sheela....

“Everyone hears what you say. Friends listen to what you say. Best friends listen to what you don't say.” Exactly what happens with you Shikha....

“How rare and wonderful is that flash of a moment when we realize we have discovered a friend.” Hope you never forget me Kavi...
“The times we have been so crazy, and the times we have laughed so hard. It's all the inside jokes and "remember *whens*". Those are all the reasons that we're best friends!” You rock Adi....
"A friend is someone who thinks that you are a good egg even though she knows that you are slightly cracked." Sneha..Sneha...Sneha....
“Friendship makes prosperity more shining and lessens adversity by dividing and sharing it.” Thanks for all the encouragement and support Pragati...
"We do not so much need the help of our friends as the confidence of their help in need." You have been a wonderful confidante Pragnya.....
I have been fortunate to have very many friends who cherish me despite my eccentricities. I risk doing them a disservice by not mentioning all of them here, but plead paucity of space. I thank all of them for many good times.

"I've learned that college friends become kind of family, we eat together, we take naps together, fight, laugh, cry, and do absolutely nothing together until we can't remember how we ever lived our life without them in the first place."

My college life and hostel fun (corridor meetings, evening tea, midnight b’day parties, excellent room made food, etc.) taught me a world of good characters: to help, to adjust and to get to know many people truly.

“In the circle of life,
Respect and gratitude are due by juniors to seniors and vice-versa
at any given level;
for the juniors to get inspired by the seniors,
for the seniors to get reminded of their accomplishments.”

Thanks to my awesome juniors: Nita, Sweta, Shabnam & Rishita who made my College life much better.

Apart from my efforts, the success of this project depends largely on the encouragement and guidelines of many others. I take this opportunity to express my gratitude to the people who have been instrumental in the successful completion of this project and thank every single person who has supported and encouraged me. But a greater thank you goes out to every single person who has tried to hold me back in one way or another. It only fuelled my personal drive, ambition and resolve to achieve greater things.

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CHAPTER I

INTRODUCTION

Language is defined as a dynamical system that emerges within a social context through interactions of cognitive, neurobiological and environmental subsystems. Language is a pertinent component for communication and typically utilizes words as a method of communication (Owens, 2005).

The term bilingualism refers to individuals who use two or more languages or dialects in their everyday lives (Grosjean, 2010). Bilingualism and multilingualism are the norm rather than exception in today's world (Harris and McGhee-Nelson, 1992). It has been estimated that children who learn two languages before puberty are the majority worldwide (Tucker, 1998). Therefore, research at the interface of bilingual development and child language disorders would be relevant to a significant number of children across the globe. However, until recently, bilingual development and child language disorders have been investigated mainly in isolation of each other.

Developing bilinguals are children who receive regular input in two or more languages during the most dynamic period of communication development, somewhere between birth and adolescence. Globally the coexistence or interactions of two or more languages within communities and within individual speakers is extraordinarily common. In India, children are routinely exposed to two or more languages from birth or begin learning a second/third language when they enter the school system.

A hallmark of developing bilingualism is variability in the time frames and patterns of language acquisition, as well as the child's resulting proficiency in each of these languages. Sources of variability in language outcomes include socioeconomic circumstances, parent education and home literacy, as well as individual differences in cognitive abilities. The following are additional factors that affect the process and product of language proficiency in developing bilinguals:

(a) The age at which consistent input in the two languages begins
(b) The environments in which this language experience occurs (home, school, parents, teachers)
(c) The relative social prestige and broader community support associated with each language
(d) The types of language to be learned
(e) The purposes for which these languages are needed (interpersonal communications, literacy, community interactions)

Proficiency or ability in any single language involves the acquisition of consistent form-function mappings at phonological, lexical-semantic, morphosyntactic and pragmatic levels as well as the efficient use of these forms derived during real time communicative interactions in receptive and expressive domains.

Language proficiency refers to skill or ability in a particular linguistic code, with no priori standard or benchmark. For bilinguals, proficiency in each of the speaker's two languages is a relative term, the primary reference point being either between speakers (compared to monolingual speaker proficiency in each language) or within speaker (ability in one language serves as a reference point for quantifying proficiency in the

other language). It refers to the ability to efficiently map form to meaning in conventional and efficient ways, for meaningful communication. This ability relies on the integrity of the individual's cognitive, neurological, sensory-motor and social systems.

Given that proficiency in language is constructed from interwoven layers of knowledge and processing skills across diverse linguistic levels (phonology, lexical-semantics, syntax and pragmatics) and domains (receptive, expressive, spoken, and written), it seems reasonable that both languages are achieved gradually, with variations in the rate and at times direction of change (Montrul, 2005).

Crystal (1997) estimates that two-thirds of the world's children grow up in bilingual environments. In general, bilinguals have been shown to have enhanced functioning of the executive control system but poorer performance in tasks based on rapid lexical retrieval and processing than monolinguals. These effects that follow from the experience of bilingualism emerge from an interaction of factors emanating from constructs in cognitive psychology, social experience, and linguistic theory. Individuals function in a social context that constrains language selection and recruits cognitive processes to meet the communicative goals.

The cognitive and linguistic processes involved in the acquisition and use of two languages are systematically different from those processes engaged in monolingual language use, leading to detectable changes in language and cognitive outcomes for bilinguals (Bialystok, 2010). Measures of linguistic proficiency and processing are often poorer in bilinguals than in monolinguals: bilingual children have a smaller vocabulary in each language than comparable monolingual children in that language and bilingual

adults take longer to retrieve specific words than monolinguals. In contrast, measures of nonverbal executive control, including the ability to selectively attend to relevant information, inhibit distraction, and shift between tasks is generally better in bilinguals than in monolinguals. One study showed greater brain density in the left inferior parietal cortex for bilinguals than for monolinguals, with more pronounced differences in early bilinguals and those with greater second-language proficiency. (Mechelli, Crinion, Noppeney, Doherty, Ashburner, et al., 2004).

Results from studies that have directly measured language performance in both L1 and L2 in young language learners reveal more variability in both rate and direction of skills over time in L1 than L2. Results from studies with young typical learners indicate that the ability to maintain and develop skills in home language corresponds to the level of support and enrichment provided in this language. On the other hand, when enrichment activities are available only in the non-native language, they are less likely to develop and maintain the home language. When language is at a developmental state, as it is for preschool age children, it is highly responsive to changes in input, i.e.: L1 is highly vulnerable and may fail to develop if L1 is not supported. A consistent finding across studies is the relative shift from L1 to L2 dominance across age. Research over the past decade has consistently shown that there is a clear and seemingly inevitable shift from relative strength or dominance in the home language to greater ability in English (L2) at some point during childhood.

Across numerous studies evaluating children with various backgrounds, bilingual children demonstrate a smaller vocabulary in each language than do comparable monolingual speakers of that language (Oller, Pearson and Cobo-Lewis, 2007). There is

no reason to believe that bilingual children have a smaller overall vocabulary - in fact, their combined vocabulary may be larger than that of monolinguals - or that they have poorer communicative ability than monolinguals, only that their vocabulary is distributed across two languages. This configuration changes the shape of communication for bilingual children as they select from two resources to supplement and augment their linguistic repertoire. The initial differences in assessments of language proficiency of bilingual children do not lead to impairments in the crucial linguistic abilities developing in the early school years.

A child's ability to communicate his/her needs start as early as birth and follow normal stages of developing their language. Unfortunately, not all children follow these stages of language development in most of these cases those children have speech and language disorders. According to the American Speech and Hearing Association (ASHA) children with speech and language impairments represent a significant proportion of the population of pupils with special needs with 46% of children with statements of special educational needs having identified speech and language problems and affect 5-8 percent of preschool population (Lindsay, Soloff, Law, Band, Peacey, Gascoigne, & Radford, 2002). Consequences of language impairment include slowed vocabulary acquisition, language specific morphosyntactic errors and reduced discourse organisation.

Much research has shown that bilinguals can lag behind their monolingual peers in rates of morphosyntactic acquisition in the early years, but it does not take them twice the amount to time to acquire any given structure, and furthermore, there is sometimes no observable lag in their dominant language/language of greater exposure (Gathercole, 2007; Guti´errez-Clellen, Restrepo, & Simon-Cereijido, 2006; Guti´errez-Clellen &

Simon-Cereijido, 2007; Paradis, Nicoladis, & Crago, 2007; Thordardottir, Rothenberg, Rivard, & Naves, 2006). Thordardottir et al. (2006) found that French–English bilingual 2.5-year-olds had scores lower than monolingual-based expectations on measures of vocabulary and syntactic development in both languages; although scores were more consistently lower in English than in French. Patterson and Pearson (2004) reviewed similar findings for lexical development in Spanish– English toddlers; however, they noted that in terms of total conceptual vocabulary, bilinguals do not lag behind monolinguals. Even if there is a lag in the early stages, simultaneous bilinguals can catch up quickly in terms of their performance on tests normed with monolinguals.

Children in early stages of bilingual development are likely to have language skills that are in flux. As the second language gradually becomes more complex, the first language may stall or become less complex (Anderson, 1999). At the same time, the level of development in the second language is typically not comparable to that of monolingual speakers of that language. These children are likely to score in the at-risk range on a language test in their weaker language. Some children may also score in the at-risk range in their stronger language during this transition to a second language. Recent efforts show that bilingual children may have distributed vocabulary knowledge across their two languages

With regard to the relationship between language impairments and bilingualism, the general finding is that, if given similar opportunities, children with language impairment can indeed learn two languages. They may learn language at a slower pace and perhaps to a lesser extent than their typically developing bilingual peers, but they do learn language to the same level as their monolingual peers with language learning

difficulties (Kohnert, 2007). To summarize, types of language deficit, severity of language disorder, and the type and availability of input in each language all influence L1 and L2 learning (Guiterrez- Clellen, 1999). Despite this, the evidence suggests that children with language impairment have the capacity to be bilingual. Bilingualism itself does not seem to affect language development in children with language impairment.

Bilingual children with developmental language disorders have a general language deficiency that manifests in every language. Vocabulary deficits are observed in both languages when children have LI. The delays in semantic development are characterised by smaller vocabulary size and Difficulties related to word meaning, word retrieval and difficulties in word learning. In the morphosyntactic domain, errors that are comparable to monolingual speakers have also been documented. French-English bilingual children with

LI produced errors in tense related morphemes in each of their languages, as predicted by the extended optional infinitive account of language impairment (Paradis et al., 2003).

According to the *DSM-IV-TR*, to be diagnosed with autism, an individual must present with: (a) qualitative impairment in social interaction; (b) qualitative impairment in communication; (c) restricted repetitive and stereotyped patterns of behavior, interests, and activities. The individual must have also demonstrated a delay or abnormal functioning in at least one of the following areas: (a) social interaction, (b) language as used in social communication (c) symbolic or imaginative play.

Communication deficits are perhaps the most frequently observed deficit in individuals with autism. Pragmatic deficits such as repetitive use of language and

limitations in ability to initiate and sustain conversations are pervasive in this population. However, there is large variability in structural linguistic skills (i.e., phonology, grammar, vocabulary). Although many individuals with autism display severe deficits with expressive and receptive language, a significant minority of individuals appear to be without any linguistic abnormality.

Susanne Döpke (2006) talks about how bilingualism is easy for children without autism because they can readily generalise between situations and just need to learn new words and new grammatical regularities to fit in with what they already know and can do, i.e., connect what they hear to what is happening around them. They can as easily generalise across languages and language environments as they can generalise within one language environment. But as CWA find it particularly difficult to generalise what they have learned to new situations, it is often recommended that parents do not further burden their child with having to learn a language other than English at home.

Though, on the surface it makes sense, and for many families this may be the best way to go. However, it may be unsettling if the parents suddenly decide to speak only English with the child. The child may interpret the fact that the parents speak English with him but another language to each other or possibly other children in the family, very wrongly. Also, CWA might miss out if they only understand their parents when they speak English to them, but do not understand the rest of the interaction that goes on around them in the parents' other language. The issue of the parents actually being able to speak English with their child, and their feelings of limitedness when they cannot speak their own language also needs consideration. The parents' discomfort with speaking English to their child can further impact the sensory processing of the child.

Growing up in a multilingual environment may be difficult for Children with Autism (CWA) who are language delayed. However, the recommendation that the CWA become a monolingual English speaker could also produce unfavourable results. There is no sufficient support for the claim that multilingualism further harms language acquisition of language impaired/delayed children. Due to the socio-pragmatic deficit inherent to autism, it is very important for the CWA to speak the home language. Since Children With Autism, unlike normal children who learn the rules of speech acts and social functioning instinctually, need to be exposed to a variety of social situations to learn the rules governing them, one should not limit their access to conversations, and especially, to those that involve the child's parents. Parents of CWA are the primary source for language input, imitation, and practice, whether the children actively engage in activities with the parents, or simply overhear parents' social interactions.

No research evidence, till date, suggests that exposure to more than one language makes the symptoms of autism worse or that the English-only advice improves the abilities of CWA language-wise, conceptual or social. Anecdotally it is known that the English-only advice causes difficulties for families. Adults report that it is impossible for them to change the language they have always spoken. Hence it is unrealistic of professionals to expect that parents would do that. There is evidence that once parents start speaking English with one child, the home language is quickly lost for all the children. There is also evidence that parents in such a situation frequently mix English and the home language, and that overall the language environment may become less stimulating.

The focus of "family-centred practice" is the well-being of the whole family. Thus, there is a need to help families to do what feels right to them in addition to teaching them skills that specifically meet the needs of their child with autism. Autism affects all languages of a bilingual child. The visual aids used with CWA can form bridges between the languages as well. Re-teaching of skills in a range of environments, can easily involve using words and sentences in more than one language. Many people with autism have dyspraxia and thus having access to easy words from more than one language may be a resource both for the child and the therapist in the early stages of teaching the child some functional language.

It is also important to consider the clinicians' recommendation to speak one language only to CWA in light of the fact that over 50% of the world population speaks more than one language and that in many places bilingualism is not only the norm but also a necessity. One such place is India. The Indian constitution lists 18 official languages. Speech pathologists and other therapists are expected to learn to speak the major languages of the areas in which they are working, and assessment and intervention is conducted in the client’s language (Chengappa, 2001). The Indian example reinforces the notion that bilingualism does not necessarily impede language learning among children with language disability. Moreover, the Indian approach increases the awareness that multilingualism is not a life style choice, but a normal circumstance that many people are born into.

I.1 Need for the Study

1. In a society in which much professional and societal attention is placed on Autism in which the population in general is becoming increasingly bilingual, and evidence-based practice is becoming the norm, more research on the bilingual population with Autism is needed so that therapy of the best quality can be provided to these children.

2. Bilingual families of CWA are often advised by child development professionals to speak only one language to their child (Besnard, 2008; Kremer-Sadlik, 2005; Leadbitter, Hudry, and Temple, 2009). Many parents and professionals believe that bilingual exposure negatively impacts language development, especially for CWA (Hambly and Fombonne, 2009). While research has explored the impact of bilingualism and multilingualism on the language development of children with language impairments (Thordardottir, Ellis Weismer, and Smith, 1997; Kay-Raining Bird, Trudeau, Thordardottir, Sutton, and Thorpe, 2005; Kohnert, 2007), there is a limited amount of research on bilingualism and the autism population especially in Indian contexts. Such a study would also augment the present understanding of verbal behaviour of autistic children.

3. Research that has examined the effect of bilingualism on children with language impairment has found that (a) bilingual children with Specific Language Impairment (SLI) do not experience more severe impairments than same age monolingual children with SLI, and (b) these children have the capacity to become bilingual (Paradis, Crago, Genesee, and Rice, 2003). Additionally, research on monolingual and bilingual children with Down Syndrome found no evidence that bilingualism had

a negative effect on language development (Kay-Raining Bird et al., 2005). But there is a dearth of Indian studies investigating the same.

4. In the Indian context, the English-only advice causes difficulties for families as it is impossible for adults to change the language they have always spoken. There is evidence that parents in such a situation frequently mix English and the home language, and that overall the language environment may become less stimulating. Thus, the parents' level of proficiency and use of both the languages plays a major role in deciding the language environment and exposure of children with autism.

Thus, on the theoretical side, understanding how similar and dissimilar the manifestations of autism are in bilingual and monolingual children would shed light on the capacity of an impaired language faculty to cope with dual language development and on the practical side, it would be important to know whether bilingualism is an impediment to acquisition under conditions of impairment in order for parents and professionals to make informed choices about language use with bilingual children in the home and in school.

I.2 Aim of the study: This study aims at examining the similarities and differences in linguistic characteristics between bilingual and monolingual children with autism.

I.3 Objectives of the study

The current study is aimed to address the following main research questions:

1. Do the English language abilities of bilingual children with autism differ from those of monolingual children with autism?
2. How do the semantic and syntactic abilities of bilingual children with autism differ from those of monolingual children with autism?
3. Do the English and Hindi language abilities of bilingual children with autism differ?

CHAPTER II

REVIEW OF LITERATURE

II.1) Language

Language is a set (finite or infinite) of sentences, each finite in length, and constructed out of a finite set of elements' (Chomsky, 1957). Language proficiency can be defined as 'the ability to function in a situation that is defined by specific cognitive and linguistic demands, to a level of performance indicated by either objective criteria or normative standards' (Bialystok, 2001).

II.2) The Phenomenon of Bilingualism

Bilingualism implies within-speaker knowledge of two different languages and/or experiences in environments in which different languages are used. Grosjean (1989, 1998) proposed a pragmatic definition that a bilingual is someone who can function in each language according to given needs. According to Grosjean (1982) bilingual and multi-language use is not only common but probably characterizes a majority of the population.

L2 acquisition can be viewed as interplay between proficiency and experience variables (Hyltenstam & Abrahamsson, 2003). The factors that have been identified as important contributors to bilingual status are:

i. Language competence: Studies have construed proficiency ratings in speaking, listening, reading, and writing as an index of general abilities across language processing domains (Stefani, 1994), including literacy-oriented proficiency, grammatical proficiency, vocabulary knowledge, and discourse abilities (Bachman, 1990). Both global (dominance) and specific (proficiency) measures of language competencies is required for indexing actual linguistic skills.

ii. Language acquisition has been shown to be tightly connected to language learning, to influence bilinguals' ratings of language dominance, and to predict their performance on behavioural tasks (Hyltenstam & Abrahamsson, 2003). Flege et al. (2002) found that age of acquisition measures for each language spoken: (a) age of initial language learning, (b) age of attained fluency, (c) age of initial reading (i.e., age at which participants started to read in each language), and (d) age of attained reading fluency, influenced bilinguals' dominance classification and correlated with bilinguals' sentence duration ratios in both languages.

iii. Modes of language acquisition and the environment in which a language is learned also influences proficiency attainment. Flege et al. (1999) found that the number of years of education received in an L2 country, years of residence in an L2 country, average self-estimated use of L1 and L2, and chronological age all influenced age-of-acquisition effects on bilingual language dominance. Carroll (1967) found a significant relationship between language performance and the extent to which the target language was used at home.

iv. Language exposure across settings as well as exposure through self-instruction and language tapes: Flege et al. (1999) found that length of residence in the L2 country influenced bilinguals' sentence-level performance, with various language abilities differentially susceptible to language exposure. Jia at al. (2002) found that mothers' L2 proficiency and frequency of speaking L2 at home were predictive of bilingual children's behavioural performance. Similarly, bilinguals who used L2 more often than L1 had better pronunciation and higher morphosyntactic performance in L2 than bilinguals who used L1 more often than L2 (Flege et al., 2002).

Bilinguals may at times combine elements from their different languages within a single sentence or conversation. This intentional mixing of traditional linguistic codes or code switching is grammatically, socially, and culturally constrained and is more common during informal interpersonal interactions, including those that take place between family members in natural contexts (Zentella, 1999). Code switched language input does not seem to present a challenge to typical learners or to delay language acquisition. Researchers have found that typically developing young children mix traditionally separate language codes in proportion to the amount of code switching used by primary care providers (Petitto et al., 2001). On the receptive end, children do not seem to struggle when listening to mixed language input, provided they understand the words used in both languages (Kohnert & Bates, 2002). For practical purposes, children with limited proficiency in one of their two languages may alternate between languages to fill lexical or linguistic gap in one language with knowledge from another language. This type of code switching may be a sign of limited skill in a language, but not necessarily a disorder.

Cross linguistic transfer, refers to the potential influence that one language has on another language, within the bilingual speaker. Cross linguistic transfer may be positive, showing a facilitative effect of one language on another, or negative, reflecting interference across languages. The directionality of the transfer effects appeared to be due largely to language dominance (Yip & Matthews, 2000). Although cross-linguistic transfer effects occur, they do not significantly impede language development. Research with developing bilinguals suggests that positive cross language transfer relies largely on metacognitive or metalinguistic skills (Bialystok, 2001). Although some older bilingual children and adults with intact cognitive-linguistic systems may be able to spontaneously transfer skills between L1 and L2, there may be significant limitations on cross linguistic transfer of skills in younger children or for older individuals with impaired language or cognitive systems.

II.3) Developing Bilingualism

Ellen Bialystok and Kenji Hakuta (1994) said "Second languages develop under an extremely heterogeneous set of conditions, far more diverse than the conditions under which children learn their native language." Researchers agree that bilingualism can be better described as a matter of *degree* than as a categorical variable, but currently there are no accepted standards for classifying children on the basis of an objective bilingualism scale.

There are differences in the exposure patterns of bilingual children to both languages and in the social contexts in which they are learning those languages that influence their development. Researchers often make a distinction between simultaneous

and sequential bilingualism at three years (Genesee, Paradis, & Crago, 2004). Simultaneous bilinguals are children who learn both languages at home before the age of 3 years (often from birth) and sequential bilinguals have the L1 fairly established (although not completely acquired) before they begin to learn the L2.

Children who have experience with two languages beginning at or shortly after birth are referred to as *simultaneous bilinguals*. Studies show that simultaneous bilingualism does not cause even temporary delays in the attainment of early language milestones. Given similar socioeconomic circumstances (Petitto & Holowka, 2002) the breadth of words known for bilingual children from middle income families is consistent with the number of words known by their middle income monolingual counterparts, at least when both languages are considered (Marchman & Martinez-Sussman, 2002). The attainment of later language milestones, including mastery of the phonological system, syntactic prowess, and narrative abilities is also similar to that of monolingual peers. Most researchers of simultaneous bilingual children consider dominance to be a measure of *relative* proficiency between the two languages that the child is learning (Genesee et al., 1995).

Early sequential bilinguals have experience with a single first language (L1) beginning at birth, and begin to acquire a second language (L2) at some point during childhood. There seems to be no negative impact on L1 for the majority language speakers as a result of educational instruction in a second language even when compared to monolingual L1 peers. These children perform as well or better than their L1 peers on standardized achievement measures (Genesse, 2004). This type of bilingual context is

referred to as additive because both languages are valued in the child's environments: learning one language does not take place at the cost of the other (Lambert, 1977).

Research indicates that bilinguals' language learning & language use experiences play a significant role in shaping their linguistic competence (Grosjean, 2004). It has been proposed that L2 experience variables become more important in shaping proficiency with increased L2 acquisition age (Hyltenstam & Abrahamsson, 2003) & that L2 acquisition is a result of cognitive, social, and environmental factors (Bialystok & Hakuta, 1999).

Bilingual children acquire language in a path largely similar to that followed by monolingual children (Petitto et al., 2001): the basic landmarks of language acquisition are intact. The most salient feature of language use by bilingual children is their mixed use of languages, even in monolingual contexts when only one of the languages is appropriate. This behaviour is not evidence of confusion or a single representational system that included both languages, but of children's strategic use of limited resources for communication (Deuchar & Quay, 1998). Bilingual children engage in language switching much of which is the insertion of words from the non target language into a conversation being carried out in the other language. This switching behaviour can be seen to signal a persistent deficit in the language resources of young bilingual children.

II.4) Language in Bilingual Preschool-School Age Children

A great deal of language acquisition takes place after four years particularly in the context of formal schooling. The demands placed on the child's language skills also

change at school entry. For the child with difficulty in language development the transition to school can be of considerable hurdle. Language problems accompanied by problems of social interaction further impede progress at school. The child's difficulty becomes more diffuse, involving abstract concepts, manipulation of vocabulary as well as poor auditory memory and attention. Thus, a thorough assessment of school going children, that determines strengths and needs in which information is shared between parents and professionals is required.

Fujiki, Brinton and Dunton (1987) found significant differences between the performance on grammatical judgment test in linguistically normal and language disordered first grade (6.6-7.6 years), second Grade (7.6-8.6 years) and third grade (8.6-9.6 years) children. They also found that normal 6, 7 and 8 year old children performed significantly better than their language impaired age matched peers in correcting grammatical violations of word order. According to the study done by Tyler and Nagy (1989), children appear to develop rudimentary knowledge of derivational morphology before IV grade. Knowledge of syntactic properties of derivational suffixes appears to increase through 8th Grade.

Fluctuations in L1 and L2 are a natural consequence of the developing child's interactions with changing environmental demands and opportunities. For young children, proficiency in L1 may be vulnerable to either backsliding or to incomplete acquisition in the absence of systematic support. Studies investigating performance in school age consistently document rapid gains in the language of instruction, culminating in a shift from relatively greater skill in L1 to dominance in L2 over time. This shift varies across children and language levels. Long term attainment studies that capture L1

and L2 proficiency after a minimum of 5years exposure to L2 have documented a switch in language dominance for pronunciation (Yeni-Komshian, Flege & Liu, 2000) and morphosyntactic proficiency (Jia, Aronson & Wu, 2002) among early sequential bilinguals. In a series of studies, Kohnert et al (2006), found that processing basic nouns and verbs in L1 (Spanish) and L2 (English) continued to improve from 5 years of age through adolescence, on both comprehension and production tasks. They found no evidence of absolute decline in L1 but rather a relative slowing.

Researchers have found that a bilingual child's two language systems can interact with each other during acquisition. Paradis and Genesee (1996) identified three potential outcomes of interdependence in bilingual acquisition; acceleration, deceleration, and transfer. Researchers have found evidence for transfer in the phonological, morphological, and syntactic domains in preschool bilingual children (Yip & Matthews, 2000).

II.5) Role of Language Input

Language input refers to the child's cumulative experience with spoken language. The role of language input is crucial for an understanding of monolingual (Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002) and bilingual (Pearson, Fernandez, Lewedeg, & Oller, 1997) acquisition. Speech Language Pathologists need to be aware of the subtle differences across language environments and how these differences may influence language acquisition and use.

When the existence of language impairment has been established, the issue becomes one of how to change a child's language behaviour in a clinical setting in an environment that may not support mainstream English usage, triggered even more when a language is spoken bilingually over several generations. The role of input is often neglected in studies of bilingual acquisition, yet it is essential to define the characteristics of the L2 when evaluating the language performance of bilingual children (Cairns, 1999). The overall clinical intervention approach should be consistent with what is recommended for intervention with culturally and linguistically diverse learners (Battle, 1996).

A study by Jacobson and Cairns (2008) was designed to address the hypothesis that the linguistic input of bilingual children differs from that of monolingual children. They present an account of how differing input could lead to differing patterns of acquisition in bilingual and monolingual children. Knowledge regarding input to children may also have educational implications. Recent studies highlight the importance of being aware of potential mismatches between language patterns of the home/community and those expected for academic learning (Charity, Scarborough, & Griffin, 2004; Scarborough, 2004). Early recognition of such differences can facilitate the early home-to-school language transition. Increased awareness of the potential language variation in bilingual communities is needed to reduce misidentification of language disorders and address the special needs of children who reside in bilingual communities.

II.6) Factors Affecting Child Language

i. Parental Education:

Parent's education influences parent's skill, values, and knowledge of the educational system, which, in turn influences their educational practices at home. Parents with more education talk and use more varied languages which influence language skill of the child (Hoff, 2003). Parents with more education also have higher expectation for their children's education which facilitate the greater educational attainment for their children (Alexander, Entwisle &, Bedinger, 1994). Research has revealed that highly educated mothers' have greater success in providing their children with cognitive and language skills. Richard and David (1967) argued that parental level of education influences parental involvement, support and expectation for their children. Results from the Program for International Student Assessment (PISA) indicate that there may be a relationship between students' academic success and their parents' educational levels, with "a correlation of 0.28 between fathers' education and student performance and 0.23 for mothers' education" (De Bortoli, & Cresswell, J., 2000)

Golden and Pashayan (1976) noted a correlation between parental educational level and intellectual functioning in a group of children with Down syndrome. Although well-educated parents might be more likely than poorly educated parents to provide a stimulating environment and better educational opportunities for their child, the authors point out that this correlation cannot be explained solely in terms of superior environment because it might represent an interaction between environmental influences and genetic

potential. Parental educational level is therefore a factor that should be controlled in evaluating the effectiveness of early intervention programs.

In a recent study, mothers' level of education appeared to have a major effect on the age of first words and phrases, showing that children with ASD, like normal children, might be sensitive to maternal inputs. Fathers' level of education also appeared to have an effect, as being delayed or non-delayed in the production of first words and phrases depended on both parents' level of education. Fathers' parenting behaviours have been shown to be predictive of young children's language development (Tamis-LeMonda, Shannon, Cabrera & Lamb, 2004) and fathers' outputs have been shown to predict language scores of children (Pancsofar, Vernon-Feagans, 2006).

Results of a study by Grandgeorge, Hausberger, Tordjman, Deleau, Lazartigues and Lemonnier (2009) demonstrated that parental characteristics (i.e. level of education) can influence language development of children with ASD. Early characteristics of language development in children with ASD revealed the influence of parents' level of education and a differential influence of mothers and fathers on these characteristics. General abnormalities also appeared to be influenced by parents' level of education. Children raised by high level of education parents developed language earlier, and first single words and first phrases were uttered earlier by children with high level of maternal education. These results suggest the importance of environmental factors, such as parental influence, on behavioural development of CWA. Inter-individual variation was high and, strongly associated with parents' socioeconomic status, including level of education. Results show that environmental factors of parent's level of education may influence more refined aspects such as age of first single words or first phrases.

ii. Socioeconomic Status

Socioeconomic status is a compound variable (Hoff, 2006) that creates ‘‘different basic conditions of life at different levels of the social order’’ (Kohn, 1963). It involves education level of parents, their income, social network (other people encountered by children) and the individual effects of these components are not well known (Ensminger & Fothergill, 2003). However socioeconomic status has a strong impact on typical language learners. High socioeconomic status mothers talk more to their children, use a more varied vocabulary, read books to their children more readily (Fletcher, Reese, 2005). According to Hoff (2003), socioeconomic status-related differences in richness of maternal speech explain socioeconomic status differences in the development of young children’s vocabulary and syntax (Hoff, 2006).

Although children from families of diverse incomes begin to talk at similar ages, there is strong evidence that family income level (presumably correlated with educational and literacy levels) is linked to the amount of input a child receives. This input, in turn, exerts a significant effect on language development (Hoff, 2003). Seminal work by Hart and Risley (1995) investigated the language environments of 42 monolingual English speaking American families across three income levels (professional, working class and welfare). Quantitatively, children in welfare families received one-third the input of children in professional families. In terms of the type or quality of input, children in professional families received seven times the encouragements as children in welfare families and only one-third of the discouragements. For children of working class families, the proportion of discouragements and encouragements was in between welfare and professional family groups. It was also noted that when income related differences

were controlled, there were no race related differences in either parent input or child attainment.

Palmer et al (2010) identified the parameter of urban versus rural as having the highest risk ratio for autism. Increased risk for autism with increasing degree of urbanization has been identified as a significant factor in multiple geographically and ethnically diverse areas (Lauritsen, Pedersen, & Mortensen, 2005). A positive relation exists between verbal ability and SES (Hoff, 2006), and recent evidence of a relation between SES and executive function (Noble, Norman, & Farah, 2005).

Bilingual children tend to be more proficient or dominant in one of their languages which are usually the language for which they have received the greatest amount of exposure and have greater proficiency (Genesee et al., 2004). Dominance can change over time and is typically closely linked to the amount of input the bilingual child receives in each language, which is seldom equal (Genesee et al., 1995). Dominance in one language may extend to the age of school entry and is a factor throughout the lifespan of most bilinguals (Baetens-Beardsmore, 1982). It is largely unknown whether one could expect a bilingual child to acquire grammatical morphology more slowly in their non-dominant language than in their dominant language.

iii. **Language Status**

The distinction between the majority/minority sociolinguistic statuses of a bilingual's two languages is another relevant distinction to make. The minority L1 children would be at risk for incomplete acquisition and/or loss of their L1, whereas the

majority L1 children would not. In contrast, when the two languages of a bilingual child are majority languages, whether the child learns them simultaneously or sequentially, successful bilingual outcomes are highly likely because both languages are widely spoken, valued by the society, and institutionally supported through government and the education system. The minority–majority status of languages is really a continuum, and is context dependent.

The majority–minority language distinction could alter a bilingual child's linguistic environment. In case of sequential bilingualism, the language of the home (L1) is a minority language in the community and L2 is the majority of both the educational system and broader community. Regardless of clinical status, it might take longer for bilinguals to catch up to their monolingual age peers in contexts where bilingual children come from non-integrated, socioeconomically disadvantaged minority groups. This kind of bilingual social context is referred as subtractive.

II.7) Bilinguals v/s Monolinguals

(a) Cognitive Outcomes

Peal and Lambert (1962) published the first study on bilingual children and found that English–French bilinguals performed better on virtually *all* the tests, including nonverbal intelligence, in particular, the bilingual advantage was found for tests involving mental reorganization. Peal and Lambert's conclusion was that the bilingual advantage was in mental flexibility and that bilinguals profited from a 'language asset', in contrast to the 'language handicap'. Peal and Lambert's data, however, showed that in both

overall assessments of linguistic knowledge and psycholinguistic measures of linguistic processing, bilinguals often indicate deficits relative to comparable monolinguals.

A series of studies in the 1970s reported enhanced metalinguistic awareness in bilingual children. Clark (1978) speculated that 'learning two languages at once might heighten one's awareness of specific linguistic devices in both'. Tunmer and Myhill (1994) postulated metalinguistic awareness as the mechanism by which bilingualism exerts its influence on any aspect of cognition. The specific areas of cognitive functioning in which bilingual children are at an advantage are: superior flexibility using a symbol reorganization task (Peal & Lambert, 1962), understanding the arbitrary nature of numeric symbols (Saxe, 1988), ignoring misleading features of a number concept task (Bialystok & Codd, 1997), understanding object constancy (Feldman & Shen, 1971), superior performance on spatial problems (Bialystok & Majumder, 1998), generating multiple hypotheses on a physical science problem (Kessler & Quinn, 1980) and performing well on nonlinguistic tests of creativity and geometric design (Ricciardelli, 1992).

Bialystok (1986) found that bilingual children performed significantly better than monolingual speakers on a metalinguistic task (Moving Word) requiring children to ignore perceptual features of a stimulus (Bialystok, 1997). Bilinguals and monolinguals did not differ on the ability to represent complex rules in the *absence* of distracting stimuli or to inhibit a familiar motor response (Bialystok & Martin, 2004), but they were better than monolinguals at selectively attending to a stimulus in the presence of distracting information (Bialystok, Craik, & Ryan, 2006). Choi, Won and Lee (2003) tested Chinese monolingual and Chinese-Korean bilingual 4th graders in China and found

that bilinguals significantly outperformed their monolingual counterparts on a test of selective attention, suggesting a specific effect of bilingual language experience over and above cultural influences on executive function.

Bialystok and Majumder (1998) found that advantages on metalinguistic tasks depended on the degree of bilingualism in a linear fashion, with children who were fully bilingual performing best after controlling for age and language proficiency. Thus, the pattern of findings suggests that bilingualism must be of a sufficiently high level to confer detectable advantages in cognitive tasks.

Literature suggests that bilingualism is associated with more effective cognitive processing than monolingualism and outcomes on cognitive performance are dependent on the extent to which an individual is bilingual. The assumption is that the constant management of two competing languages enhances "executive functions" (Bialystok, 2001). Bilingual cortical organization (Marian, Spivey, & Hirsch, 2003), lexical processing (Kroll & de Groot, 1997), and phonological and orthographic processing (Marian & Spivey, 2003) have all been found to differ depending on bilinguals' ages of language acquisition, mode(s) of acquisition, history of use, and degree of proficiency and dominance.

According to Bialystok's (2001) analysis, there is a pattern of evidence that supports enhancement of one aspect of cognitive functioning, namely inhibitory control over attentional resources, which develops more rapidly in children with extensive bilingual experience. Inhibitory control, a key component of executive functioning according to Posner & Rothbart (2000), is disrupted in a number of childhood disorders,

including Autism (Casey, Tottenham & Fossella, 2002) and is positively correlated with social competence (Hughes, Dunn & White, 1998), moral conduct (Kochanska, Murray & Harlan, 2000), school readiness (Riggs, Blair & Greenberg, 2003) and theory of mind (Carlson, Mandell & Williams, 2004). Interestingly, there is some evidence of advanced theory of mind in bilingual compared to monolingual preschoolers (Goetz, 2003). Recent evidence suggests that bilingual children excel at working memory tasks even when the inhibition demands are relatively low (Feng, Diamond & Bialystok, 2005).

Bialystok (2001) noted, 'one must not lose sight of the possibility that the impact of bilingualism may not be advantageous but rather detrimental to cognitive performance, so demonstrations of equivalent performance for monolinguals and bilinguals are themselves salutary'. Carlson and Meltzoff (2008) study findings suggest that when bilingual children are not equally matched with their monolingual peers on verbal ability and SES, they may be able to compensate or achieve the same ends by an alternative route, namely, honing of the cognitive operations involved in language switching. It is of considerable importance to take into account the cultural context in which bilingualism occurs to better evaluate cognitive outcomes.

(b) Linguistic Outcomes

Researchers have argued that children who acquire two languages simultaneously begin their acquisition process by establishing a unitary linguistic system for their dual language input, which only separates into two systems later (Genesee, 1989). However, recent research has demonstrated that bilingual children have differentiated phonological,

lexical, morphosyntactic, and discourse-pragmatic systems as early in development as 18 months of age (Paradis & Genesee, 1996).

Researchers have found that the overall patterns of language development in bilingual preschool children parallel those of monolinguals (de Houwer, 1990), with the possible exception of receptive vocabulary size (Nicoladis & Genesee, 1996). Bilingual children have been found to have a larger productive and receptive vocabulary in one of the languages and their vocabulary in each language taken individually is usually less than that of a monolingual speaker of the same age (Nicoladis & Genesee, 1997).

Research has shown that bilingual children usually exhibit the same rates and stages of development as monolingual children with respect to phonology and grammar (Genesee et al., 2004). With regard to vocabulary, bilinguals tend to have smaller vocabularies in each of their languages compared to monolingual children (Genesee et al., 2004). Shyamala Chengappa & Jayanti Ray's (2007) comparison of typically developing monolingual and bilingual children's performance in Kannada, revealed a better performance by monolinguals but no significant difference in performance.

The basis of linguistic differences between monolinguals and bilinguals are two types of deficits involved in these comparisons:

a) The first is a difference in the linguistic representations developed during language acquisition and sustained through adulthood. The representations created by bilinguals for each language are less rich or less accessible than are those for monolingual speakers of that language.

b) The second is a difference in the ease or fluency with which linguistic items can be retrieved. This is more effortful for bilinguals, resulting in longer response times (RTs) and more errors. This can be accounted for by developmental differences in vocabulary in that, they have less experience in each language and so take longer to build the representational system that provides the foundation for their linguistic knowledge.

Pearson et al. (1993) created a detailed comparison study looking at lexical comprehension and production development in 25 English-Spanish bilingual and 35 English monolingual children. Results revealed that, for production, the bilingual children's double-language knowledge, with translation equivalents counted only once, was very close to the monolingual children's averages. In addition, the bilinguals' comprehension appeared to be comparable in each language to that of the monolingual children. Both the monolingual and bilingual groups showed vocabulary acquisition rates similar to those of monolinguals. The study concluded that, before the age of 30 months, the bilingual and monolingual children developed vocabulary at the same rate. Such findings support the notion that monolingual and bilingual lexical development follows the same developmental path.

Maratsos (2000) suggested that the learning period for past tense irregulars may be extended in bilingual acquisition, as they may receive input that contains two past tense representations for a single verb (e.g., catched and caught)

Patterson and Pearson (2004) noted that in terms of total conceptual vocabulary, Spanish– English bilingual toddlers do not lag behind monolinguals. Even if there is a lag

in the early stages, simultaneous bilinguals can catch up quickly in terms of their performance on tests normed with monolinguals. An additional study by Allman (2005) found no significant differences in conceptual vocabulary comprehension scores among the English monolingual group and any of the bilingual groups. This suggests that the number of concepts understood by bilingual children is comparable to that of their monolingual peers who speak the dominant language of the community. For the conceptual production vocabulary, the English monolinguals scored significantly higher than all other groups, which suggested that the English monolinguals were able to speak about more concepts than the bilingual children. The authors argued that bilinguals encounter words and their associated meanings with lower frequencies than their monolingual peers. As a result, they may take longer to negotiate accurate linguistic production rules associated with a concept in each of their two languages, and this may make them less comfortable producing words for these concepts. Overall, the results of this study support the notion that bilingual preschoolers have a total vocabulary size advantage and a conceptual vocabulary development that is not delayed.

Thordardottir et al. (2006) found that French–English bilingual 2.5-year-olds had scores lower than monolinguals on measures of vocabulary and syntactic development in both languages; although scores were more consistently lower in English than in French. Guti´errez-Clellen et al. (2006) and Guti´errez-Clellen and Simon-Cereijido (2007) found parallel results using a measure of morphosyntactic development in English and in Spanish with children aged 4 to 7 years old. They found that in Spanish, monolingual and Spanish-dominant bilinguals performed similarly, and in English, monolingual and English-dominant bilinguals performed similarly. However, bilinguals might lag behind monolinguals longer for vocabulary-based measures (Oller, Pearson, & Cobo-Lewis,

2007). Paradis et al. (2007) and Paradis (2010) showed that French–English bilingual children aged 4 to 6 years old can perform similar to their monolingual peers in their dominant language on the Test of Early Grammatical Impairment (TEGI).

The acquisition of grammatical morphemes has been consistently shown to present significant challenges to second language (L2) learners. Those with younger ages of L2 exposure tend to obtain greater L2 proficiency (Jia, Aaronson, &Wu, 2002). The age-related differences take time to emerge and only exist for the relatively difficult morphemes (Jia & Fuse, 2007).

Paradis (2005) found that accuracy for tense-related morphemes was significantly lower (48.81%) than that for non-tense-related morphemes (70.58%) in bilinguals. These findings led to the conclusion that the morphological acquisition profiles of L2 learners resembled those of monolingual children of the same age with SLI in exhibiting more difficulties with tense-related morphemes. L2 learners tend to use non-finite verbs in finite positions; they rarely use finite verbs in non-finite positions (Paradis & Crago, 2000; Prévost & White, 1999). Such findings are argued to indicate that L2 learners have the knowledge and thus intact underlying representations of the functional categories. L2 learners are also found to overuse suppletive morphemes (e.g., do and be) in situations when inflectional morphemes are required (e.g., “He is want to go there”). Such findings are interpreted to show that L2 learners not only have intact underlying representations of functional categories but also resort to expressions that are more easily perceived and produced, such as the suppletive forms (Leonard, 1998), and other times to the nonfinite forms that have high frequency of occurrence.

c) Other Outcomes

A growing body of research has documented the benefits of bilingual fluency to various academic outcomes (Portes & Hao, 2004), higher self-esteem (Portes & Hao, 2002) and stronger family cohesion (Tseng & Fuligni, 2000). Scholars have generally explained bilingualism's positive effects through its relationship with greater cognitive flexibility and abstract thinking skills (Bialystok, 1988; Rumbaut, 1995) and through their access to positive cultural resource of their families and communities (Portes & Rumbaut, 2001).

Han and Huang (2010) studied how being bilingualism may shape Asian children's long-term emotional well-being. Most Asian children who spoke a non-English language were doing as well as their English-monolingual peers, on their behavioural trajectories, which suggest that the lack of bilingual ability might be responsible for some of the negative outcomes. The bilingual groups was found to be having the most positive outcomes, as in addition to having no problems with English in the school environment, bilingual children receive extra benefits from the cultural resources in their families and ethnic communities (Fuligni & Flook, 2005). The results reinforced the hypothesis that speaking two languages helps to strengthen the parent–child relationship and children's behavioural and emotional well-being. They have clearly shown that there is some emotional and behavioural benefit to being bilingual and that parents should be encouraged to speak their native language with their children.

II.8) Bilingualism in the Language Impaired Population

There is a dearth of studies tying language impairment and bilingualism. However, theories in bilingualism and cognitive development, such as the threshold and cognitive development interdependence hypotheses (Cummins, 1979), warn that when first language (L1) skills are impaired or underdeveloped, limits are set in turn on second language (L2) development, that is, that a child who is language delayed in his L1 is unlikely to succeed in his L2. Further, it cautions that low levels of L1 and L2 increase the child's risk of enduring negative cognitive effects.

The few studies examining bilingualism and language disability have shown that such dire consequences are not inevitable. Bruck (1982) had concluded in his study "that the proficiency acquired by language-impaired children in second language was at no cost to the development of their first language, academic progress, or cognitive skills"

The detailed analyses of the linguistic differences in monolingual and bilingual children with SLI, reported by Paradis (1994), point to the need to develop diagnostic and perhaps remedial procedures that are appropriate for bilingual children. The attentional control advantage conferred by bilingualism is predicted to mitigate the severity of attentional disorders in bilingual children. Thus, the interpretations of standard clinical tests need to be modified to accurately reflect the ability of bilingual individuals. Verbal fluency test is generally performed differently by bilinguals and monolinguals so standardized scores may be inaccurate for bilingual populations.

Thordardottir et al. (1997) used a single case alternating treatment design to examine the effectiveness of monolingual and bilingual treatment of English vocabulary for a five year old Icelandic-English bilingual child with language impairment. This study revealed that the bilingual intervention did not slow down language growth. For vocabulary words related to the home, the bilingual treatment offered a slight advantage over the monolingual treatment. Bilingual intervention has the added advantage of avoiding negative side effects that result from the elimination of one of the languages spoken around children who grow up in bilingual environments.

Crutchley, Conti-Ramsden, and Botting (1997) compared the performance of bilingual and monolingual children with SLI on a range of standardized language assessments in English and found that the bilingual children scored lower than the monolingual children, which might be interpreted as indicating that dual language learning has a deceleration effect on development under conditions of language impairment, effectively making the symptoms of impairment more severe than in monolinguals. However, all the bilingual children (with one exception) were from language minority backgrounds, typically from immigrant families, and in a majority English-speaking society; thus, most of them were actually L2 children.

Paradis, Genesee and Rice (2003) did a study with the goal to determine whether bilingual children with specific language impairment (SLI) are similar to monolingual age mates with SLI, in each language, with respect to their use of morphosyntax (tense-bearing and non-tense-bearing morphemes) in language production. Analyses revealed that the bilingual and monolingual children with SLI showed greater accuracy with non-tense than with tense morphemes and had similar mean accuracy scores for tense morphemes. Thus, it was concluded that the dual language knowledge of the bilingual children was not causing them to have different patterns of difficulty in this domain of morphosyntax than

monolinguals. These bilingual-monolingual similarities point to the possibility that SLI may not be an impediment to learning two languages, at least in the domain of grammatical morphology.

The French–English bilingual children with SLI studied in Paradis et al. (2006) showed morphosyntactic abilities on par with their monolingual peers with SLI in both languages (Guti´errez-Clellen et al., 2008). Regarding sequential bilinguals, the two children with LD/SLI followed in Paradis (2008) exhibited the ability to acquire non tense-marking morphemes and *'be'* morphemes in English very well. They also showed progress in their abilities with inflectional tense morphemes and the child with LD caught up to his L2 peers with TLD and the child with SLI caught up to his peers with SLI.

A comparative research on the language abilities of mono and bilingual children with Down Syndrome by Bird, Trudeau, Thordardottir, Sutton, and Thorpe in 2005 indicated similar lexical profiles. Bilingual children with DS with the highest mental age scores also had the highest scores on the Preschool Language Scale (PLS-3), PPVT and MLU-English scores. Duration of exposure was not significantly correlated with any second language measure in the bilingual DS group. This fact that the two DS groups did not differ significantly in their performance on any of the English language measures supports the notion that bilingualism is not detrimental to the dominant language development of children with DS, at least when they experience intensive, ongoing, and consistent exposure to both languages.

In Steenge's (2006) study, the scores on her morphology test increased very slowly across each age group of bilingual children with SLI, and their mean score did not reach the mean score of the monolinguals with SLI by the end of the study. Orgassa and Weerman (2008) found that after 5 years of exposure to Dutch in school, the bilingual

children with SLI had essentially failed to acquire adjectival gender inflection. It is possible that social context differences are an explanation for this contrast, and this raises the question of whether full bilingualism is an attainable goal for children with SLI in all contexts (Cornips & Hulk, 2008).

Paradis (2007) reviewed data from two studies on French–English simultaneous bilingual 7- year-olds with SLI compared to their monolingual peers with SLI in both languages (Paradis, Crago, Genesee, & Rice, 2003). The main findings were: the bilingual children with SLI were as accurate with all the grammatical morphemes as their monolingual peers with SLI in both languages at this age and they did not necessarily have higher accuracy scores in their dominant language.

Another study on bilingual language development in children with DS looked specifically at vocabulary and morphosyntactic skills (Feltmate & Kay-Raining Bird, 2008). Four triads of children were studied, with each triad consisting of one bilingual child with DS, one bilingual typically developing child, and one monolingual child with DS. No significant differences were revealed between bilingual and monolingual children with DS on the language sample measures of English semantics and morphosyntax, with the exception of verb diversity. No consistent effect of bilingualism was found.

Guti´errez-Clellen, Simon-Cereijido, and Wagner (2008) examined accuracy in the production of English verb morphology on a narrative task by 5.5 years old Spanish–English bilinguals, with and without SLI, and English monolinguals, with and without SLI. The bilinguals and monolinguals with SLI displayed similar and low levels of accuracy with English verb morphology, distinct from their monolingual and bilingual

peers with TLD. This suggests that affected bilinguals can achieve similar levels of morphological acquisition to affected monolinguals early on in development.

Two studies of bilingual children from minority L1 backgrounds in The Netherlands (Orgassa & Weerman, 2008; Steenge, 2006) found significant differences in abilities with Dutch grammatical morphology between bilingual and monolingual children with SLI, and between bilingual children with SLI and with TLD. Orgassa and Weerman (2008) found that bilingual children with SLI had very low scores for adjectival gender inflection. To explain this exceptionally poor performance with adjectival gender inflection, they proposed that exposure to dual language input; coupled with the internal processing deficit caused by SLI, produce a cumulative effect in bilingual children with this disorder ("additionally disadvantaged" in Steenge, 2008). Orgassa and Weerman (2008) define the presence of cumulative effects using the following formula: for the same target structure, bilingual children with SLI<monolingual age peers with SLI, and < bilingual age peers with TLD.

The explanation for the conflicting findings between the studies by Paradis and Guit´errez-Clellen versus Orgassa and Weerman (2008) and Steenge (2006) can be found in the bilingual populations being examined, and in how cumulative effects are measured. One possible criterion could be that when probing for cumulative effects, comparing bilinguals with SLI to monolinguals with SLI is meaningful when bilinguals with TLD with the same amount of exposure have reached similar levels of accuracy with a target morpheme as their monolingual age peers with TLD. In this case, if bilinguals with SLI are less accurate than monolinguals with SLI, this would constitute reasonable evidence for cumulative effects. However, the data from Steenge (2006), as well as those from

Paradis (2008), indicate that reaching sufficient exposure in the L2 as defined this way might take several years. Another alternative method for testing for cumulative effects with sequential bilinguals can be paired comparisons between monolinguals with TLD and SLI, and between bilinguals with TLD and SLI, and then, the magnitude of the difference between the pairs could be examined. If the magnitude, or effect size, is larger for the bilingual group, this could be seen as evidence for cumulative effects.

II.9) Language in Children With Autism (CWA)

Autism is a neurodevelopmental disorder characterized by primary impairments in social interactions, communication, and repetitive and stereotyped behaviours (American Psychiatric Association, 2000). Approximately 20% of individuals with Autism function within the normal range on IQ tests (American Psychiatric Association, 1994). The DSM-IV (APA, 1994) stated that the median reported rate in epidemiological studies is 5 cases per 10,000, with rates ranging from 2 to 20 per 10,000. Researchers of all the epidemiological studies to date have noted an increase in prevalence of autism among males over females (Gillberg, 1984). Most estimates of the ratio of males to females are between 1.4:1 and 3.4:1. Some researchers have also indicated that the male to female ratio increase with IQ, with significantly more males with autism than females having an IQ greater than 50 (Wing, 1981).

Many CWA begin speaking late and develop speech at a significantly slower rate than typically developing children (Tager-Flusberg, Paul, & Lord, 2005). A small percentage of CWA do not show any significant language delays, whereas some CWA never acquire any functional language (Tager-Flusberg et al., 2005). A significant proportion of CWA also have impairments in other aspects of language, including

lexical–semantic and grammatical development (Kjelgaard & Tager-Flusberg, 2001). While overall lexical knowledge may be a relative strength in Autism, the acquisition of words that map onto mental state concepts and socio-emotional terms tend to be specifically impaired in this population (Tager-Flusberg et al., 2005). As well, errors with temporal and spatial expressions are relatively common (Perkins, Dobbinson, Boucher, Bol, & Bloom, 2006), as are pronoun reversal errors (Tager-Flusberg et al., 2005). Originally viewed as a result of echolalia, difficulty with pronouns is now generally seen as a difficulty with deixis, a challenge linking vocabulary use to semantic processing (Tager-Flusberg et al., 2005). Indeed, Tager-Flusberg (1991) has interpreted previous research to mean that individuals with Autism have the meaning of the words encoded appropriately but that the deficit is a result of failing to use linguistic information to facilitate effective retrieval of stored information.

Recent studies suggest that children with ASD share an inherent basis with typical language learners in at least some aspects of language acquisition and that therefore delays might result more from social disinterest than from a core language disability (Swensen, Kelley, Fein & Naigles, 2007). Tager-Flusberg (2000) suggested that language impairments may reflect the lack of attention of these children to their social environment. Individual variations in language impairments may therefore reflect variations in social attention/involvement (Stevens, Fanning, Cocha, Sandersa, Neville; 2008). Autism has an increased risk with increased paternal age (Cantor, Yoon, Furr & Lajonchere, 2007).

II.10) The Bilingual Child with Autism

According to Ochs and Schieffelin (1984), “The process of language acquisition and the process of socialization are integrated”. A child is not only socialized to use language, but is also socialized through language. The family environment is the primary site in which a child learns to be an empathetic, social, and communicatively competent member of society. This suggests that a child needs to understand and speak the language that is used in the home. It also insinuates that when a child does not understand the home language, it could negatively affect the child's socialization process. Studies that have looked at language use in immigrant families and their normal children suggest that eliminating communication in the home language could result in communication breakdown. Research has also suggested that when children do not speak the home language this negatively impacts parent/child relationships. Wharton et al. (2000) who studied communication between immigrant parents and their CWA noticed that parents were more affective and engaging with their children when they used their native language.

Baron-Cohen, Simon. (1993) stated that parents whose native language is other than English were advised upon diagnosis of autism in their child, to speak only one language to their child, namely English regardless of the parents' English proficiency. Parents believe that English should be the language of choice to ensure the child's exposure to the same language inside and outside the home. This way, clinicians attempted to ensure that the child was exposed to "simplified" linguistic input in order to facilitate language learning and use. For these professionals simplified input meant exposure to one language only, English.

Studies tying language impairment and bilingualism are in dearth to support or rationalize the clinicians' recommendation to stop speaking the home language to CWA. However, theories in bilingualism and cognitive development, such as the threshold and cognitive development interdependence hypotheses (Cummins 1979), warn that when first language (L1) skills are impaired or underdeveloped, limits are set in turn on second language (L2) development, that is, that a child who is language delayed in his L1 is unlikely to succeed in his L2. Further, it cautions that low levels of L1 and L2 increase the child's risk of enduring negative cognitive effects.

Autism experts (Attwood,1998) propose that parents function as informal trainers teaching their children to attend to and recognize socio-cultural beliefs, norms, and expectations, as well as to be tuned to interlocutors' affective stances and other cues revealing their intentions, motivations, beliefs, desires, and knowledge. Role play and behaviour modelling can be used by parents to teach their children explicitly. A study conducted by Baron-Cohen and Staunton (1994) emphasizes the great influence that a parent's language use may have on a CWA. This study provides additional support for the argument that parents' language practices are particularly influential in the case of CWA.

Petersen's (2003) investigation of the lexical production skills of bilingual English-Chinese and monolingual English preschool-age CWA revealed that bilingual and monolingual participants had equivalent English production vocabularies, and that bilinguals had larger conceptual production vocabularies than monolinguals. Bilingual participants had larger number of verbs in their conceptual production vocabularies,

higher vocabulary comprehension and higher language scores. There were no significant differences in the size of production vocabularies and vocabulary comprehension scores.

Another published report on autism and bilingualism investigated the experiences of families who had been advised by professionals to restrict language input to one language for their bilingual children with high functioning autism (Kremer-Sadlik, 2005). It highlighted data from parental interviews and video recordings of home interactions of four children who came from homes in which the native language was not English. The interviews showed that, when families followed advice to speak only English to their child with high functioning autism, the child did not take part in family conversations, the parents addressed the child infrequently, and the parents rarely ended up using English in family conversations. The paper reported that there is no sufficient support for the claim that multilingualism harms the language acquisition of language impaired children and that it is very important for children with high functioning autism, who suffer from socio-pragmatic deficits, to speak the home language. Kremer-Sadlik also stated that because children with high functioning autism need to be exposed to a variety of social situations in order to learn the rules of speech acts and social functioning, their access to conversations should not be limited. When these interactions take place in a language that the child does not understand, the child is deprived of important learning occasions (Kremer-Sadlik, 2005). One family in the study that did not take the professional advice and continued to speak both languages saw their child with high functioning autism develop into a bilingual speaker. The family added more English after their son's diagnosis, while his grandfather spoke to him in Chinese. The child's language skills developed, he began to speak more, and the family returned to speaking mostly in Chinese, with the boy answering back in both languages. These findings demonstrate that

limiting the home language input can have negative effects on social functioning, whereas maintaining both languages can result in a child being bilingual.

A case study investigated bilingual speech-language intervention for a Korean-English bilingual CWA living in the United States of America (Seung, Siddiql, & Elder, 2006). Therapy began shortly after an autism diagnosis was provided and took place twice weekly. For the first 12 months, therapy was provided in Korean, the child's primary language; the next 6 months involved intervention that gradually introduced English; and the final 6 months consisted of intervention that was almost entirely in English. Vocabulary building and pragmatic goals was provided. Progress, measured using the PPVT and Expressive Vocabulary Test (EVT) at four time points every 6 months, revealed notable gains in language production and comprehension development in both languages as well as decreases in aberrant behaviours. The results support the practice of providing intervention in the home language in order to establish a linguistic foundation when English, the language of the majority culture, is not used at home (Seung et al., 2006).

Research has shown that bilingual children have some superior executive functions, one consequence of which is enhanced attentional control, which can be manifested in enhanced metalinguistic awareness (Bialystok, 2007). One could speculate that the superior executive functions emerging from dual language learning could compensate to some extent for some of the processing deficits that come along with Autism.

Another study looked specifically at monolingual English and bilingual English-Spanish toddler-age children with ASD (Valicenti-McDermott, Schouls, Molly, Tarshis, Seijo, & Shulman, 2008). A retrospective chart review of 50 toddlers with ASD revealed no differences in demographics, maternal education, cognitive testing, and Childhood Autism Rating Scale (Schopler, Reichler, & Renner, 1986) scores between the two groups. The bilingual children were more likely to use two or more gestures than monolingual children, but no other differences in expressive skills, communicative function, or speech production were found. The difference in gesture use has also been observed in typically developing children.

One study by Hambly and Fombonne (2009) compared early language milestones and spoken vocabulary in monolingual and bilingual children with ASD aged 18 months to 6 years. Phone interviews were used to gather information regarding the children's language exposures and developmental history, and the CDI was used to collect a total dominant language vocabulary and a total conceptual vocabulary for the children. The two groups did not differ in mean age in months at the time of first spoken word or first spoken phrase. Statistical analysis did not reveal a statistically different size of vocabulary, as measured in raw CDI scores, in either the dominant language (MON = 369, BIL = 394), or the total conceptual vocabulary (MON = 369, BIL = 429).

The final study (Leadbitter et al., 2009) administered the PLS, the Vineland Adaptive Behavior Scales Classroom Edition, and the CDI on bilingual and monolingual children with ASD between 2 and 5 years of age. Stepwise regression analyses revealed that degree of bilingualism was not a significant predictor of any language scores. Valicenti-McDermott, Schouls, Molly, Tarshis, Seijo, and Shulman (2008) and Hambly

and Fombonne (2009) concluded that bilingualism had neither a positive or negative effect on language development in preschool CWA. Summarizing, from these recent reports there does not appear to be any indication that individuals with ASD should limit language use to one language only.

II.11) Factors/Issues in Language Assessment in CWA

i. Language Assessment Measures: Uses

Researchers and clinicians rely on a variety of measures of language to assess and chart developmental changes in language in a variety of populations. They depend on language measures to diagnose children with language impairments, to assess a range of language skills, and to design and monitor treatment programs. Language measures are used by researchers to define their participant populations, to document their participants' language status, to match groups of participants, or to investigate aspects of language impairment in different populations.

ii. Language Assessment Measures: Types

Typically, two classes of measures are used to assess a range of Language skills including phonology, lexical knowledge, semantics, morphosyntax, and pragmatics, in children at different ages:

a) Standardized language measures are norm-referenced, and when administered according to the standardized procedures defined for them, they provide a relatively quick means for comparing a child to age-matched peers. These are used to assess

both receptive and expressive abilities and also allow one to compare a child's performance across different tests to yield a profile of language performance across language domains. Standardized tests provide a portrait of a child's language abilities across a pre-specified set of language skills. However, in this structured context, factors such as children's test-taking skills, attention, or motivation to interact with the examiner may also contribute to language scores.

Another issue to consider about the use of standardized tests with bilinguals is that these children do not approach monolingual norms in synchrony across all linguistic sub-domains. Oller et al. (2007) showed that Spanish–English bilingual children's scores on standardized tests of basic phonics skills were within the normal range of monolinguals, whereas their scores for tests of receptive and productive vocabulary fell below the normal range, a pattern they referred to as "profile effects." The presence of profile effects also suggests that norms for standardized tests in a particular language should be collected for monolingual and bilingual children separately, and such norms need to be organized in function of both chronological age and the duration of target language exposure.

b) Natural language samples, collected in a variety of ways in different contexts, are used to derive measures of spontaneous speech, which are used to tap expressive language. These measures require a significant amount of time and provide an index of the child's use of language in everyday informal settings. They are useful for assessing a variety of pragmatic and discourse skills. Measures from natural language samples are used for assessment of a child's real-time language performance. Such measures reveal the influence of the dynamic interaction among a child's individual

linguistic knowledge, internal processing factors, and external processing constraints on verbal performance (Evans, 1996).

iii. Bilingual Language Assessment Measures:

There are three conventional ways to quantify or qualify language ability, or proficiency, in developing bilinguals:

a) The first is to consider the bilingual child's abilities in each of his or her languages as compared to monolingual age peers of each language.
b) A second way to describe bilingual language abilities is by using within speaker comparisons. A child's ability in one language is compared to his or her ability in the other known language.
c) A third way to consider the degree or level of language attainment in developing bilinguals is to compare the separate and collective language system to age and experience matched bilingual peers.

If the goal is to identify the presence of underlying language impairment, then it is important to compare the child's collective language system to that of age, language and experience matched peers. The distinction between the timing (as well as context) of language experience is one way to classify developing bilinguals and may have important implications for child language assessment and intervention. If the goal is to gain a complete understanding of the child's language abilities as well as the integrity of the language learning system, it's important to assess the proficiency in both languages, across time and task demands. Studies also suggest that questions about proficiency and

language history can be successfully used to capture language profiles in bilingual children by means of parent reports (Flege et al., 2002).

Bornstein and Haynes (1998) examined the relationship between measures derived from standardized assessments and measures of spontaneous speech. They found that all these measures correlated significantly with one another, suggesting that both standardized and spontaneous speech measures tap the same language competence in normally developing toddlers. A second study compared standardized vocabulary test scores to spontaneous speech measures in 28 normally developing preschoolers (Ukrainetz & Blomquist, 2002). Botting, Conti-Ramsden, & Crutchley (1997) investigated the sensitivity of standardized psychometric tests to different types of language disorders in a sample of more than 240 children aged 6–8 years old. They found that although such tests were good at discriminating children with structural language impairments, none of the tests could identify children with semantic–pragmatic disorders. They concluded that psychometric measures cannot be used for diagnosing these kinds of language impairments, which are prevalent in CWA spectrum disorders.

iv. **Language Assessment Measures in CWA**

Autism is a disorder characterized by delays and deficits in language. In order to capture the spoken language and communicative abilities of young CWA and to avoid sampling effects, assessments should include measures derived from multiple sources. These sources should ideally include (a) natural language samples, (b) parent report, and (c) direct standardized assessment (Paul et al., 2009). A study by Condouris, Meyer &

Tager-Flusberg (2003) revealed that both standardized and spontaneous speech measures tap the same underlying linguistic abilities in CWA.

There are significant challenges in assessing the language of CWA (Tager-Flusberg, 2000). Because of the core social deficits in autism and high rates of echolalia, found especially in younger children, it may be difficult for them to provide an adequate natural language sample in the context of a conversational interaction. On the other hand, perhaps the unique behaviour, motivation, and attention problems found in many CWA interfere with the demands of the formal testing situation required for standardized tests. Some researchers have questioned whether standardized tests can be used to describe language functioning in CWA (Koegel, Koegel, & Smith, 1997), and others have suggested that the highly structured testing situation in fact enhances the performance of CWA, whose rigid behavioural styles might be well suited to standardized test assessments (Paul & Cohen, 1995).

The main aim of a study by Condouris, Meyer and Tager-Flusberg (2003) was to investigate whether standardized tests and measures derived from natural language samples provide comparable assessments of language skills in CWA. They focused on measures of lexical– semantics and morpho-syntax because they can readily be assessed in both standardized testing and natural language samples and findings provided support for the view that both kinds of assessment are measuring the same linguistic abilities in this population. These findings suggest that the majority of verbal CWA have impairments in formal aspects of language as assessed by both kinds of measures included in this study, and confirm other data on language deficits in CWA (Kjelgaard & Tager-Flusberg, 2001).

CWA, because of their primary impairments in pragmatics and social reciprocity, may not use the range of vocabulary and grammatical constructions that they have acquired in everyday conversation, even with their mothers. This suggests that measures of lexical–semantic and grammatical abilities obtained from natural language samples are influenced by pragmatic factors. Findings have also indicated that spontaneous speech and standardized test measures of lexical–semantic skills are highly related in CWA.

Thus, research findings suggest that for CWA, measures derived from spontaneous speech and standardized tests are tapping the same specific abilities in lexical– semantic and morphological syntactic domains of language. These confirm earlier studies with typically developing children (Bornstein & Haynes, 1998; Ukrainetz & Blomquist, 2002), which had also found strong general and specific correlations across language measures derived from natural language samples and standardized psychometrically based language tests. These findings are important for several reasons:

- The data presented confirm the utility of both standardized and spontaneous speech measures for assessing language in CWA.
- The strong correlations found among the different measures suggest that for CWA, a relatively consistent picture of language abilities may be obtained, both in structured settings where standardized tests are administered and in language measures derived from more informal everyday conversational interactions.
- Despite the significant social, behavioural, and communicative impairments that characterize CWA, language assessments may be obtained in both contexts.
- The findings provide empirical support to researchers' and clinicians' reliance on both types of measures as useful tools for identifying language impairments and

quantifying linguistic skills of CWA, as well as for matching groups in research studies and documenting developmental changes in language in this population.

v. The Childhood Autism Rating Scale (CARS)

Numerous measures related to autism have been partly or fully validated for school aged children such as the Autism Behavior Checklist (ABC; Krug et al., 1980), Modified Checklist for Autism in Toddlers (M-CHAT; Robins, Fein, & Barton, 1999), Autism Diagnostic Interview-Revised (ADI-R; Rutter, Couteur, & Lord, 2003), Childhood Autism Rating Scale (CARS; Schopler, Reichler, & Renner, 1986), Gilliam Autism Rating Scale (GARS; Gilliam, 1995) and Autism Diagnostic Observation Schedule (ADOS; Lord et al., 1989) are widely used for cither screening or diagnosis of autism although none of these measures have been validated for this population.

Among these autism assessment instruments, Childhood Autism Rating Scale (CARS) is promising as a diagnostic measure because of its simplicity, conceptual relevance, high concordance with DSM-III/III-R/IV diagnosis of autism, acceptability, cost effectiveness, utility among different populations and strong psychometric properties when validated in India. CARS was developed by Schopler & Reichler (1971, 1980) and is a well-established instrument for the screening and diagnosis of childhood autism.

Estimates of reliability presented in the CARS manual are high (Schopler, Reichler, & Renner, 1988). The scale assesses behaviour in 14 domains that are generally affected by severe problems in autism, plus one general category of impressions of

autism, with the aim of identifying CWA, as differentiated from the other developmental disorders.

Minshawi (2001) found good and better test-retest reliability of the CARS than the test-retest reliability of the DSM-IV criteria. Rellini, Tortolani, Trillo, Carbone, & Montecchi (2004) study shows complete agreement between DSM-IV and CARS. Russell, Daniel, Russell, Mammen, Abel, Raj, Shankar & Thomas (2010) did a study on the Diagnostic accuracy, reliability and validity of Childhood Autism Rating Scale in India. The inter-rater reliability, test-retest reliability, face and content validity, for CARS were good, besides good internal consistency.

Summary

Most CWA begin to talk late and develop speech at a slower rate than typically developing children. However, the developmental course for CWA appears similar to that of typically developing individuals. Common differences in vocabulary use include pronoun reversals, a decreased use of mental state and socio-emotional words, and some abnormal use of vocabulary.

The majority of the world's children are bilingual because their environment requires them to be so. The nature of language input plays a very important role in the bilingual acquisition process. The type and amount of language input and the cultural and linguistic differences between languages all affect the rate of learning and attainment in each language of a bilingual communicator. Regardless of these factors, bilingual

language acquisition follows the same developmental path as monolingual language acquisition.

The types of language deficit, severity of language disorder, and the type and availability of input in each language, all influence L1 and L2 learning (Guiterrez-Clellen, 1999). Evidence suggests that children with language impairment have the capacity to be bilingual. Bilingualism itself does not seem to affect language development in children with language impairment.

Thus, to conclude, there is very limited research in the area of autism and bilingualism, especially in Indian contexts. In order to determine whether bilingualism impacts the language development of CWA, one needs to have a complete description of their language abilities in both languages. Research in this area seems a logical starting point, because it has been investigated in other populations with language impairment, and because it is a reliable predictor of future academic and social consequences in both typically developing children and CWA.

This review of literature has also revealed that there is no evidence to support the claim that bilingual families with CWA should limit linguistic input to one language. Further research is needed in order to increase our understanding with regards to bilingual language development in CWA. Therefore, the current study aimed to address the following main research question: Do the language abilities of bilingual CWA differ from those of monolingual CWA?

CHAPTER III

METHOD

III.1 Subjects

Prior research does not present adequate information about the impact of dual language learning on autism. As a step toward this broad goal, the present study is designed to compare language among three groups of CWA: Hindi monolingual, English monolingual, and Hindi-English bilingual.

More specifically, this study is designed to address the following question: Do bilingual CWA exhibit difficulties with the same semantic-syntactic structures, and to the same extent, as monolingual CWA in each language? Comparing the semantic-syntactic abilities of bilingual CWA to those of monolingual age mates with autism, in both languages, will further our understanding of whether bilingualism makes CWA display distinct behavior in this domain of language and, in so doing, inform us of the impact of dual language learning on autism.

It is important to consider the role of language dominance in the present study because a bilingual child with autism might display levels of accuracy similar to monolinguals, but in only their dominant language, and not in their non-dominant language. With respect to the present study, if the bilingual CWA display lower levels of accuracy in both languages than their monolingual peers with autism, this could be construed as evidence for bilingualism causing delay.

Subjects for this study were selected from English monolingual, Hindi monolingual, and English/Hindi bilingual families residing in Mysore (Karnataka), either temporarily or permanently. The sample was purposeful due to the required characteristics of each subject, such as age (4 years to 10 years), onset of bilingualism (since at least 15 months of age), and level of parental education (minimum of high school diploma or equivalent). Subjects were recruited through preschools, therapy services and through parental networks in All India Institute of Speech and Hearing, Mysore.

A total of 15 subjects participated in the study. There were 8 male and 7 female subjects, ranging in age from 4 years to 10 years, with a mean age of 7.0267 years (S.D. = 1.86221). The average number of children in the family, including the subjects, was 1.6 ranging from 1 to 2 children in a family. Because ASD occurs more frequently in the male population than in the female population (Hambly & Fombonne, 2005), gender was not controlled for in either group.

Children were divided into three groups according to the language of exposure: CWA who were being raised in either a Bilingual Hindi-English (BA) or a Monolingual predominantly English (ME) or Monolingual predominantly Hindi (MH) context. Each group had five children.

Inclusion Criteria for the Subjects:

All children had an average range of IQ, as assessed by a certified Clinical Psychologist. None of these children were reported to have a history of other health problems that could affect development (e.g., mental retardation, meningitis), and no

associated visual or hearing deficits were reported. It was required that all participants were productive at least at the one word level and used oral language as their primary means of communication, not picture symbols or sign language. Duration of therapeutic intervention for all the participants ranged from six months to two years.

III.*1.1 Subject Group One: Monolingual CWA (ME and MH)*

Monolingual children came from predominantly Hindi/English-speaking homes with exposure to the respective language since at least 15 months of age and no significant exposure to other languages either in the home or at school. Children who came from families where both parents spoke only Hindi or only English were regarded as monolingual, i.e., Monolingual English (ME) and Monolingual Hindi (MH) respectively. The monolingual children had very limited exposure to a second language at school (30 min per week maximum) or at home. All parents reported a single language (Hindi/English) as the child's dominant language, the language of print and television in the home, and therapy/preschool programs, with no (or minimal) exposure to a second language.

III.*1.2 Subject Group Two: Bilingual CWA*

For the purposes of this study, bilingual individuals were operationally defined as bilingual learners who were exposed to both Hindi and English on a daily basis since the age of 15 months. The basic requirement for inclusion was that both languages were currently spoken on a daily basis; that at least one parent could speak, read, and write in English; and that at least one parent could speak, read, and write in Hindi. Bilingual

children had received ongoing and intensive input in two languages, one being English and the other being Hindi. Bilingual children who spoke languages other than Hindi and English were not included. Children who came from families where one parent spoke Hindi and the other English at home were also regarded as bilingual.

Children who begin learning English as their second language at or just before school entry are a significant population of dual language children in India. Although L2 children are possibly more numerous, they are not the optimal population with which to study the impact of dual language learning. This is because, by definition, they have had significantly less exposure to, and practice with, one of their two languages at school entry. Thus, any differences found between the English of an L2 child with autism and the English of a monolingual child with autism might be due to the L2 child's incomplete grasp of English, and not due to the potentially complicating effects of dual language learning on autism. In contrast, simultaneous bilinguals, by definition, have had extensive and continuous exposure to and practice with both their languages by school entry, and therefore, any bilingual-monolingual differences in the autism population could be more readily attributed to the effects of dual language learning on autism. Thus, this study compares the linguistic performance of monolingual with bilingual CWA who have had an early exposure of both languages.

III.2 Instruments/Materials

III.2.1 Childhood Autism Rating Scale (CARS)

CARS (Schopler, Reichler, & Renner, 1988) aids in evaluating the child's behaviour on a scale based on deviation from the typical behaviour of children of the same age. It is suitable for use with children over 2 years of age. CARS was designed to differentiate between autistic and other developmentally disordered children. The 15 items of the CARS are: 1) Relating to people; 2) Imitation; 3) Emotional response; 4) Body use; 5) Object use; 6) Adaptation to change; 7) Visual response; 8) Listening response; 9) Taste, smell, and touch response and use; 10) Fear or nervousness; 11) Verbal communication; 12) Nonverbal communication; 13) Activity level; 14) Level and consistency of intellectual response; 15) General impressions.

The examiner observes the child and also obtains relevant information from the parents to assign a score of 1 to 4 for each item: 1 indicates behaviour appropriate for age level, while 4 indicates severe deviance with respect to normal behaviour for age level. The scores for the single items are added together into a total score, which classifies the child as not autistic (below 30), mild or moderately autistic (30–36.5) or severely autistic (above 36.5). The CARS was chosen for this study because it is considered the gold standard in the field (Matson et al., 1998).

III.2.2 Parent Inventory/ Questionnaire

A parental questionnaire was used to obtain information about the language environment of participants. This was developed by the researcher in order to explore the subjects' demographic characteristics, communication patterns, and parental attitudes toward child speaking English, Hindi, or being bilingual (See Appendix).

It was given to the primary caregiver to ensure that the child was bilingual according to the operational definition, and to control for maternal and paternal education. The questionnaire inquired about parental education; which languages were spoken by the child's parents (English; Hindi; other) and which languages the child spoke (English; Hindi; other). Parents of bilingual children were also asked to indicate which language was the child's stronger language (English; Hindi; equally strong).

It was constructed to assess bilingual experience and proficiency profiles in first and second languages, irrespective of the specific languages involved. Domains assessed by it included acquisition history, contexts of acquisition, present language use, and language preference and proficiency ratings (across the four domains of language use: speaking, understanding, reading, and writing).

The questionnaire was developed in English only (note that Delgado et al. (1999) showed that language of self-assessment does not influence bilinguals' proficiency ratings). The questionnaire provided an extensive array of measures that could be completed by the parent independently (including before his or her arrival at the testing

site) and took approximately 15 minutes to complete, thereby making it an effective addition to comprehensive assessment.

This questionnaire had 4 sections of:

1. Child Information (Age, Gender, Medium of instruction, Performance)
2. Parental Information (Parental age, Education & Occupation, Socio Economic Status)
3. Brief family history (Consanguinity, Number of Siblings & Family history)
4. Language History (Age of acquisition, Language Growth, Language Preferences for communication, language for therapy)

The language proficiency of the parents of the participants was scored as follows in the four domains of ability to understand, speak, read and write:

Proficiency/Capacity	Score
0 – 25 %	1
25 – 50 %	2
50 – 75 %	3
75 – 100 %	4

III.2.3 National Institute for the Mentally Handicapped Socio-Economic Scale Checklist

NIMH-SES (Venkatesan, 2009) has been readapted from 1997 version NIMH Socio Economic Status Scale (Secunderabad). It has five sections of: Occupation, Education, Family Income, Property and Per Capita Income. Each section is ranked from I to V with each rank carrying scores from 5 to 1, with higher grades accorded higher scores. The total scores of each section are entered in a table grade wise and the respective grade in which the participant scores maximum is considered to be his/her SES Grade. Grade I is High SES, Grades II and III are Mid SES, while Grade IV and V are Low SES.

III.2.4 The Language Assessment Checklist

This assessment checklist for Speech Language Skills has been developed by Swapna, Geetha, Prema and Jayaram (2010). It rates the speech language abilities of the child for each of the 74 items, grouped into 12 age ranges, based on the scoring of 0 (Not Applicable), 0.5 (Totally Dependent/physical/verbal prompt) and 1 (Consistent and independent). The scoring, based on clinician observation and parent reports, gives the receptive and expressive language age of the child in months (0 to 72 months).

III.2.5 Linguistic Profile Test(LPT)

LPT in Hindi (Karanth, Pandit and Gandhi, 1986) has 4 sections: Phonology, Syntax, Semantics and Discourse. Only the Semantics and Syntax sections were performed as the equivalent abilities in English could be assessed by another English

language tool, in order to draw comparisons. Both the Semantic and Syntax sections are scored for 100 marks.

The syntax section had lists containing both correct and incorrect forms and the participants had to listen carefully and indicate whether each item is correct or not. Subsections include: Morphophonemic structures, Plural forms, Tenses, PNG markers, Case markers, Transitives, intransitives & causatives, Sentence types, Predicates, Conjunction, comparatives and quotatives, Conditional clauses and Participial constructions. Grammaticality judgment tasks have proven useful for gaining information regarding an individual's knowledge of specific language forms (McDaniel & Cairns, 1996).

The semantic section had two subsections: Semantic Discrimination and Semantic Expression. The latter is further subdivided into sections assessing ability in Naming, Lexical category, Synonymy, Antonymy, Homonymy, Polar questions, Semantic anomaly, Paradigmatic relations, Syntagmatic relations, Semantic contiguity and Semantic similarity.

The scores of LPT are useful in identifying school age children with language deficits and also finding out the area of deficit- i.e. linguistic skills and structures at different linguistic levels which is essential to carry out a systematic language remediation programme.

III.2.6 English Language Testing for Indian Children (ELTIC)

ELTIC developed by Bhuvaneshwari (2009) has three domains: Semantic knowledge, Morphological Rules and Syntactic Rules. These three domains included thirteen sub domains and each sub domain consists of nine items each. The maximum score of the sections are 72, 21 and 18 respectively. The Semantic Knowledge domain has sub domains of body parts, nouns, verbs, categories, functions, prepositions, colours and opposites. The second domain of ELTIC is Morphological Rules which has three sub domains, namely: pronouns, verb tenses and plurals/comparatives/superlatives. The third domain has two sub-domains: Subject Verb Agreement/Negation and Sentence Repetition/Judgement of Correctness.

III.3 Phases of the Study

This study was carried out in two phases:

Phase I consisted of collecting the socio-demographic, educational and language proficiency data by using a questionnaire developed for the purpose.

Phase II: Standardized tests, semantics and syntax sections of the Linguistic Profile Test - Hindi (LPT - Karanth, Pandit & Gandhi, 1986) and English Language Testing for Indian Children (ELTIC) by Bhuvaneshwari (2009), were administered in order to provide a portrait of the child's language abilities across a pre-specified set of language skills (semantics, morphology and syntax).

III. 4 Procedures

There are significant challenges in assessing the language of CWA (Sparrow, 1997; Tager-Flusberg, 2000). The core social deficits and high rates of echolalia may make it difficult for CWA to provide an adequate natural language sample in the context of a conversational interaction. The rigid behavioural styles of CWA might be well suited to standardized test assessments and enhance their performance (Paul & Cohen, 1985).

III.4.1 Procedures common to monolingual and bilingual groups:

For all the participants, once contact was made with a primary caregiver, two meetings were booked to take place in the therapy setting. These meetings were usually separated by one week, but in some cases schedules did not allow for this, or participants fell sick. The longest time between two meetings was 10 days. At the first meeting, parents were briefly interviewed to determine parental education, the extent to which each language was used, and the amount and types of therapy their child had received.

A Speech Language Pathologist along with a Clinical Psychologist confirmed the diagnosis of Autism according to the Diagnostic and Statistical Manual for Mental Disorders–Fourth Edition (American Psychiatric Association, 1994). All children were rated on the Childhood Autism Rating Scale (Schopler, Reichler, & Renner, 1986) and were included only if it revealed a mild-moderate severity of autistic symptoms.

The Parent Questionnaire, NIMH SES Checklist and the Language Assessment Checklist were administered in the first visit.

Standardized test administration for each participant was conducted maximally over two 60-minutes sessions scheduled on different days within a 1-month period. Breaks were provided if and when needed. The examiner actively worked at ensuring that the children were always engaged in the test and attending to the stimuli. When needed, reinforcers such as stickers or stars were used to maintain the child's motivation.

III.4.2 Procedures exclusive to the bilingual groups:

For bilingual children, testing in English and the second language occurred on different days, the order being counterbalanced across participants within participant groups. When the investigator administered tests and/or collected language samples in a given language, the investigator spoke only that language in the presence of the child in order to minimize the likelihood of code switching in the bilingual child.

The data thus obtained for each child was tabulated and analyzed using appropriate statistical procedures.

CHAPTER IV

RESULTS AND DISCUSSION

This study was designed to examine the language abilities of children with autism (CWA) who were being raised in bilingual environments.

The results of the study have been analyzed and discussed under five broad headings:

IV.1 Chronological Age and Gender of Participants

IV.2 Parental data analyses across all three groups

IV.3 Within group comparisons:

i. **Monolingual English (ME) group**

ii. **Monolingual Hindi (MH) group**

iii. **Bilingual Hindi-English (BA) group**

IV.4 Across groups:

i. **Monolingual Hindi (MH) v/s Bilingual Hindi-English (BA) group**

ii. **Monolingual English (ME) v/s Bilingual Hindi-English (BA) group**

IV.5 Analysis of Semantic abilities

IV.6 Analysis of Syntax abilities

IV.7 Relative Findings With Regard to Language Data across the Bilingual and Monolingual Participants

IV.1 Chronological Age and Gender of Participants

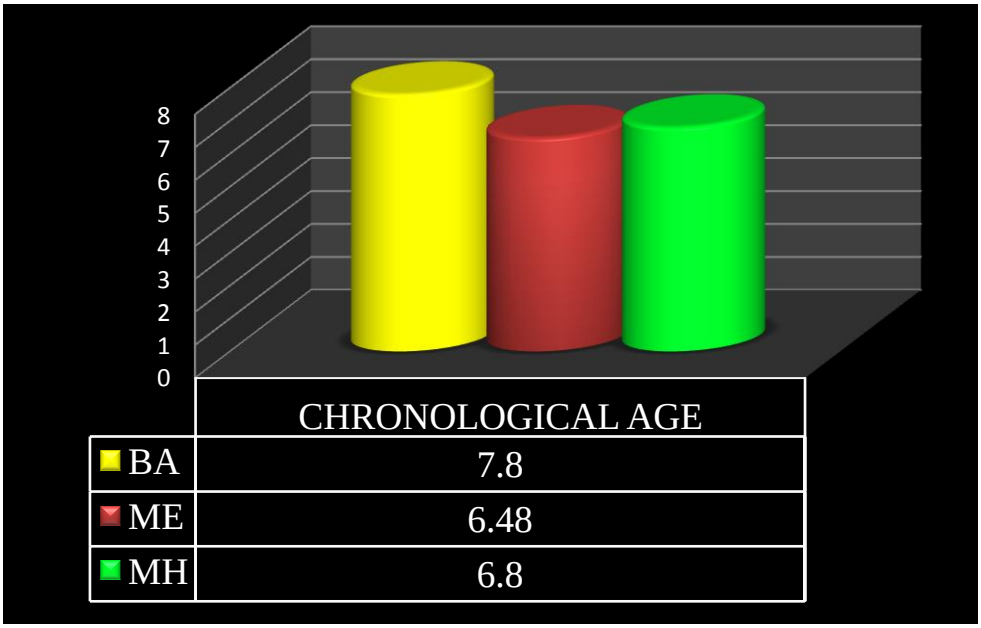
The participants were CWA of age 4 years to 10 years and divided into three groups as follows:

Table 1: Age and gender characteristics of the three participant groups

Groups of Participants	Number of Participants	Gender Distribution	Chronological Age of Participants (in years)	
			Mean	S.D.
Bilingual Hindi-English (BA) group	5	3 Male 2 Female	7.80	1.30384
Monolingual English (ME) group	5	3 Male 2 Female	6.48	2.35627
Monolingual Hindi (MH) group	5	2 Male 3 Female	6.48	1.92354

A comparison of the means of the participant group reveals no significant differences between the chronological age of the participants across the three groups. Thus the groups are matched across age.

Figure 1: Chronological age of participants across the three groups



IV.2 Parental data analyses across all three groups

The three language groups (BA, ME & MH) were first compared with respect to parent education scores and parent occupation scores. The education and occupation scores were calculated for both parents according to the NIMH-SES grades. The income scores were calculated as the mean of the Annual Family Income, Property and Per Capita Income.

Table 2: Parental education-occupation data

Group	Parental Education Scores		Parental Occupation Scores		Parental Income Scores	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
BA	8.20	1.09545	4.20	0.44721	13	1.581
ME	8.60	1.51658	5.40	2.07364	13	1.581
MH	6.00	1.22474	3.20	0.44721	11.2	1.303

A Pearson's Correlation analysis between these variables revealed a statistically significant positive correlation (0.731) between the parental education and parental occupation scores at the 0.01 level (2-tailed) for all the language groups.

Higher education is one of the most effective ways that parents can raise their families' incomes. There is clear evidence that higher educational attainment is associated with higher earnings. Studies have shown that most children in low-income families have parents without any college education and Higher education leads to higher earnings (Maag & Fitzpatrick, 2004).

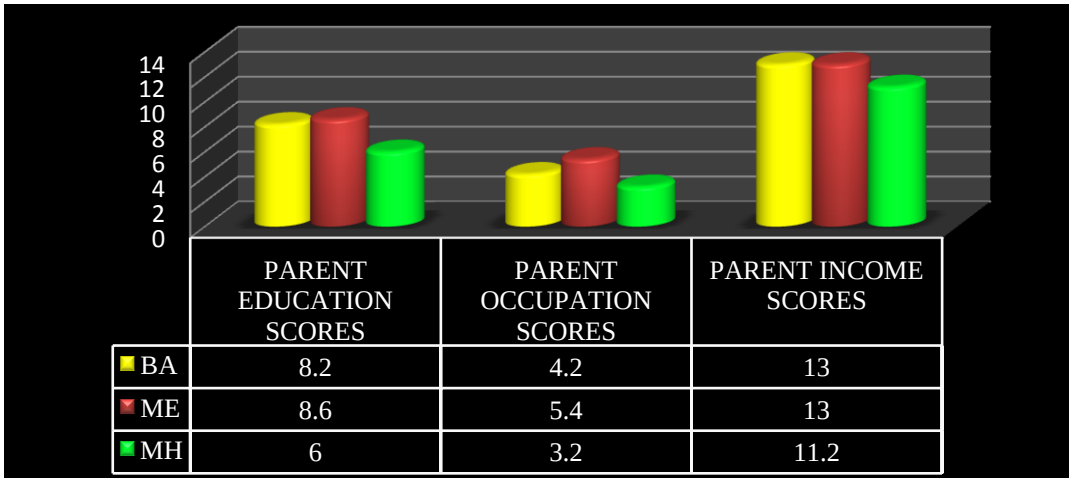
A comparison of the means reveals no significant differences between the variables of parent education scores and parent occupation scores across BA and ME.

Thus the bilingual Hindi-English and monolingual English language groups are matched across age and parent education and occupation, i.e.: Socioeconomic Status of the participants is matched across the participants of these two sets.

A study done by Cortina, Garza & Pinto (2000) found that bilingualism is associated with higher income. The effect was, however, substantively small in their case (on average the income level of bilinguals was 2.7% more than the income of monolinguals. More recently, a literature exploring the export-oriented IT and business services industry in India has shown large returns to English skills (Kapur & Chakraborty 2008; Shastry 2008; Munshi & Rosenzweig, 2006).

But parental education and occupation scores were found to be lowest in case of the monolingual Hindi group. A statistically significant difference was found to exist between the education and occupation scores of MH group and the other two language groups. This indicates a relatively lower socio-economic status as compared to the ME and BA groups. The income level was also lowest in this group.

Figure 2: Education, occupation and income scores parents' of participants



	PARENT EDUCATION SCORES	PARENT OCCUPATION SCORES	PARENT INCOME SCORES
BA	8.2	4.2	13
ME	8.6	5.4	13
MH	6	3.2	11.2

In India higher university education is primarily in the official language of the country, deprived of which, there is a fall in the occupational and social status. Cortina, Garza and Pinto (2000) found that income decreased monotonically as the ability to speak English fell, which was consistent. Their results also show that not speaking English negatively affects earnings, corroborating the argument that English fluency is rewarded in the marketplace. This can lend support to our finding of poorer education, occupation and SES scores of parents' of monolingual Hindi participants.

Bilingualism and literacy are both forms of human capital that enable communication. Bilingualism can be an important human capital investment when language differences limit access to economic opportunities such as employment. Part of the growth of bilingualism in India is likely related to expanded demand for schooling. Bilingualism is related to formal schooling in a more complex way, since higher schooling in India is mostly available in English. Cortina, Garza and Pinto (2000) had examined the economic consequences of bilingualism and found that while the correlation between bilingualism and income was positive among non-supervisory labourers in manufacturing, the association turned negative among those in managerial positions and among those employed in the public sector. *Thus, a detailed matching of the parental professions could have led to matching across socio-economic variables.*

IV.3 Within Group Comparisons

i. Monolingual English (ME) CWA group

a) Language age of participants

A comparison of receptive and expressive language ages of CWA in English revealed comparable scores, with slightly better receptive age means.

Table 3: Language age data of the ME CWA group

Language Age - English	ME		
	Mean	S.D.	Median
Comprehension	10.60	1.14018	11.00
Expression	9.80	0.83666	10.00

b) Parental Language Proficiency Scores

Proficiency scores showed a slight statistically insignificant paternal advantage with greater variability in maternal proficiency scores. A Pearson's correlation analysis (2-tailed) revealed a statistically significant positive correlation (0.817 for father at the 0.01 level and 0.728 for mother at the 0.05 level) between the parental proficiency and parental education scores for English Monolingual Group. The receptive (0.745) and expressive (0.646) language age of the participants also showed a statistically significant positive correlation with parental education scores at the 0.05 level.

Table 4: Parental proficiency data of the ME CWA group

Parental Proficiency - English	ME		
	Mean	S.D.	Median
Father's Proficiency Scores	14.20	2.48998	16.00
Mother's Proficiency Scores-	13.80	3.03315	16.00

It was observed that mother's and father's levels of education are significant predictors of child's language (Pancsofar & Feagans, 2006; Ginsberg, 1991) and intellectual functioning (Golden & Pashayan, 1976). Grandgeorge, Hausberger, Tordjman, Deleau, Lazartigues and Lemonnier (2009) demonstrated that parental characteristics (i.e. level of education) can influence language development of children with ASD.

c) English language Testing Scores – Semantics

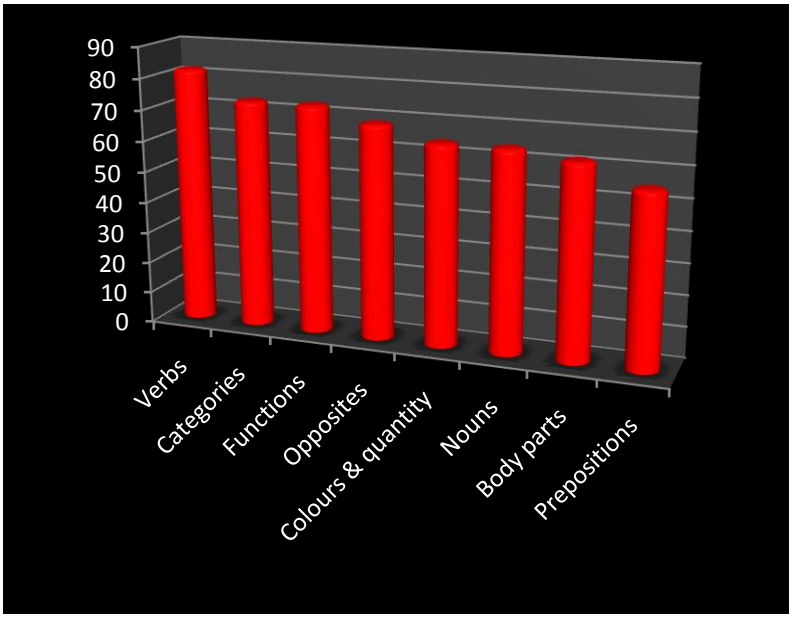
ELTIC was the standardized English language test administered on the ME group. The scores are arranged in a descending hierarchical order of mean.

Table 5: ELTIC scores of semantic section of ME CWA

Language aspects	**ME**		
	Mean	**S.D.**	**Median**
Semantic Subsection	68.0564	9.77372	63.8900
Verbs	82.2240	12.66735	77.7800
Categories	73.3340	18.59447	77.7800
Functions	73.3340	25.58105	77.7800
Opposites	68.8900	21.37337	66.6700
Colours & quantity	64.4480	9.29529	66.6700
Nouns	64.4440	19.87920	66.6700
Body parts	62.2240	14.90861	55.5600
Prepositions	55.5580	7.85949	55.5600

The ELTIC semantic sub-section scores reveal that the Monolingual English participants' scores on the first four sections of the hierarchy, i.e., verbs, categories, functions and opposites are significantly greater than the rest of the sections.

Figure 3: ELTIC scores of semantic section of ME CWA



There are (at least) two mechanisms involved in normal word learning. The first involves the use of perceptual and social cues, and is most relevant for the learning of concrete nouns such as "chair" and "dog", as well as verbs such "kick" and "smile". The other involves the use of grammatical cues, and is relevant for the learning of more abstract nouns such as "story" and "game", and for verbs such as "think" and "see". There is experimental evidence that children with specific language impairment face a particular problem using syntax to learn the meanings of verbs (Lely, 1994**).** The results of a study by Grela (2002) indicated that the children with Down syndrome produced lexical verbs as frequently as their normally developing counterparts.

CWA have serious problems learning concrete nouns (Tager-Flusberg, 1996). This is perhaps because autism involves a deficit in social cognition, and hence these children find it difficult to figure out what people are referring to when they use new words to refer to entities in the world (Frith & Happe, 1994). There is a growing body of evidence from studies of normal children that word learning relies on the same systems of

inference and memory that apply to the learning of social facts more generally (Markson & Bloom, 1997).

d) English language Testing Scores – Syntax

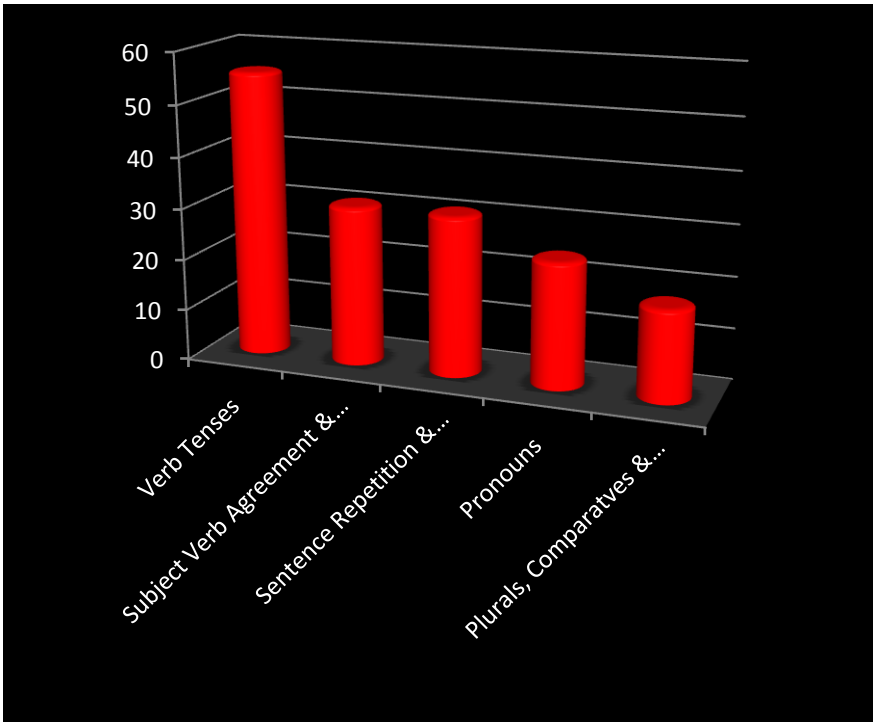
The ELTIC morphology and syntax sub-section scores reveal that scores of verb tenses were significantly greater than all of the other sections.

Table 6: ELTIC morphology and syntax scores of ME CWA

Language aspects	**ME**		
	Mean	**S.D.**	**Median**
Morphology and Syntax Subsection	32.0020	13.39041	26.6700
Verb Tenses	55.5560	15.71722	66.6700
Subject Verb Agreement & Negation	31.1100	21.37467	22.2200
Sentence Repetition & Judgement	31.1080	14.48567	33.3300
Pronouns	24.4440	27.66749	22.2200
Plural, Comparatives & Superlatives	17.7760	9.93709	11.1100

Noveck, Guelminger, Georgieff, and Labruyere (2007) confirm that adults rely on pragmatic processes to determine which of the two readings is most applicable when hearing negation sentences. This modest claim was supported by their CWA's consistent performance with respect to the comprehension questions and the multiple unambiguous control sentences (making these participants comparable to both the children and adults) and their being inconsistent solely with respect to Negation sentences in the 2-of-3 contexts (making them comparable solely to the children).

Figure 4: ELTIC morphology and syntax scores of ME CWA



Eigsti and Bennetto's (2009) study on grammaticality judgment in CWA was helpful in indicating that, grammatical judgments may be tapping into specifically linguistic, rather than general cognitive, abilities. These grammaticality judgments appeared to be related to autism symptomatology, suggesting that these language abilities may be part and parcel of the autism profile – that is, they may reflect a core deficit. Their data suggested that individuals who were later in learning to speak were less sensitive to the grammaticality of sentences. They also found that CWA showed a differentially greater impact of sentence length. Consistent with data indicating that individuals with autism have difficulty with aspects of executive functions, including working memory (Bennetto, Pennington, & Rogers, 1996), this length effect may reflect the increased demands on working memory for the longest (10–11 word) sentences. These children had difficulties using noun-related morphemes (plural –s). Similar results found in CWA with respect to production of comparative and superlative forms (Baer & Guess, 1971)

e) English language Testing Scores – Semantics v/s Syntax

A comparison of the semantics and syntax-morphology sections of ELTIC reveal significantly better semantic scores (t value = 4.863).

This can be supported by research from other language impaired population. Semantics is often an area of strength in SLI children as compared to syntax and grammatical morphology (Clahsen, 1991; Grimm, 1993). Grela (2002) supports previous findings that when compared to syntactic development, children with Down syndrome show a relative area of strength in semantics. Such a disparity between grammatical and lexical knowledge appears to hold up across both production and comprehension. There may be a relative sparing of lexical/semantic skill in children with MR. Grammatical knowledge is overall extremely limited, and it appears to lag further and further behind lexical knowledge as chronological age increases whether the task is comprehension (Bartel, Bryen, & Keehn, 1973), or production (Bliss, Allen & Walker, 1978; Ryan, 1977). Rice, Wexler, and Hershberger (1998) presented evidence that preschoolers with specific language impairments were more likely, over time, to improve deficits in vocabulary size than problems in morphosyntax.

ii. Monolingual Hindi (MH) CWA group

a) Language age of participants

The receptive and expressive language age in Hindi revealed comparable scores.

Table 7: Language age data of MH CWA

Language Age-Hindi	MH		
	Mean	**S.D.**	**Median**
Comprehension	11.0000	1.22474	11.0000
Expression	10.2000	.83666	10.0000

b) Parental Language Proficiency Scores

Parental Proficiency scores were uniform across both parents. A Pearson's Correlation analysis (2-tailed) revealed a statistically non-significant correlation between the parental proficiency and parental education and occupation scores for English Monolingual Group.

Table 8: Parental proficiency data of CWA MH group

Parental Proficiency-Hindi	MH		
	Mean	**S.D.**	**Median**
Father's Proficiency Scores	14.4000	2.30217	16.0000
Mother's Proficiency Scores	14.4000	2.30217	16.0000

Chiswick (1978) and Mincer (1974), among others, have shown that English proficiency is correlated with human capital and education. The same does not hold true for Hindi and this might explain the contrary findings.

c) Hindi language Testing Scores – Semantics

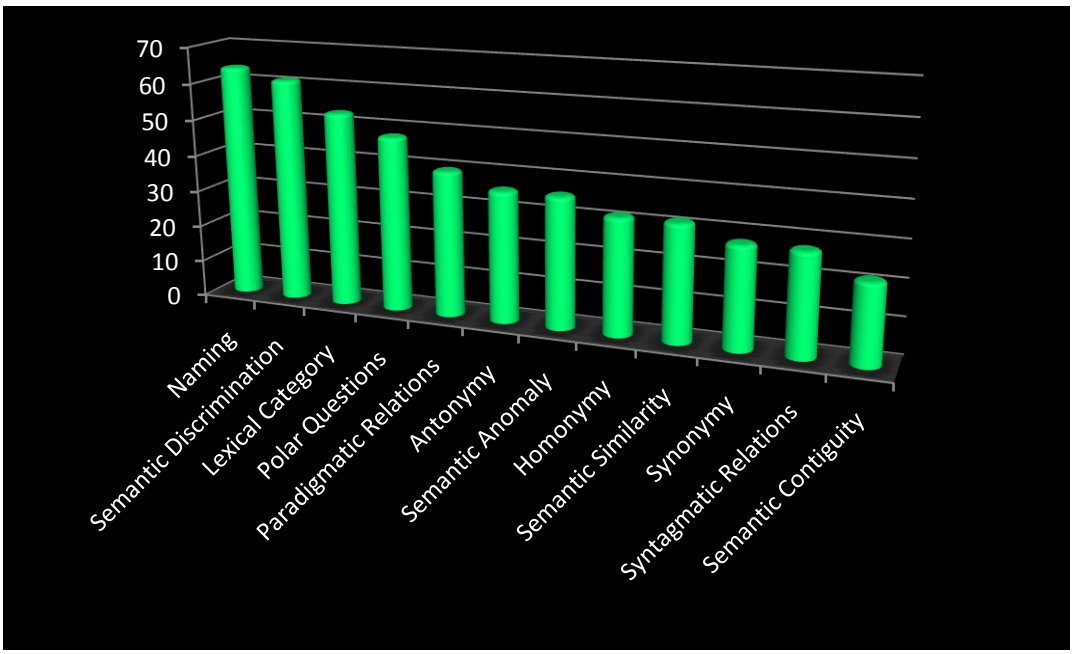
LPT was the standardized test administered. The scores are arranged in the following table in a descending hierarchical order of mean.

Table 9: LPT Semantic Section Scores of MH CWA

Language aspects	MH		
	Mean	**S.D.**	**Median**
Semantic subsection	47.6000	11.78134	51.0000
Naming	64.0000	16.73320	70.0000
Semantic Discrimination	61.3340	12.82350	66.6700
Lexical Category	53.3320	12.47442	53.3300
Polar Questions	48.0000	8.36660	50.0000
Paradigmatic Relations	40.0000	14.14214	40.0000
Antonymy	36.0000	16.73320	40.0000
Semantic Anomaly	36.0000	16.73320	40.0000
Homonymy	32.0000	10.95445	40.0000
Semantic Similarity	32.0000	10.95445	40.0000
Synonymy	28.0000	17.88854	40.0000
Syntagmatic Relations	28.0000	17.88854	40.0000
Semantic Contiguity	22.0000	14.83240	20.0000

The LPT semantic sub-section scores reveal that scores on the first three sections of the hierarchy, i.e.: Naming, Semantic Discrimination and Lexical Category are significantly greater than the rest of the sections. The sections assessing Polar Questions, Paradigmatic Relations, Antonymy and Semantic Anomaly were also found to be significantly stronger areas than the remaining sections of LPT.

Figure 5: LPT Semantic Section Scores of MH CWA



Amico, Devescovi and Bates (2001) did a study on picture naming and lexical access in Italian children and adults. They found that although children were substantially slower and less accurate than adults, child and adult performance was highly correlated. Differences were also observed in the semantic categories that were easiest for children (animals) vs. adults. Leonard, Nippold, Kail and Hale (1982) found that in language impaired children (a) pictures of objects with more frequently occurring names were named more rapidly than pictures of objects with less frequently occurring names; (b) language-impaired children named pictures less rapidly than their chronological-age peers but more rapidly than their language-age peers; and (c) the effects of frequency of occurrence on naming time were comparable for all three groups of children. Performance at picture naming depends crucially on lexical/semantic memory, which encodes the arbitrary associations between a word's phonological representation (specifying the sounds to be produced) and its meaning—the concept activated by presentation of the picture (Indefrey & Levelt 2004; Levelt et al. 1999; Levelt 2001). Evidence from autism suggests a sparing of lexical and semantic memory (Shalom, 2003).

d) Hindi language Testing Scores – Syntax

The Syntax section show a uniform distribution with significantly lower scores in the sections assessing Sentence types, Participial Constructions and Conditional Clauses.

Dalgleish (1975) has suggested that syntactic deficits in autism are related to deficits in the ability to sequence stimuli, or to learn rules for ordering stimuli. Roberts et al. (2004) compared CWA to children with SLI and found that the autism group

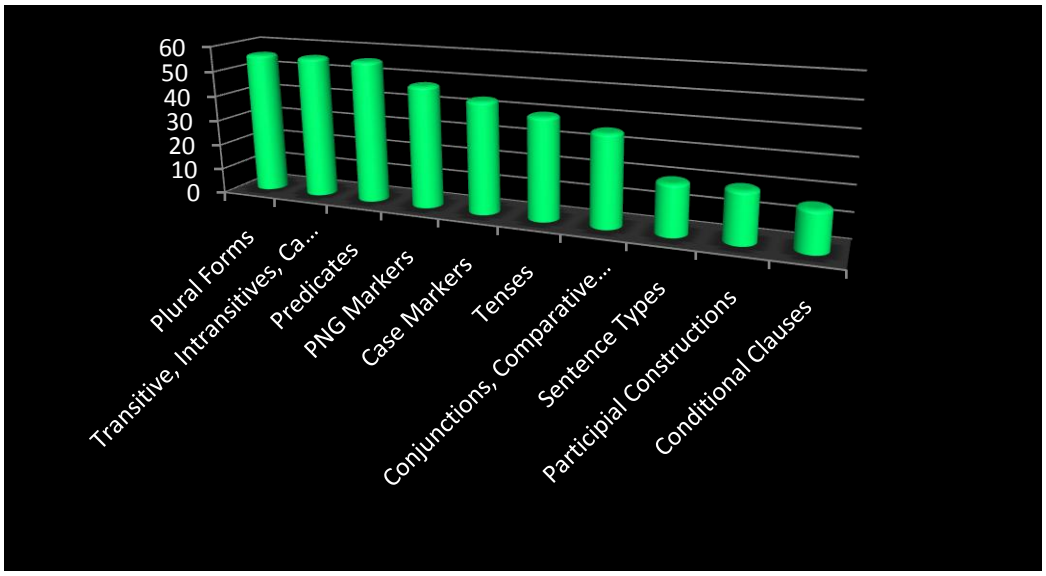
frequently omitted tense markers. The authors suggested that the data supported a specific morphology deficit within a more general language impairment in CWA.

Table 10: LPT Syntax Section Scores of MH CWA

Language aspects	**MH**		
	Mean	**S.D.**	**Median**
Syntax subsection	34.6000	9.60729	37.0000
Plural Forms	56.0000	21.90890	60.0000
Transitive, Intransitives, Causatives	56.0000	20.73644	60.0000
Predicates	56.0000	11.40175	60.0000
PNG Markers	48.0000	13.03840	50.0000
Case Markers	44.0000	20.73644	50.0000
Tenses	40.0000	14.14214	40.0000
Conjunctions, Comparative, Quotatives	36.0000	15.16575	30.0000
Sentence Types	20.0000	10.00000	20.0000
Participial Constructions	20.0000	10.00000	20.0000
Conditional Clauses	16.0000	11.40175	20.0000

A number of studies have found that the spontaneous speech of CWA is marked by a much more limited range of morphological and syntactic forms in their spontaneous speech (conjunctions, articles, verb tenses and auxiliaries) and less complex syntax (including embedded sentences, sentence complements and relative clauses) than their MA-matched peers (Bartolucci et al., 1980; Scarborough, Rescorla, Tager-Flusberg, Fowler & Sudhalter, 1991). In a study of grammatical abilities in young children with autism (mean age five years) the autism group exhibited specific delays in grammatical complexity (Eigsti et al., 2007).

Figure 6: LPT Syntax Section Scores of MH CWA



e) Hindi language Testing Scores – Semantics v/s Syntax

A comparison of the semantics and syntax sections of LPT reveal no significant differences across the two language skill areas. Studies have found that patterns in syntax are consistent with the patterns noted for other language domains in CWA (Tager-Flusberg, 1994; Tager-Flusberg et al., 1990).

iii. Bilingual Hindi-English (BA) group

a) Language age of participants

The language age data reveals comparable scores across receptive and expressive domains in both Hindi and English. The Language age scores across the two languages reveal that the participants were balanced bilinguals.

Table 11: Language age data of BA CWA

Language Age	English			Hindi		
	Mean	S.D.	Median	Mean	S.D.	Median
Comprehension	10.4	1.3416	11.00	10.40	1.3416	11.0000
Expression	9.8	.83666	10.00	9.80	.83666	10.000

b) Parental Language Proficiency Scores

The parental proficiency scores indicate that both the parents were Hindi Dominant bilinguals.

Table 12: Parental Proficiency Data of BA CWA

Parental Proficiency	English			Hindi		
	Mean	S.D.	Median	Mean	S.D.	Median
Father's Proficiency Scores	12.0	2.5495	12.00	15.80	.44721	16.0000
Mother's Proficiency Scores	9.20	3.6331	9.00	16.00	000	16.0000

Pearson, Fernandez, Lewedeg, and Oller (1997) had concluded that children need to be exposed to the minority language 40-60% of the time in order to become a balanced bilingual. It is clear from the literature that in most of the case studies in which a child becomes an active bilingual, both parents understood (at a minimum) the minority language. Several case studies indicate that monolingual dominant parents had successfully raised balanced bilingual children (Kamada, 1997; Arnberg, 1987; Cunningham-Andersson & Andersson, 2004)

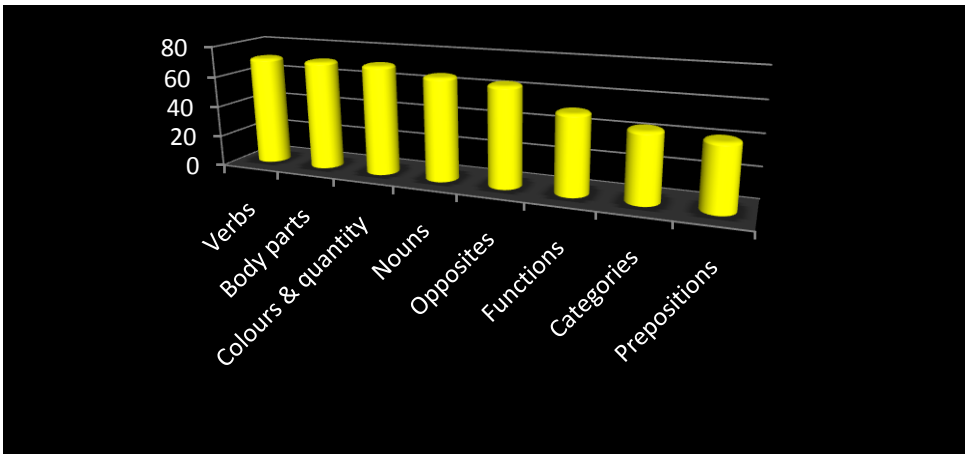
c) English language Testing Scores – Semantics

The ELTIC semantic sub-section scores reveal that the Preposition section scored significantly lower that all the other sections.

Table 13: ELTIC Scores of Semantic Section of BA CWA

Language aspect	BA		
	Mean	S.D.	Median
Semantic subsection	60.2760	17.61059	58.3300
Verbs	71.1140	16.84915	66.6700
Body parts	71.1120	26.75995	77.7800
Colours & quantity	71.1120	16.85311	77.7800
Nouns	66.6660	26.05952	55.5600
Opposites	64.4460	25.33886	66.6700
Functions	51.1100	23.04277	44.4400
Categories	44.4440	24.84719	44.4400
Prepositions	42.2220	21.37493	44.4400

Figure 7: ELTIC Scores of Semantic Section of BA CWA



The difficulty that individuals with autism and related disorders tend to have with prepositions could be a result of deficits in cognitive processing and/or auditory delays. The only conclusion that can be put forward with any certainty is that CWA seem to differ from other disadvantaged groups and preschool children on ability to integrate and process information from various sense modalities (Hermelin & O'Connor, 1970).

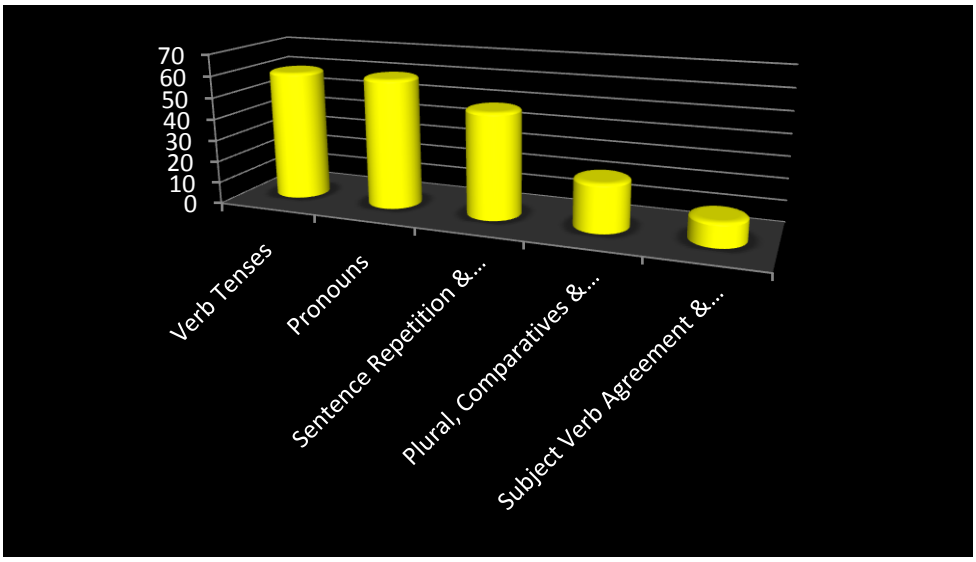
d) English language Testing Scores – Syntax

The ELTIC morphology and syntax sub-section scores reveal significantly lesser scores of Subject Verb Agreement and Negation than all of the other sections.

Table 14: ELTIC Morphology and Syntax scores of BA CWA

Language aspect	**BA**		
	Mean	**S.D.**	**Median**
Syntax subsection	39.5548	29.62182	42.2200
Verb Tenses	60.0020	36.51529	66.6700
Pronouns	60.0000	54.77226	100.0000
Sentence Repetition & Judgement	48.8900	21.66225	55.5600
Plural, Comparatives & Superlatives	22.2220	43.74456	.0000
Subject Verb Agreement & Negation	11.1100	19.24308	.0000

Figure 8: ELTIC Morphology and Syntax scores of BA CWA



Under the cross-linguistic influence hypothesis, which proposes that facilitation/acceleration, delay, or transfer could emerge in bilingual language acquisition (Paradis & Genesee, 1995; Genesee & Paradis, 1997). Transfer can be expected as the incorporation of the negation structure of one language into the other (e.g. from Hindi to

English). Furthermore, it is also possible that the burden of acquiring the two distinct negation systems of English and Hindi could slow down the acquisition process of negation in bilingual children, causing them to be behind monolingual children in their overall progress in grammatical development.

e) English language Testing Scores – Semantics v/s Syntax

A comparison of the semantics and syntax-morphology sections of ELTIC reveal no significantly differences between the scores. Studies have found that patterns in syntax may be consistent with the patterns noted for other language domains in CWA (Tager-Flusberg, 1994; Tager-Flusberg et al., 1990).

f) Hindi language Testing Scores – Semantics

The LPT semantic sub-section scores reveal that the scores of the sections assessing Semantic Anomaly, Homonymy, Lexical Category, Semantic Discrimination and Semantic Contiguity were found to be significantly weaker areas than the remaining sections of LPT.

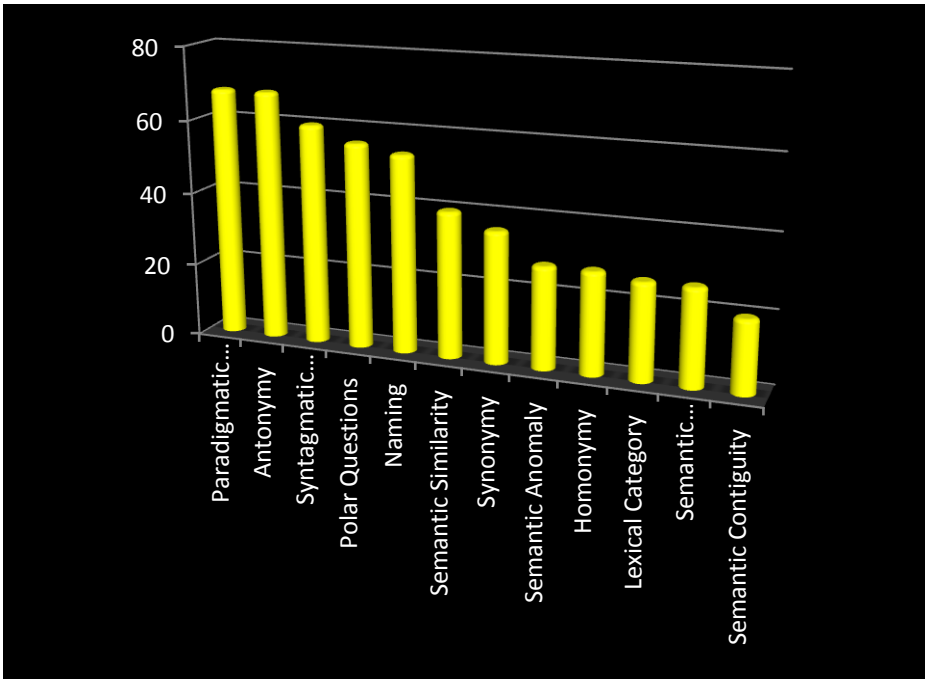
Lexical items do not always share the same lexical-semantic frequency cross-linguistically or cross-culturally (Sanfeliu & Fernandez, 1996; von Studnitz & Green, 1997). This fact has implications for the scaling properties of the ELTIC. Items on the test based on the original monolingual English speaking normative data used in test construction. With respect to the linguistic variability inherent in a bilingual–monolingual comparison, the expectation that bilinguals will behave like monolinguals is highly

suspect on both practical and theoretical grounds (Grosjean, 1992, 1997; Gutierrez-Clellen, 1996; Hernandez, Bates, & Avila, 1994, 1996; Paradis, 1997; Reyes, 1995). The poor scores in naming can be explained by a combination of cultural, linguistic, and experiential variables.

Table 15: LPT Semantic Section Scores of BA CWA

Language aspect	BA		
	Mean	S.D.	Median
Semantics subsection	41.8000	12.91124	36.0000
Paradigmatic Relations	68.0000	22.80351	60.0000
Antonymy	68.0000	10.95445	60.0000
Syntagmatic Relations	60.0000	24.49490	60.0000
Polar Questions	56.0000	16.73320	60.0000
Naming	54.0000	17.10263	50.0000
Semantic Similarity	40.0000	28.28427	20.0000
Synonymy	36.0000	16.73320	40.0000
Semantic Anomaly	28.0000	10.95445	20.0000
Homonymy	28.0000	17.88854	40.0000
Lexical Category	26.6660	22.60801	20.0000
Semantic Discrimination	26.6680	29.81126	6.6700
Semantic Contiguity	20.0000	14.14214	20.0000

Figure 9: LPT Semantic Section Scores of BA CWA



g) Hindi language Testing Scores – Syntax

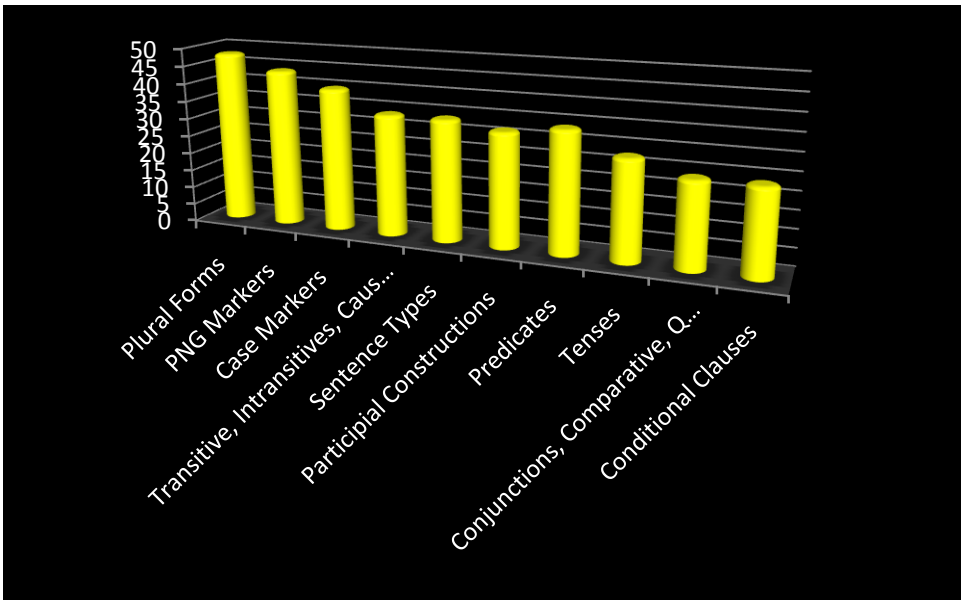
The LPT syntactic sub-section scores reveal a uniform distribution across all the subsections.

Dehaene et al. (1997) and Kim, Relkin, Lee, and Hirsch (1997) suggest that when the second language is not completely mastered or when it is learned late in life differences result from syntactic but not from phonetic nor from semantic processing (Wartenburger et al., 2003). Indirect support for this idea comes from electrophysiological (Weber-Fox & Neville, 1996) and behavioural (Birdsong, 1999) evidence that the use of grammar is much more adversely affected by later ages of exposure than is the use of lexical items, and that the neural systems mediating grammatical processing are more vulnerable to changes in early experience than are those mediating semantic processing

Table 16: LPT Syntax Section Scores of BA CWA

Language aspect	**BA**		
	Mean	**S.D.**	**Median**
Syntax subsection	29.8000	10.94075	
Plural Forms	48.0000	30.33150	40.0000
PNG Markers	44.0000	18.16590	50.0000
Case Markers	40.0000	18.70829	30.0000
Transitive, Intransitives, Causatives	34.0000	16.73320	30.0000
Sentence Types	34.0000	11.40175	30.0000
Participial Constructions	32.0000	13.03840	30.0000
Predicates	34.0000	15.16575	30.0000
Tenses	28.0000	10.95445	20.0000
Conjunctions, Comparative, Quotatives	24.0000	11.40175	20.0000
Conditional Clauses	24.0000	5.47723	20.0000

Figure 10: LPT Syntax Section Scores of BA CWA



h) Hindi language Testing Scores – Semantics v/s Syntax

A comparison of the semantics and syntax sections of LPT reveal no significant differences across the two language skill areas. Wartenburger et al. (2003) used fMRI to investigate the effects of age of acquisition and proficiency level on grammatical and semantic tasks. They found that while semantic tasks were largely dependent on proficiency level; age of acquisition mainly affected the grammatical processes.

i) Hindi v/s English Language Testing Scores

A comparison across the semantic and syntax areas of Hindi and English language of the balanced bilingual participants in this study revealed no statistically significant differences across their semantic and syntactic abilities in both the languages.

In the past, when comparing monolingual and bilingual performance, researchers mainly considered only one language of the bilingual (Ben Zeev, 1977b; Bialystok, 1988; Doyle et al., 1978). However, there is considerable evidence of an overlap in the lexicon of bilingual children's two languages, differing from child to child (Umbel, Pearson, Fernandez, & Oller, 1992). This overlap is attributed to the child acquiring each language in different contexts resulting in some areas of complementary knowledge across the two languages (Saunders, 1982). It is thus, crucial to examine both languages of bilingual children and account for this overlap in order to assess the language ability of bilinguals' with validity

IV.4 Across groups comparison:

i. Monolingual Hindi (MH) v/s Bilingual Hindi-English (BA) group

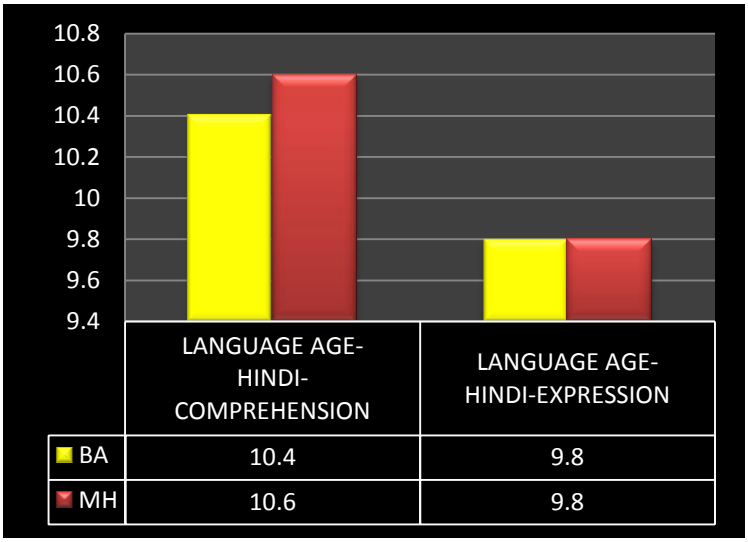
a) Language age of participants

Table 17: Language Age Data of BA & MH CWA

Language Age-Hindi	**BA**			**MH**			**Z**	**Asymp. Sig. (2-Tailed)**
	Mean	S.D.	Median	Mean	S.D.	Median		
Comprehension	10.4	1.34	11.00	11.00	1.224	11	-.775	.439
Expression	9.80	.8366	10.00	10.20	.83666	10	-.775	.439

A comparative analysis of the two groups across language age in Hindi showed no statistically significant differences.

Figure 11: Language Age Data of BA & MH CWA



b) Parental Language Proficiency Scores

A comparative analysis of the two groups across parental proficiency scores in Hindi showed no statistically significant differences among these variables.

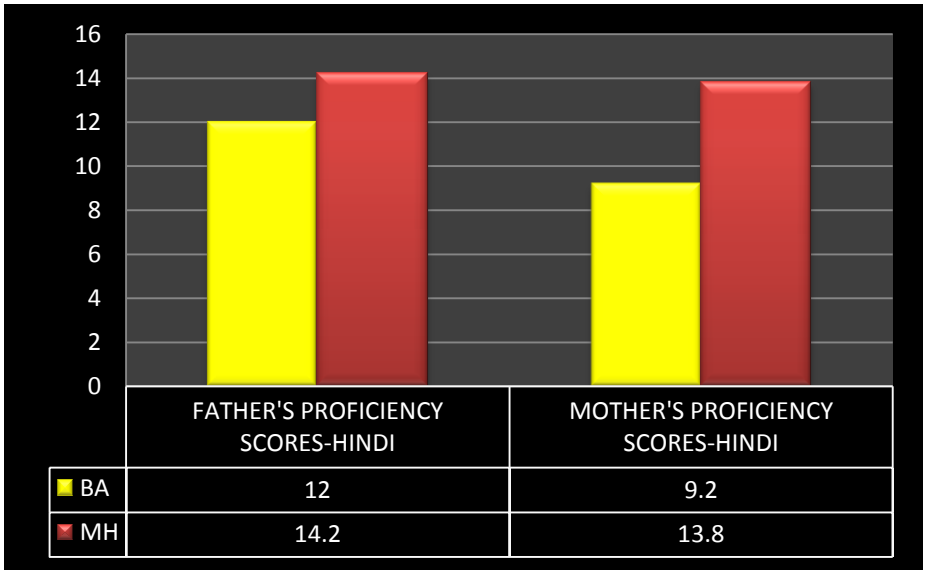
The most influential factor in bilingual language acquisition is the languages spoken by parents and by others with whom the child comes into contact (Romaine, 1989). This language exposure is called comprehensible input. In a 1984 edition of *Bilingual Education Paper Series,* Carolyn Kessler claimed that "children develop faster in the language which is used most in their environment" (Kessler, 1996), which may or may not reflect the language of the surrounding community. However, bilingual acquisition can also be affected by the amount of input, the separation of input, and the stability of input, as well as attitudes about bilingualism.

Table 18: Parental Proficiency Data of BA & MH CWA

Parental Proficiency Hindi	BA			MH			Z	Asymp. Sig. (2-Tailed)
	Mean	S.D.	Median	Mean	S.D.	Median		
Father's Proficiency Scores	15.80	.4472	16.00	14.40	2.3021	16	-.900	368
Mother's Proficiency Scores	16.00	.0000	16.00	14.40	2.3021	16	-1.491	.136

Thus, the groups were matched on parental proficiency scores.

Figure 12: Parental Proficiency Data of BA & MH CWA



c) Hindi language Testing Scores – Semantics

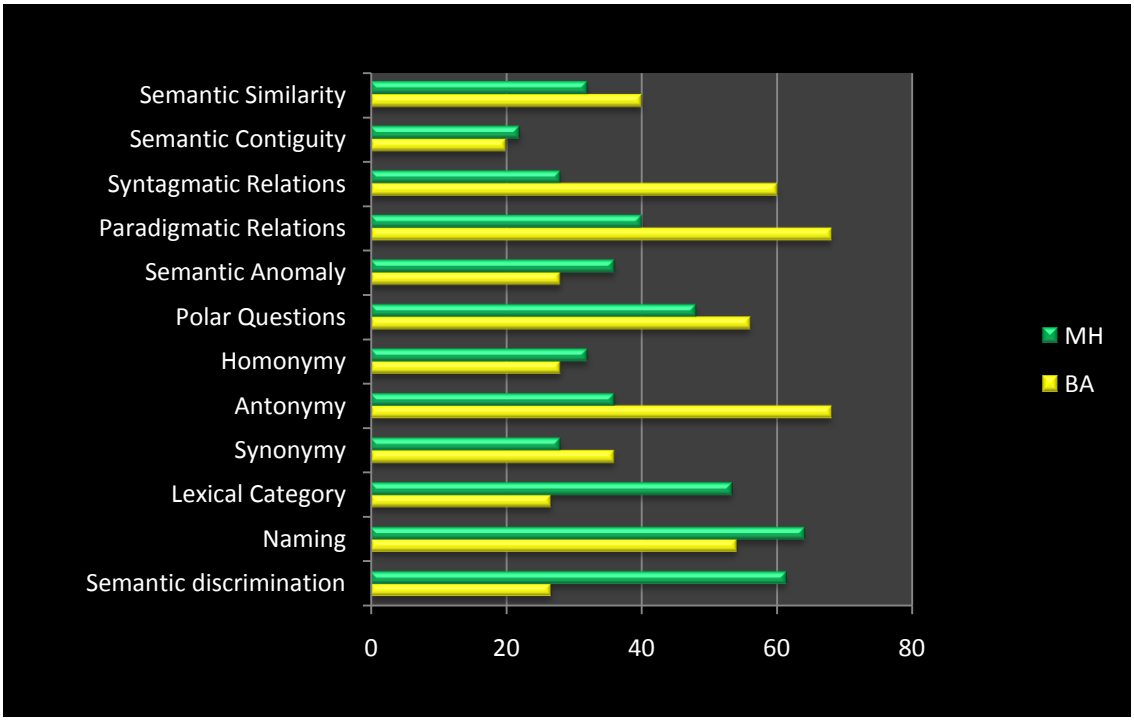
A comparative analysis was done using Mann Whitney across the Semantic subsection of LPT. The semantic section reveals significant greater scores of the bilingual participants in the sub sections of Lexical Category, Antonymy, Paradigmatic Relations and Syntagmatic Relations.

Table 19: LPT Semantic Section of BA & MH CWA

LPT Semantics	BA			MH			Z	Asymp. Sig. (2-Tailed)
	Mean	S.D.	Median	Mean	S.D.	Median		
	41.8	12.91	36	47.6	11.78	51.00	-.522	.802
Semantic Discrimination	26.66	29.81	6.67	61.33	12.82	66.67	-1.60	.109
Naming	54.0	17.10	50	64.0	16.73	70.00	-.841	.401
Lexical Category	26.66	22.60	20.00	53.33	12.47	53.33	-2.00	.045
Synonymy	36.0	16.73	40.00	28.0	17.88	40.00	-.565	.572
Antonymy	68.0	10.95	60.00	36.0	16.73	40.00	-2.39	.017
Homonymy	28.0	17.88	40.000	32.0	10.95	40.00	-.239	811
Polar Questions	56.0	16.73	60.00	48.0	8.36	50.00	-.767	.443
Semantic Anomaly	28.0	10.95	20.00	36.0	16.73	40.00	-.808	.419
Paradigmatic Relations	68.0	22.80	60.00	40.0	14.14	40.00	-1.96	.049
Syntagmatic Relations	60.0	24.49	60.00	28.0	17.88	40.00	-2.12	.034
Semantic Contiguity	20.0	14.14	20.00	22.0	14.83	20.00	-.337	.736
Semantic Similarity	40.0	28.28	20.00	32.0	10.95	40.00	- .11	.910

The above findings can be corroborated with a vast resource of literature. Children learning two languages simultaneously or sequentially must store and retrieve a larger number of words, because vocabularies are distributed across two linguistic systems (Hashimoto, McGregor, & Graham, 2007). Recent research comparing bilingual and monolinguals on their ability to learn new words consistently suggests that bilinguals tested in their native language outperform monolingual adults on word-learning tasks (Sheng, Bedore, & Peña, 2008). Kaushanskaya and Marian (2009) found that bilingualism facilitates word-learning performance, although the precise mechanisms of this advantage remain unknown. It appears that word-learning performance in bilingual children may be less contingent on latent vocabulary knowledge than in monolingual children (Kan & Kohnert, 2008; Wilkinson & Mazzitelli, 2003).

Figure 13: LPT Semantic scores of BA & MH CWA



d) Hindi language Testing Scores – Syntax

A comparative analysis was done using Mann Whitney across the Syntax subsection of LPT. The syntax section comparisons across the BA and MH group reveals significantly poorer performance of the bilingual children in the sub section of Predicates only.

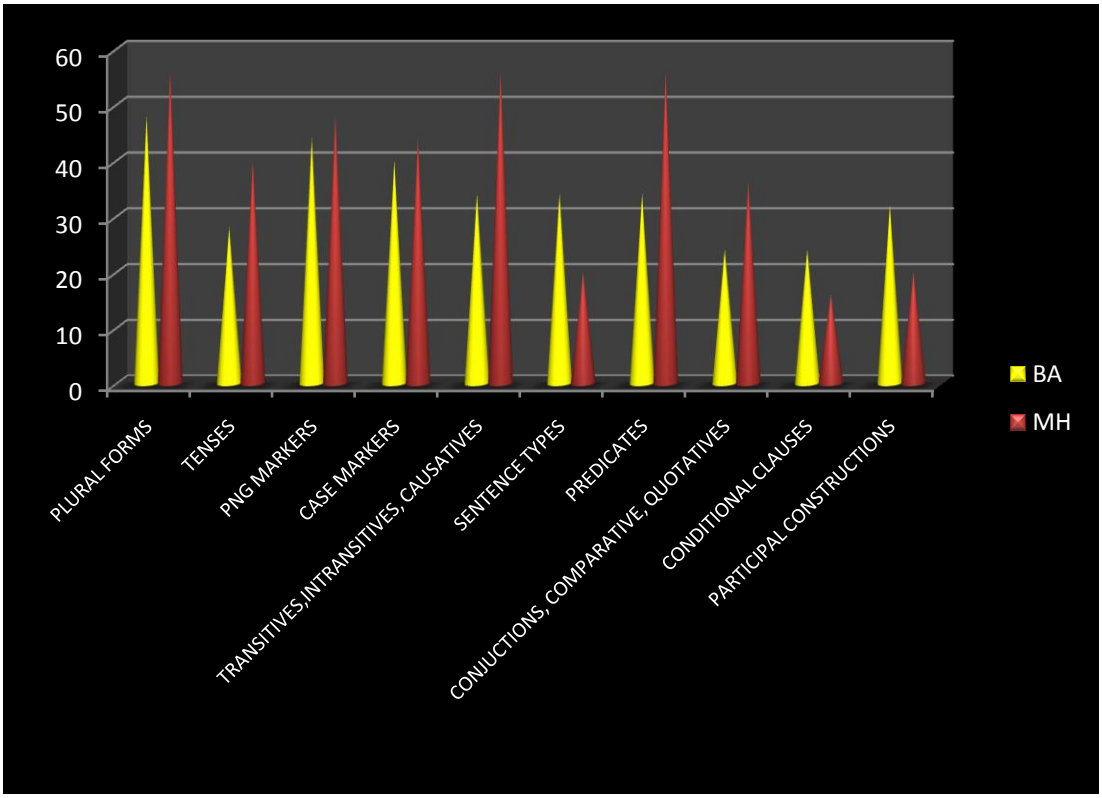
Grosjean (1999) had concluded that often one of the bilingual's languages is mastered only to a certain level of proficiency which surfaces as the person's inter-language (also known as within-language) deviations. These include overgeneralizations (regularization of irregular verbs), simplifications (omission of plurals, tense markers, functions words, simplifying the syntax, etc.) as well as hypercorrections and the avoidance of certain words and expressions. Between and within-language deviations are clearly observable when bilinguals are in a monolingual language mode but they,

although are sometimes quite apparent, usually do not interfere with communication. This is because bilinguals develop their languages to the level of fluency required by the environment. Deviations in bilingual speech are thus of the same nature as slips of the tongue and hesitation phenomena. They are present but do not usually affect communication.

Table 20: LPT Syntax Section of BA & MH CWA

LPT Syntax	**BA**			**MH**			**Z**	**Asymp. Sig. (2-Tailed)**
	Mean	S.D.	Median	Mean	S.D.	Median		
	29.8	10.94	25.0	34.6	9.6072	37	-.52	.599
Plural Forms	48	30.33	40.0	56.00	21.908	60	-.32	.745
Tenses	28	10.95	20.0	40.00	14.142	40	-1.3	.166
PNG Markers	44	18.16	50.0	48.00	13.038	50	-.32	.745
Case Markers	40	18.70	30.0	44.00	20.736	50	-.32	.746
Transitives, Intransitives, Causatives	34	16.73	30.0	56.00	20.736	60	-1.61	.107
Sentence Types	34	11.401	30.00	20.00	10.000	20	-1.73	.083
Predicates	34	15.165	30.00	56.00	11.401	60	-2.02	.043
Conjunctions, Comparative, Quotatives	24	11.401	20.00	36.00	15.165	30	-1.28	.197
Conditional Clauses	24	5.4772	20.00	16.00	11.401	20	-1.24	.214
Participial Constructions	32	13.038	30.00	20.00	10.000	20	-1.39	.163

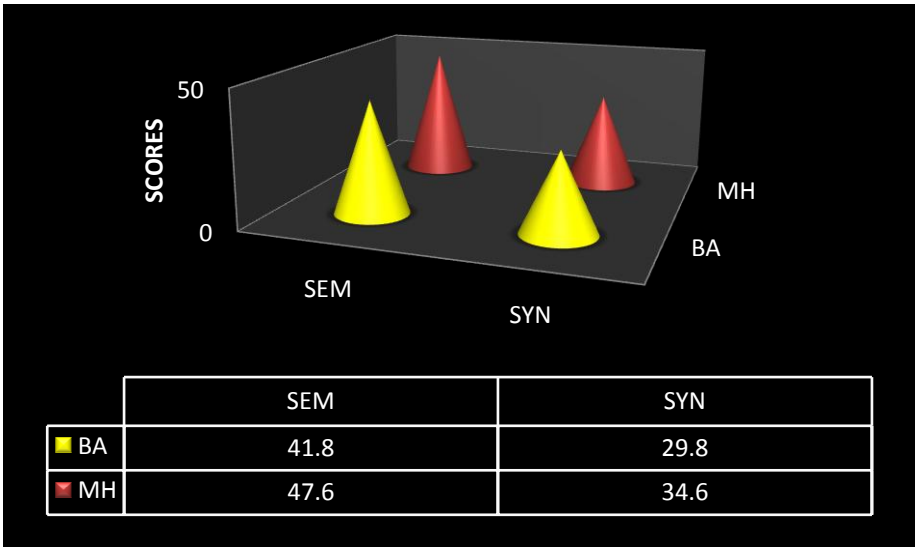
Figure 14: LPT Syntax scores of BA & MH CWA



e) Hindi Language Testing Scores – Semantics v/s Syntax

The overall data reveals no statistically significant differences between the bilingual and monolingual groups in Hindi language across both sections of Semantics and Syntax.

Figure 15: LPT Semantic scores v/s Syntax scores of BA & MH CWA



	SEM	SYN
BA	41.8	29.8
MH	47.6	34.6

A large group of studies have results that suggest bilingual children are simply comparable to their monolingual peers for levels of semantic and syntactic development. Morton and Harper (2007) results showed that bilingual children did not show an advantage, despite their mastery of two languages. Their results convey that controlling for outside factors of socio-economic status (SES) and ethnicity can extenuate the bilingual advantage. In a study which focused on the lexical-semantic organization in bilingual children (Sheng, McGregor, & Marian, 2006), similar neutralized results were found.

The researchers found that bilingual children's semantic abilities were relatively unaffected by the exposure and use of a second language, thus putting them at an equal level with their monolingual peers. Pena et al (2002) found that Spanish-English children named similar numbers of words for each language in a category task and generated different specific items for each language. The patterns of bilingual children's responses for semantic tasks have appeared to fall along the same continuum as that of monolingual children (Bedore et al, 2005). In a series of studies on expressive vocabulary size, Pearson and her colleagues showed that Spanish/English-speaking preschoolers scored comparable to monolingual children in vocabulary size when measures were used that combined vocabulary knowledge in both of their languages (Pearson et al, 1993). A similar finding was shown for German/English bilingual children in a study done by Junker and Stockman (2002).

ii. Monolingual English (ME) v/s Bilingual Hindi-English (BA) group

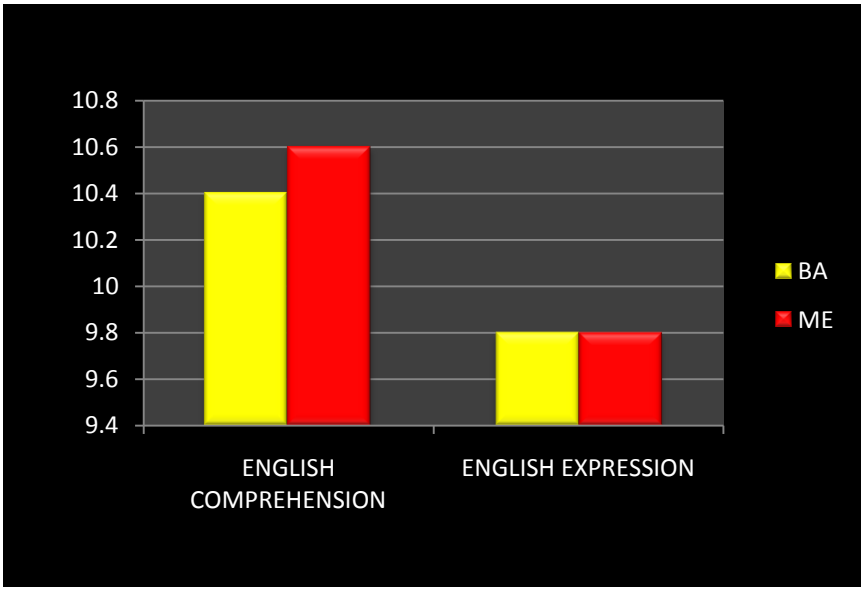
a) Language age of participants

Table 21: Language Age Data of BA & ME CWA

Language Age English	BA			ME			Z	Asymp. Sig. (2-Tailed)
	Mean	S.D.	Median	Mean	S.D.	Median		
Comprehension	10.4	1.3416	11	10.600	1.1401	11.000	-.21	.827
Expression	9.80	.83666	10	9.8000	.83666	10.000	.00	1.000

The bilingual and monolingual participants were matched in language ages in both the receptive and expressive domains.

Figure 16: Language Age Data of BA & ME CWA



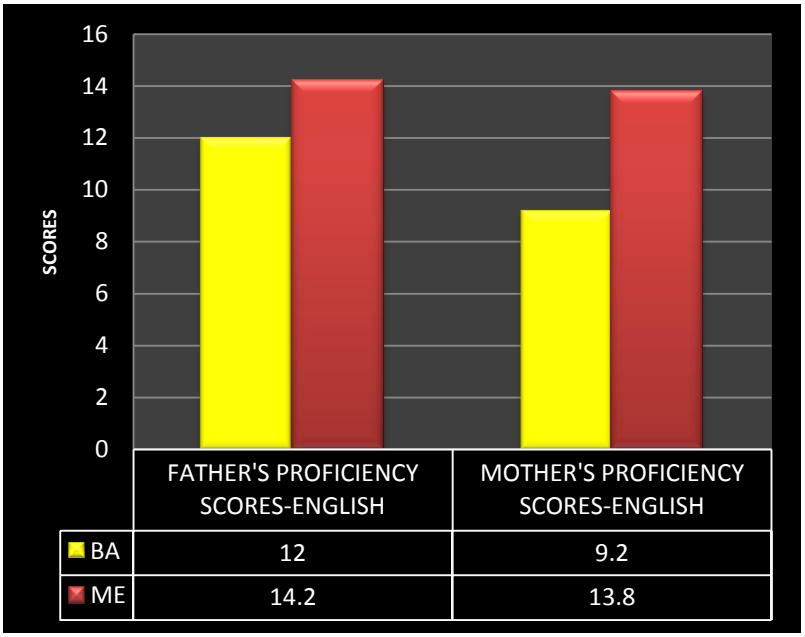
b) Parental Language Proficiency Scores

Table 22: Parental Proficiency Data of BA & ME CWA

Parental Proficiency English	BA			ME			Z	Asymp. Sig. (2-Tailed)
	Mean	S.D.	Median	Mean	S.D.	Median		
Father's Proficiency Scores	12	2.5495	12	14.200	2.4899	16.000	-1.2	.228
Mother's Proficiency Scores	9.2	3.6331	9	13.800	3.0331	16.000	-2.2	.026

A comparative analysis reveals differences in parents' proficiency scores across the bilingual and monolingual groups, with parents' of monolingual English participants scoring better.

Figure 17: Parental Proficiency Data of BA V/S ME



The descriptive analysis reveals differences in parents' proficiency scores across the bilingual and monolingual groups, with parents' of monolingual English participants scoring better.

c) English language Testing Scores – Semantics

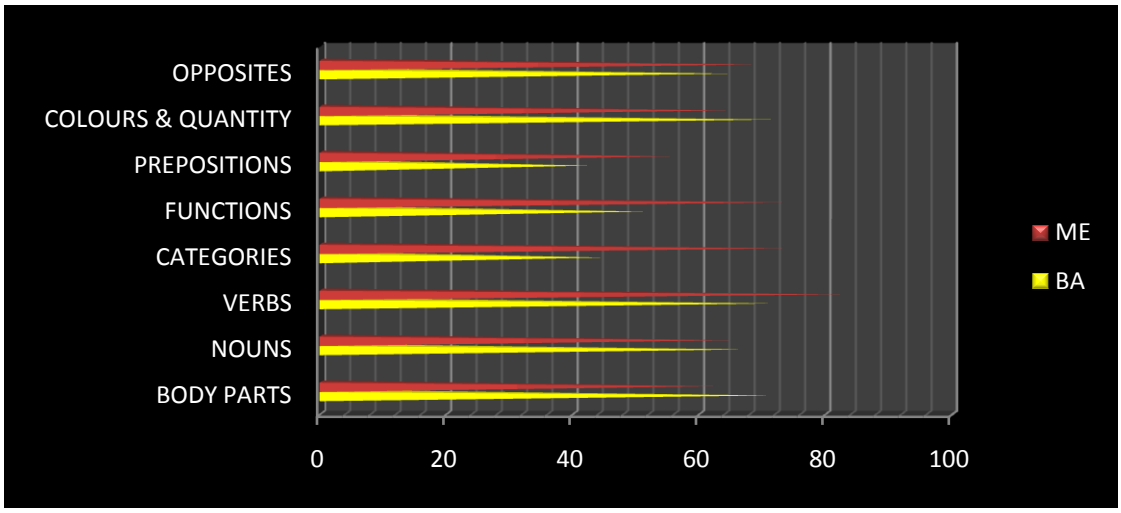
The following tables contain the relative difference in scores across the Bilingual and Monolingual participants on the English language tests in the areas of semantics

Table 23: ELTIC Semantic Scores of BA & ME CWA

ELTIC Semantics	**BA**			**ME**			**Z**	**Asymp. Sig. (2-Tailed)**
	Mean	S.D.	Median	Mean	S.D.	Median		
	60.276	17.6105	58.330	68.056	9.7737	63.89	-.94	.347
Verbs	71.11	16.849	66.67	82.22	12.66	77.78	-1.0	.288
Categories	44.444	24.8471	44.440	73.334	18.59	77.78	-1.7	.073
Functions	51.110	23.0427	44.440	73.334	25.58	77.78	-1.2	.203
Opposites	64.446	25.3388	66.670	68.890	21.37	66.67	.00	1.000
Colours & Quantity	71.112	16.8531	77.780	64.448	9.295	66.67	-.99	.334
Nouns	66.66	26.059	55.56	64.44	19.87	66.67	-.21	.829
Body Parts	71.112	26.7599	77.780	62.224	14.908	55.56	-.75	.454
Prepositions	42.222	21.3749	44.440	55.558	7.859	55.56	-1.0	.278

The statistical analysis (Wilcoxson Test) revealed that the bilingual and monolingual participants scored equally well on all the tasks of the test.

Figure 18: ELTIC Semantic scores of BA & ME CWA



d) English language Testing Scores – Syntax

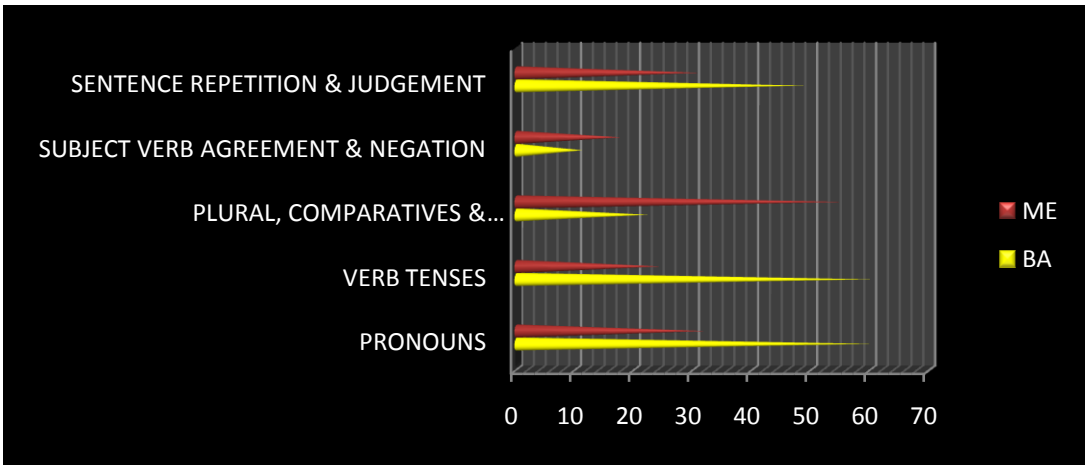
The following table contains the relative difference in scores across the Bilingual and Monolingual participants on the English language tests in the area of morpho-syntax.

The statistical analysis (Wilcoxson Test) revealed that the bilingual and monolingual participants scored equally well on all the tasks of the test.

Table 24: ELTIC Syntax Scores of BA & ME CWA

ELTIC Syntax	**BA**			**ME**			**Z**	**Asymp Sig.(2-Tailed)**
	Mean	S.D.	Median	Mean	S.D.	Median		
	39.55	29.62	42.220	32.00	13.39041	26.6700	-.105	.917
Verb Tenses	60.00	36.515	66.67	55.55	15.717	66.67	-.706	.480
Subject Verb Agreement & Negation	11.11	19.24	.00	31.11	21.3746	22.22	-1.70	.089
Sentence Repetition & Judgement	48.89	21.66	55.56	31.10	14.4856	33.33	-1.37	.189
Pronouns	60.00	54.772	100.00	24.44	27.667	22.22	-.983	.328
Plural, Comparative & Superlatives	22.2	43.74	.00	17.77	9.93709	11.11	-1.31	.190

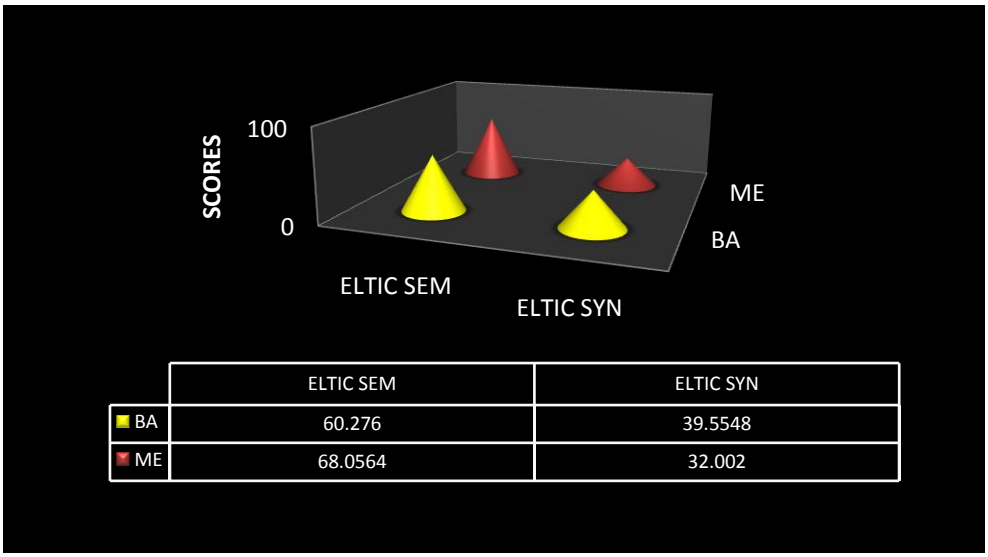
Figure 19: ELTIC Syntax scores of BA & ME CWA



e) English language Testing Scores – Semantics v/s Syntax

The semantic and syntax subsections of ELTIC reveal that bilingual and monolingual participants scored equally well.

Figure 20: ELTIC Semantic scores v/s Syntax scores of BA & ME CWA



Research has provided evidence to state that bilinguals approach or meet monolingual levels of performance toward the end of elementary school (Gathercole, 2007; Gathercole & Thomas, 2005; Marchman et al., 2004; Nicoladis et al., 2007; Oller & Eilers, 2002; Thordardottir et al., 2006). French-English bilinguals performed the same as monolinguals in their dominant input language for the past tense (Paradis, et al., 2008) and performed closer to monolinguals on grammaticality judgement than production tasks, regardless of dominant input language. French-English bilingual children with SLI did not lag behind their monolingual peers with SLI in use of verb morphology or pronouns (Paradis et al., 2003; Paradis, 2007). Thus, bilingual acquisition is sensitive to input variation, but variation in input does not always result in "delay" for school age bilinguals and variation in input may not affect all linguistic domains equally.

IV.5 Analysis of Semantics Findings With Regard to the Language Data of the Participants

All language and communication domains were not equally affected in CWA. Whereas impairments are consistently observed in ''pragmatics'', ''lexical'' abilities involving individual words are generally spared (Walenski et al., 2006).

Multiple lines of evidence from healthy and impaired populations, including both adults and children, have linked lexical knowledge to declarative memory and its underlying temporal lobe structures (Friederici 2002; Indefrey & Levelt 2004; Levelt et al. 1999; Levelt 2001; Ullman 2001, 2004; Ullman et al. 1997). In autism it has been predicted that aspects of declarative memory, in particular lexical and semantic memory, may not only be spared, but perhaps even enhanced (Walenski et al. 2006). *This may*

explain the Monolingual Hindi participants' better scores in the sections of Naming, Semantic Discrimination and Lexical Category as well as in the sections of Body parts, Colours, quantity and Nouns in ELTIC in bilingual Hindi English participants.

Naming is one of the first linguistic functions mastered by children (Bates, Camaioni, & Volterra, 1975). The underlying cognitive process of naming a picture has been articulated by Johnson, Paivio, and Clark (1996) in three broad stages. The first step includes the identification of the object as a member of a particular class of objects; the second consists in name activation of the object from among thousands of words known by users; and finally, in the last step, articulatory commands for a specific response must be prepared and executed. These sophisticated operations must occur rapidly and efficiently (Johnson et al., 1996). *The complex nature of the process might explain the findings of deficits in sections requiring naming of Colours, quantity, Nouns and Body parts in the Monolingual English group*.

Semantic judgement tasks require metalinguistic abilities and have been used widely as a measure of language impairment or language change, in a variety of populations. While the task requires metalinguistic judgment, and thus meta-cognitive skills, only a minimal verbal response (yes or no) is required. Children with language impairment generally have poor metalinguistic skills, and are at a considerable disadvantage during the middle primary school years. The findings by **Doherty and Perner (1998)** confirm that metalinguistic awareness deficits are related to the theory of mind, i.e., the ability to understand belief relates to the development of understanding representations. *This explains the poor scores on tasks assessing Semantic Anomaly,*

Homonymy, Semantic Discrimination and Semantic Contiguity of bilingual participants on LPT.

IV.6 Analysis of Syntax Findings With Regard to Language Data of the Participants

Syntax and morphology might present as 'islands' of specific impairment in autism – a 'delay within a delay' (Roberts, Rice & Tager-Flusberg, 2004) – within the more generally impaired domain of language. Several studies of grammatical development have found that syntactic deficits are typical of ASD. In a large, well-characterized sample of 300 children with ASD and 262 children with developmental language disorders between the ages of two and five years, 63% were judged to have syntactic impairments (Rapin & Dunn, 2003).

Rapin & Dunn (2003) concluded that the CWA fell into two subtypes: (1) a mixed receptive/expressive subtype (impaired phonology and syntax, with impoverished vocabulary); or (2) a fluent semantic–pragmatic subtype (poor pragmatic and discourse skills, with possible but not necessarily in phonological and syntactic impairments). They concluded that, contrary to many comparable studies of school-age children with ASD, impairments in phonology and syntax are important contributors to communication deficits in ASD. *This holds true in light of the current findings of better semantic than syntactic scores in case of the Monolingual English group.*

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Bilingual children are exposed to a much wider range of grammatical possibilities, given the input from two different languages. In addition, they can be exposed to structural possibilities which are not available to monolingual children. Due to the

phenomenon of Cross-linguistic influence (Paradis & Genesee, 1995), the two languages in a bilingual context might not be processed in isolation from each other and it could emerge as facilitation/acceleration, delay or transfer (Paradis & Genesee 1995). Thus, *an overall profile of poor syntax across both the tests of the bilingual groups of participants may be accounted for.*

But a number of researchers have also concluded that syntactic deficits are not central to the communicative impairments in ASD. For example, a study of the order of acquisition of grammatical morphemes suggested that while acquisition may be delayed, the developmental progression itself is similar to that in typical development (Howlin, 1984). An important longitudinal study found few differences between ten children with autism compared to mental age (MA)-matched children with Down syndrome or with typical development in the grammatical complexity of their expressive spontaneous language (Tager-Flusberg, Calkins, Nolin, Baumberger, Anderson & Chadwick-Dias, 1990). *All except one comparison across the semantic-syntactic areas revealed a uniformity of performance in the participants on both Hindi and English tests.*

IV.7 Relative Findings With Regard to Language Data across the Bilingual and Monolingual Participants

Syntax and semantics are undoubtedly interconnected in language. Gawlitsek-Maidwald and Tracey (1996) argued that semantic knowledge in both of a bilingual's languages may actually cause boosts in productivity across syntactic systems. When tested in both languages, preschool bilinguals do not seem to demonstrate memory or input limitations in their receptive or productive knowledge of linguistic labels related to

concepts. The stage most studies investigate is when there is a neutralization of the differences between the bilingual and monolingual populations, as all groups of children will gradually gain a necessary core of linguistic information (Gathercole, 2007). A bilingual child catches up to his or her monolingual peers with time in which the two languages are bonded together by means of the child's cognitive and semantic processing (Gathercole, 2007). *This explains the equivocal scores on semantic-syntactic comparisons across the bilinguals and monolinguals.*

Many studies have shown that children from bilingual backgrounds tend to score lower on standardized vocabulary tests in comparison to monolingual children (Duran, 1988; O'Brien, 1992; Pefia & Quinn, 1997; Saville-Troike, 1991; Valdes & Figueroa, 1993). On tests of vocabulary bilinguals frequently seem to perform at lower levels than monolinguals (Ben Zeev, 1977; Doyle, Champagne, & Segalowitz, 1978). The reason for this seems to be that bilingual children have to learn two different labels for everything, which reduces the frequency of a particular word in either language (Ben Zeev, 1977b). This makes the task of acquiring, sorting, and differentiating vocabulary and meaning in two languages much more difficult when compared to the monolingual child's task in one language (Doyle et al., 1978). Bilinguals may indeed have temporarily smaller vocabularies in each language because their "developing cognitive capacities impose limitations on the breadth of information that can be stored in accessible memory" (Bialystok, 2001). The lower scores may also be related to lower frequencies of words bilinguals are exposed to in either language, as suggested by Ben Zeev (1977). *Thus, the marginally (statistically insignificant) lower scores of the bilingual group may be explained.*

Investigation of the research on vocabulary development in bilinguals provides evidence of their use of a unique bilingual profile, and is consistent with the notion of an amalgamated rather than a "two monolinguals in one" system. Bilinguals may demonstrate a higher level of vocabulary knowledge, because they have access to and participate in communication events in two language communities as opposed to their monolingual counterparts. A number of studies in the area of vocabulary acquisition illustrate that in early development, bilinguals learn unique words across their two languages, rather than learning two words (one in each language) for each concept. Peña, Bedore, and Zlatic (2002) found that in a category generation task, bilingual children (ages 4-6 years) produced more unique words (referred to as a *conceptual score*), in comparison to doublet (overlapped) words. When monolinguals and bilinguals are compared on measures of vocabulary, differences become more apparent. Pearson, Fernández, and Oller (1993) found that when they compared the total number of unique words they produced across the two languages, their scores were more comparable to the monolingual norms. It has been suggested that when the vocabulary scores of tests in both languages of the bilingual child are combined, their vocabulary equals or exceeds that of monolingual children (Bialystok, 1988; Doyle et al., 1978; Genesee & Nicoladis, 1995). *This bilingual advantage is reflected in the superior semantic section scores reveal of the bilingual participants.*

The bilingual participants had higher scores than the monolingual participants. This may be related to the fact that both groups received their schooling and therapy in English, and therefore both groups were receiving a large amount of English input. It is possible that the children in the bilingual group received a better quality of therapy and that this contributed to the difference in language scores. Although the total number of

therapy hours did not differ between groups, the bilinguals received significantly more speech-language therapy and significantly less behavioural therapy than the monolingual group. It is also possible that having language input in two languages provided the bilingual children with a stronger language foundation. A large body of research has shown that bilingual children have better cognitive and linguistic abilities compared to their monolingual peers, including higher levels of metalinguistic awareness of words (Ben-Zeev, 1977; Rosenblum & Pinker, 1983).

The Bilingual Advantage

The bilingual advantage hypothesis is a working theory (Bialystok, 2001; Oller, Eilers, Urbano, & Cobo-Lewis, 1997) about the relationship between bilingualism and aspects of cognitive development. According to this hypothesis, early awareness that different words can label the same concept may drive early development of semantic relations in the lexicon of the bilingual child (Cummins, 2001; Vygotsky, 1962). Hence, bilingual children may have a more developed semantic network than monolingual age-mates.

It is well established that the representational systems for both languages of a well practiced bilingual are active and potentially available when that individual is speaking in either language. The mechanism recruited to resolve the potential conflict from the two language systems and select appropriately from the target language is some domain general aspect of executive control. The necessity to use this conflict management system continuously enhances its function, with consequent benefits to control in both language and non-language tasks.

Bilingual advantage theorists speculate that bilingual children posses an early awareness that different words can label the same concept. They hypothesize that it is this awareness that can drive advanced early development of their semantic network and linguistic flexibility (Bialystok, 2001; Oilers et al, 1997; Ricciardelli, 1992; Cummins, 2001). Included in this theory is the idea that the addition of a second language imposes demands on bilingual children to exercise added selective attention and cognitive flexibility. In order to speak in one language, they must suppress the other language to allow for fluency and to avoid confusion and crossover between the two. Because of this necessary skill, bilingual children might be more efficient at exercising control in comparison to their monolingual peers (Morton & Harper, 2007). Bialystok and Martin (2004) suggested that the semantic structure of a bilingual person might be more hierarchical than that of a monolingual person, predicting that words exist at a higher or more abstract level than the concrete connection of simply a word and its meaning. Thus early childhood bilingualism may alter development of control. This increased attention and focus may enhance cognitive skills and serve as an added benefit to bilingual CWA.

CHAPTER V

SUMMARY AND CONCLUSIONS

The term bilingualism refers to individuals who use two or more languages or dialects in their everyday lives (Grosjean, 2010). Developing bilinguals are children who receive regular input in two or more languages during the most dynamic period of communication development-somewhere between birth and adolescence. In India, children are routinely exposed to two or more languages from birth or the child begins learning a second/third language when he/she enters the school system. Thus, research at the interface of bilingual development and child language disorders is relevant to a significant number of children.

Autism is a neurodevelopmental disorder characterized by primary impairments in social interactions, communication, and repetitive and stereotyped behaviours (American Psychiatric Association, 2000). Bilingual children with Autism, have a general language deficiency that manifests in every language. With regard to the relationship between language impairments in Autism and bilingualism, most evidence to date, leans towards a positive attitude toward dual language learning for children with Autism who are in a supportive context for bilingualism. There is a dearth of Indian studies tying language impairment and bilingualism to support or rationalize the clinicians' recommendation to stop speaking the home language to children with Autism. With the evidence-based practice becoming the norm, there is a need for more research on the bilingual population with Autism so that therapy of the best quality can be provided to these children.

The present study aimed at examining the similarities and differences in linguistic characteristics between bilingual and monolingual children with autism.

The study was done on fifteen children (8 males and 7 females) in the age range of 4-10 years, with a diagnosis of mild-moderate severity of autism as rated by the Childhood Autism Rating Scale (Schopler, Reichler, & Renner, 1986), and the Diagnostic and Statistical Manual for Mental Disorders–Fourth Edition (American Psychiatric Association, 1994) by a Speech Language Pathologist along with a Clinical Psychologist. Participants had normal range of IQ, and no associated visual or hearing deficit.

The language abilities of five bilingual children with autism (BA) who had experienced ongoing, intensive, prolonged exposure to two languages with at least one language being English and the other Hindi were compared to the language abilities of five predominantly English-speaking monolingual children with autism (ME) and five predominantly Hindi-speaking monolingual children with autism (MH). The participants used English or both Hindi-English productively at least at the one word level. All bilingual participants had been exposed to both Hindi and English since at least 15 months of age.

The language ability, or proficiency, in developing bilinguals was quantified or qualified in two ways: by considering the bilingual child's abilities in English and Hindi as compared to monolingual age peers of English and Hindi respectively, and by describing bilingual language abilities using within speaker comparisons, i.e., the child's ability in English is compared to his or her ability in the other known language (Hindi).

Participants were matched on socio-economic status based on the NIMH SES Checklist (Venkatesan, 2009) and their language age as assessed by the Language Assessment Checklist (Swapna, Geetha, Prema & Jayaram, 2010). This study was carried out in two phases:

Phase I consisted of collecting the social-demographic, educational and language proficiency by using a questionnaire developed for the purpose.

In *Phase II*, standardized tests, semantics and syntax sections of the Linguistic Profile Test - Hindi (Karanth, Pandit, & Gandhi, 1986) and English Language Testing for Indian Children (ELTIC) by Bhuvaneshwari (2009), were administered in order to provide a portrait of the child's language abilities across a pre-specified set of language skills (semantics, morphology and syntax).

The results of the study were analyzed and discussed within and across groups. The within group analysis revealed that both monolingual and bilingual groups showed similar patterns of language deficits, on the language sample measures of English and Hindi semantics and morphosyntax.

- All the groups were matched across age.
- BA and ME language groups were matched across parent education and occupation, i.e., Socioeconomic Status of the participants, but the MH group had a relatively lower socio-economic status.
- The ME group scored significantly greater on the sections of verbs, categories, functions, opposites and verb tenses, with significantly better semantic scores.
- The MH group had significantly higher scores in Naming, Semantic Discrimination and Lexical Category while significantly lower scores in the sections assessing

Sentence types, Participial Constructions and Conditional Clauses., while no significant differences were found across semantics and syntax.

- The BA group had balanced bilingual participants with Hindi Dominant parents. On the Hindi test, they scored significantly lower in the sections assessing Preposition, Subject Verb Agreement and Negation. On the English language test Semantic Anomaly, Homonymy, Lexical Category, Semantic Discrimination and Semantic Contiguity was most difficult, but there were no significant differences across the two language skill areas. A comparison across the semantic and syntax areas of Hindi and English language of the balanced bilingual participants in this study revealed no statistically significant differences across their semantic and syntactic abilities in both the languages.
- The BA v/s ME group analysis revealed a bilingual advantage in the sub sections of Lexical Category, Antonymy, Paradigmatic Relations and Syntagmatic Relations and a bilingual disadvantage in the sub section of Predicates only.
- The BA v/s MH group scores were analyzed to reveal that the bilingual and monolingual participants scored equally well on all the tasks (semantics and syntax) of both the Hindi and English language tests.
- The findings reveal better semantic than syntactic scores in case of the Monolingual English group, while an overall profile of poor syntax was found across both the tests of the bilingual groups of participants may be accounted for.

The absence of a pattern of difference in semantics and morphosyntax between mono and bilingual children provides evidence that the introduction of a second language seems to have no detrimental effect on the development of the stronger language. Thus, it indicates that the number of concepts understood by bilingual children is comparable to

that of their monolingual peers. There was considerable diversity in the second-language abilities of the bilingual children; however, there was no evidence that bilingualism had a negative effect on language development. It was concluded that bilingualism had neither a positive or negative effect on language abilities in children with autism, i.e., if given similar opportunities, children with Autism can indeed learn two languages. This study also provides additional support for the argument that parents' language practices are particularly influential in the case of children with autism.

Bilingualism was not found to affect the language skills of CWA more than it affected children in general. The language profiles of the CWA were comparable regardless of whether they were bilingual or monolingual. In this respect, the results parallel the findings regarding language and developmental impairment in the studies by Paradis et al. (2003) and Kay-Raining Bird et al. (2005). The present study also adds to earlier findings by using a systematic, comprehensive set of language test to study the combined effects of bilingualism and language impairment. Assessing language comprehensively is important because it is possible that effects emerge on some types of tasks but not others (Ottem & Jakobsen 2004). The present study did not find significant evidence of a selective interaction of bilingualism and language impairment on any type of task. The current research further supports the position that bilingualism does not negatively affect language development, and expands this line of research to the ASD population.

This study suggests that CWA have the potential to be bilingual, and that speaking Hindi in the home and English at school and in therapy should not be considered a disadvantage to the language development of CWA. The information resulting from this

study should influence the recommendations of speech-language pathologists, behaviour interventionists, infant development consultants, supported child development consultants, general practitioners, paediatricians, and any other early child development professionals. Families need not change their home language in order to help with the language development of their child with ASD. A suspicion or diagnosis of language delay in a child raised bilingually should not result in a recommendation to eliminate either language. Support for two languages does not necessarily mean treating both in the same way at the same time, but that goals be consistent with the child's previous experiences and current and future needs (Kohnert, 2007).

Thus, some of the important findings of this study are:

- It provides a clearer view of the developmental advantages from which bilinguals benefit.
- These results also allow greater confidence in claiming that simultaneous bilingualism is advantageous to a child's developing mind.
- Being bilingual does not harm language or conceptual development
- Balanced bilingualism, especially, brings benefits to bilingual children by allowing them access to two language communities, a richer linguistic environment, which positively affects their vocabulary and cognitive development.
- Bilingualism is not detrimental to the dominant language development of CWA, at least when they experience intensive, ongoing, and consistent exposure to both languages.

- There was also some evidence for an advantage of bilingualism. It is possible that metalinguistic advantages of bilingualism might exist for the BA group (Kleeck, 1994).
- The findings strongly suggest that the bilingual CWA are developing language skills at least as well as their monolingual counterparts.

V.1 LIMITATIONS

- Single-language measures ignore the fact that bilingual children may choose to use different words depending on the setting, interlocutor, and context (Iglesias, 2001) as well as their cultural experiences (Peña, 2001). These difficulties in assessment are further compounded when tests are used with children for whom they were not designed, as was in this case.

- There are multiple outside variables to consider that may be the true causes for any positive, negative or neutral results. These factors include general language differences, the interrelationship of culture/language, socioeconomic status, as well as the age of participants. Foremost, one must consider that languages are all very different. Syntactically, the placements of language components are dissimilar. Furthermore, the complexity of languages varies greatly. Not all languages are acquired by an individual in the same sequence or timing, therefore, the structure of the languages being learned play a significant role in the development of a bilingual individual (Gathercole, 2007).

- Another variable that may be playing a larger role than it appears is that language is always interconnected with culture. Certain cultures may place emphasis on names or specific aspects of syntax. A research study or task may be given in both languages, yet still present unseen favouritism to the underlying structure of one language or another, there by leading to false or abated results for certain bilingual populations.

- Another influential environmental factor that may have had a role in the current findings is the role that socioeconomic status (SES) plays in effecting language development for children. The lack of exposure to language will affect the acquisition of vocabulary and overall language comprehension (Pearson et al, 1997). When measuring differences between bilingual and monolingual children, one has to consider how much equality exists for groups of participants in regards to their SES. This consideration was lost in case of the Monolingual Hindi group of participants.

- In the present study, monolingual children spoke only English/Hindi at home and in school. The possibility cannot be excluded that monolingual children could have had some knowledge of the other language. However, it might be argued that having some knowledge of another language is not comparable with being bilingual in the sense of using two languages on a daily basis. Few people have absolutely no knowledge of any other language than their primary language. Thus, such a strict definition of monolingualism does not correspond to the monolingualism relatively typical of today's society.

- The different amount of speech-language therapy and behavioural therapy between the two groups may also be seen as a limitation. Although there is the possibility that more speech-language therapy resulted in better speech-language skills, this is a

variable that needs to be controlled before concluding that the bilingual children had better language skills than the monolingual children.

- Finally, the sample size of the current study is small and it is possible that the sample may not be fully representative of the bilingual English-Hindi community in India. Caution is also warranted as the small sample size may have masked significant differences.

- Anecdotal evidence tells us that there is a notion of perceived shame around having a CWA in the Asian community. Supporting this notion, several SLPs and behaviour consultants reported to have clients who met the participant recruitment criteria but were not interested in participating because they did not want to disclose their child's diagnosis. The results should be interpreted with caution.

V.2 IMPLICATIONS

- Understanding the benefits balanced bilinguals enjoy as a result of their exposure to two languages can assist early educators in developing appropriate curriculum for these children, supporting development in both languages.
- Additionally, educators and clinicians who determine the school readiness of bilingual children should be aware of the importance of testing both languages of bilinguals in order to assess true vocabulary knowledge of these children.
- The data of this study is valuable to evaluate more exactly the relative strengths in Hindi and English of the bilingual children.

- Administration of at least some test in both languages was helpful to verify that monolingual children did not have any knowledge of the other language. Fully evaluating both of a bilingual child's languages helped to provide a better estimate of his or her semantic-syntactic knowledge, thereby accounting for similarities and differences between languages (Pearson, Fernández, & Oller, 1993).

V.3 Directions for Future Research:

- Future studies should focus on making tests as unbiased and impartial between both languages as possible (Pena, Bedore, & Rappazzo, 2003).

- Studies in other languages are needed to unravel whether the present findings are uniquely characteristic for Hindi-English bilingual children. There was no significant indication that bilingualism would aggravate the difficulties in CWA. This finding adds weight to the conclusion by Paradis et al. (2003) that 'there is no reason not to raise children with language impairment bilingually'.

- Determining levels of bilingualism in greater detail could provide more information regarding the possibility that some children may be more successful than others in becoming bilingual.

- Further research needs to be undertaken before this broad conclusion can be substantiated, however. In particular, it would be important to compare bilingual children with autism to normally developing bilingual children. Such a comparison group would be needed to understand whether a linguistic structure that seems unique

in bilinguals with autism is due to the combination of bilingual language learning and autism or simply due to bilingual language learning.

- An interesting direction for future research would be to determine if bilingual children with Autism show evidence of enhanced executive functions like their peers, and whether these enhanced functions are associated with children's language outcomes, for morphosyntax in particular. In other words, it would be interesting to see research addressing the question of whether bilingualism can be viewed as a kind of "therapy" for Autism.

- As well, metalinguistic ability was not tested directly in the present study, so its impact for bilingual CWA awaits further study. Another interesting direction for future research would be to investigate the possibility of facilitative cross-linguistic interactions in the morphosyntactic development of bilingual children, with and without Autism

- Future studies should focus on identifying the predictors of success. While awaiting more data, professionals and families should proceed with caution and careful attention to the individual needs of each family and child.

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APPENDIX

Parent inventory/ Questionnaire

Date:

Informant: Father/Mother/Other (specify)

A. Child Information

a. Name:

b. Age:

c. Gender: M/F

d. Mother tongue:

e. Other languages:

f. Education: List the medium of instruction in different grades (beginning with preschool and continuing to the present)

Grade	Medium of instruction	Performance		
		Poor	Average	Good

g. Associated problems: Nil/Articulation/Language/HI/LD/MR/Others (specify)

h. Child resides with: Mother/Father/ Both /Other (specify)

i. Number of Siblings: Nil/1/2/3/>3

B. Parental Information

a. Age range in years:

	20-30	30-40	40-50	50-60
Father				
Mother				

b. Education:

Relation	PG & Above (Post Graduate Diplomas, Doctorates, Professional Qualifications)	Graduates (Graduates with Diploma)	Under-Graduates (PUC, Intermediate, Plus Two Level Courses, etc)	Middle & High School (Passed or Failed Tenth Class, SSC, SSLC, etc)	Illiterate (Unread or cannot read or write)
Father					
Mother					

c. Occupation:

	Professional (Doctors, Engineers, Chartered or Cos Accountants, IT Professional, Architects, Audiologists, Group A Jobs, Large Scale business with Turnover above INR 50 lac p.a.	Semi-Professional (Technicians, Skilled Workers, Business with turnover between INR 10-20 lacs per annum, Group B Jobs, etc	Technical (Technicians, Skilled Workers, Business with turn-over between INR 5-10 lacs per annum, Group C Jobs, etc	Semi-skilled (Assistants to Techies, Farmers, Field Workers, Group D Staff, auto)	Unskilled (Part time Jobbers, Manual Workers, House Maids, porters, etc)
Father					
Mother					

d. Family Income (p.a.):

	>= 75 lacs	25-50 lacs	10-20 lacs	1-5 lacs	<1 lac
Father					
Mother					
Others					

e. Property

>1 crore	50-100 lacs	10-50 lacs	<10 lacs	Nil

f. Socio Economic Status (SES) **:** SES1/SES2/SES3

II. Brief family history

a. Family Status: Nuclear/Joint/Extended

b. Total number of persons in the family: <3/4-6/7-8/>8

c. Consanguinity: -ve /+ve (I degree/II degree/III degree)

d. Family history of associated problems: Yes/No

III. Language History:

a. Language predominantly spoken at home: Hindi/English/Both equally/Others

b. Languages used:

Languages	Understand	Speak	Read	Write
Child				
Father				
Mother				

c. Language exposure:

Languages	Home	School	Neighbourhood
Hindi			
English			
Others (specify)			

d. Tick the appropriate one:

Languages	Proficiency/ Capacity	0-25%	25-50%	50-75%	75-100%
Hindi	Understand				
	Speak				
	Read				
	Write				
English	Understand				
	Speak				
	Read				
	Write				
Others (specify)	Understand				
	Speak				
	Read				
	Write				

e. Age of acquisition:

Languages	Since birth	1-2 yrs	2-3 yrs	3-5 yrs	>5yrs
Hindi					
English					
Others (specify)					

f. Language development

Languages	Absent	Delayed	Average	Above average
Hindi				
English				
Others (specify)				

g. Language Growth:

Languages	First word	two-word phrases	complete sentences of four or more
Hindi			
English			
Others (specify)			

h. Language Preferences for communication:

Languages	Hindi	English	Both equally	Others (specify)
Child				
Parents				

i. Decision of language for therapy taken by: Parents/Teacher/Speech Language Pathologists /Others (Specify)

Special services received by the child	Duration (in mths)						Language Used			
	0	< 1	1-3	3-6	6-12	>12	Hindi	English	Both	Others (specify)
Speech Language Therapy										
Occupational Therapy										
Physio Therapy										
Special Education										
Behaviour Therapy										
Others (Specify)										