

LANGUAGE ABILITIES IN BILINGUAL CHILDREN WITH AUTISM (CWA)

Madhuban Sen¹ & ²Geetha Y.V

Abstract

Bilingual children with Autism (CWA) have a general language deficiency that manifests in every language and evidence is towards a positive attitude toward dual language learning. This study aims at examining the similarities and differences in linguistic characteristics between bilingual and monolingual CWA in the age range of 4-10 years, with a diagnosis of mild-moderate severity of autism and normal range of IQ with no associated deficits. The participants used language productively at least at the one word level and had been exposed to the languages since at least 15 months of age. Participants were matched based on socio-economic status on the NIMH SES Checklist (Venkatesan, 2009) and their language age on the Language Assessment Checklist (Swapna, Geetha, Prema & Jayaram, 2010). Phase I had 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. Both monolingual and bilingual CWA showed similar patterns of language deficits, within and among themselves. It was concluded that bilingualism had neither a positive nor negative effect on language abilities in CWA. This study supports the argument that parents' language practices are particularly influential in the case of CWA and that families should be encouraged to continue speaking their home-language, to ensure a high-quality social and language input during his/her language development.

Key words: Bilingualism, autism, language, socioeconomic status

Language is defined as a dynamical system that emerges within a social context through interactions of cognitive, neurobiological and environmental subsystems. 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 & 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.

Although all bilingual children, by definition, acquire two languages, there are differences in their exposure patterns to both languages and in the social contexts in which they are acquiring 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 acquire both languages at home before the age of 3 years (often from birth) and sequential bilinguals have the first language (L1) fairly established (although not completely acquired) before they

begin to acquire the second language (L2). Bilingual children tend to be more proficient or dominant in one of their languages. The dominant language is usually the language for which they have received the greatest amount of exposure (Genesee et al., 2004).

Literature says that bilingualism is associated with more effective cognitive processing than monolingualism. The assumption is that the constant management of two competing languages enhances "executive functions" (Bialystok, 2001). Bilingual cortical organization (Kim, Relkin, Lee, & Hirsch, 1997; Perani, Paulesu, Galles, Dupoux, Dehaene, Bettinardi, 1998; Vaid & Hull, 2002; Marian, Spivey, & Hirsch, 2003), lexical processing (e.g., Chapnik-Smith, 1997; Kroll & de Groot, 1997; Chen, 1992), and phonological and orthographic processing (e.g., Macnamara & Kushnir, 1971; Doctor & Klein, 1992; Grainger, 1993; 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.

Research has shown that bilingual children usually exhibit the same rates and stages of development as monolingual children with respect to phonology and grammar (Oller & Eilers, 2002; Genesee et al., 2004). With regard to vocabulary, bilinguals tend to have smaller vocabularies in each of their languages compared

¹Speech Language Pathologist Grade-I, All India Institute of Speech & Hearing (AIISH), Mysore-06, E-mail: sen.madhuban@gmail.com, & ²Prof. in Speech Sciences, AIISH, Mysore-06, geethayelimeli@gmail.com

to monolingual children (Pearson, Fernandez, & Oller, 1993; Genesee et al., 2004). Chengappa & Ray (2007) compared typically developing monolingual and bilingual children's performance in Kannada, which revealed a better performance by monolinguals but no significant difference in performance.

With regard to the relationship between language impairments and bilingualism, several studies have looked specifically at the bilingual language development of children with Down Syndrome and children with Specific Language Impairment (Thordardottir, Weismer, & Smith, 1997; Kay-Raining Bird, Trudeau, Thordardottir, Sutton, & Thorpe, 2005). A comparative research on the language abilities of mono and bilingual children with Down Syndrome by Kay-Raining Bird et al., in 2005 indicated similar lexical profiles. Feltmate and Kay-Raining Bird (2008) studied the vocabulary and morphosyntactic skills of bilingual children with Down Syndrome and found no consistent effect of bilingualism. The general finding is that, if given similar opportunities, children with language impairment can indeed acquire two languages. They may acquire language at a slower pace and perhaps to a lesser extent than their typically developing bilingual peers, but they do acquire language to the same level as their monolingual peers with language learning difficulties (Kohnert, 2007).

Autism is a neurodevelopmental disorder characterized by primary impairments in social interactions, communication, and repetitive and stereotyped behaviors (American Psychiatric Association, 2000). Approximately 20% of individuals with Autism function within the normal range on IQ tests (American Psychiatric Association, 1994; Cohen & Volkmar, 1997).

Petersen's (2003) investigation of the lexical production skills of bilingual English-Chinese and monolingual English preschool-age children with autism revealed that bilingual and monolingual participants had equivalent English production vocabularies, and that bilinguals had larger conceptual production vocabularies than monolinguals. Bilingual participants had a larger number of verbs in their conceptual production vocabularies, and were found to have higher vocabulary comprehension scores and higher language scores. There were no significant differences in the size of production vocabularies and vocabulary comprehension 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 children with autism.

Bilingual families of CWA are often advised by child development professionals to speak only one language to their child (Kremer-Sadlik, 2005; Besnard, 2008; Leadbitter, Hudry, & Temple, 2009). Many parents and professionals believe that bilingual exposure negatively impacts language development, especially for children with autism (Hambly & Fombonne, 2009). While research has explored the impact of bilingualism and multilingualism on the language development of children with language impairments (Thordardottir, Ellis Weismer, & Smith, 1997; Kay-Raining Bird, et al., 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 behavior of children with autism.

Research that has examined the effect of bilingualism on children with language impairment has found that (a) 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, & 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.

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.

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

Objectives of the study: The current study is aimed to address the following 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?

Method

Subjects: The present study was designed to compare language among three groups of CWA: Hindi monolingual (MH), English monolingual (ME), and Hindi-English bilingual (BA). All the children were in the age range of 4-10 years (6 males and 4 females). 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 had a mild-moderate severity of autistic symptoms on the Childhood Autism Rating Scale (Schopler, Reichler, & Renner, 1986) and an average range of IQ, as assessed by a certified Clinical Psychologist and it was ensured that they had no associated visual or hearing deficit. Monolingual participants (ME & MH) were from predominantly English/Hindi-speaking homes with exposure to the respective language since at least 15 months of age. Bilingual participants (BA) had been exposed to two languages, with one language being Hindi and the other being

English, since at least 15 months of age. The participants used English or both Hindi-English productively at least at the one word level. Participants of both the groups 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). Duration of therapeutic intervention for all the participants ranged from six months to two years.

Procedure: 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 (attached as appendix).

Phase II consisted of administering the 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).

Results and Discussion

Sample size of the study consisted of fifteen CWA (8 males and 7 females).

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	Standard deviation
Bilingual Hindi-English (BA) group	5	3 Males 2 Females	7.80	1.30
Monolingual English (ME) group	5	3 Males 2 Females	6.48	2.35
Monolingual Hindi (MH) group	5	2 Males 3 Females	6.48	1.92

A comparison of the means of the participant groups revealed no significant differences between the chronological age of the participants across the three groups. Thus the groups were matched across age.

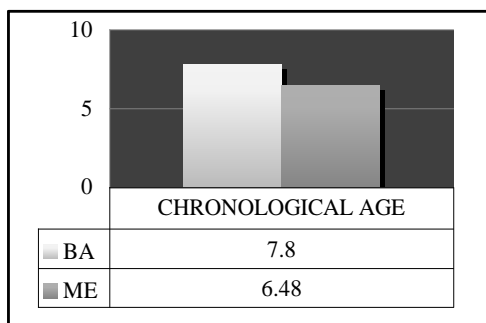


Figure 1: Chronological age of participants across the two groups

The three language groups (BA, ME & MH) were compared with respect to parent education scores and parent occupation scores.

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	1.09	4.20	0.44	13	1.58
ME	8.60	1.51	5.40	2.07	13	1.58
MH	6.00	1.22	3.20	0.44	11.2	1.30

*Standard deviation

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. Studies have shown that most children in low-income families have parents without any college education and higher education leads to higher earnings (Maag & Farrar, 2002). A comparison of the means revealed no significant differences between the variables of parent education and occupation scores across BA and ME, i.e., Socioeconomic Status of the participants is

matched across the participants of these two sets. A study done by Cortina, Garza and Pinto (2000) found that bilingualism is associated with higher income. But parental education and occupation scores were found to be lowest in case of the monolingual Hindi group. A statistically significant difference was found. Cortina, Garza and Pinto (2000) found that income decreased monotonically as the ability to speak English fell, which was consistent.

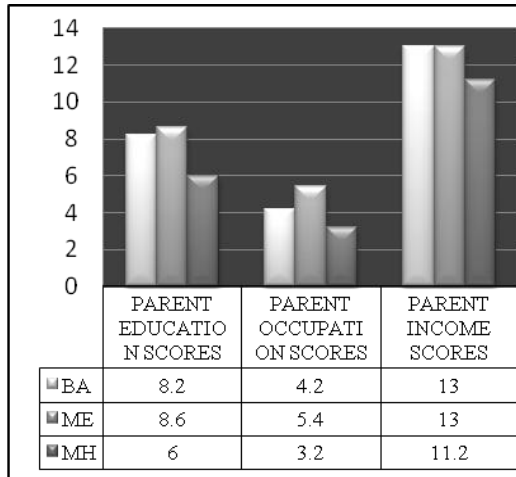


Figure 2: Education, occupation and income scores parents' of participants

A comparison of receptive and expressive language ages of Monolingual English (ME) CWA group in English revealed comparable scores, with slightly better receptive age means. Proficiency scores showed a slight statistically insignificant paternal advantage with greater variability in maternal proficiency scores. 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. It was observed that mother's and father's levels of education are significant predictors of child's language (Pancsofar & Feagans, 2006).

The 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. CWA have serious problems learning concrete nouns (Tager-Flusberg, 1991). The ELTIC morphology and syntax sub-section scores reveal that scores of verb tenses were significantly greater than all of the other sections. CWA had difficulties using noun-related morphemes (plural -s) and production of comparative and superlative forms (Baer & Guss, 1971). 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 of Down syndrome and SLI (Clahsen, 1991; Grimm, 1993; Grela, 2002).

Table 3: Language Age Data of the ME CWA Group

Language age	Mean	S.D.	Median
Comprehension	10.60	1.14	11.00
Expression	9.80	0.83	10.00
Parental proficiency			
Father's Proficiency Scores	14.20	2.48	16.00
Mother's Proficiency Scores	13.80	3.03	16.00
ELTIC Scores of Semantic Section	68.05	9.77	63.89
Verbs	82.22	12.66	77.78
Categories	73.33	18.59	77.78
Functions	73.33	25.58	77.78
Opposites	68.89	21.37	66.67
Colours & quantity	64.44	9.29	66.67
Nouns	64.44	19.87	66.67
Body parts	62.22	14.90	55.56
Prepositions	55.55	7.85	55.56
ELTIC morphology and syntax scores	32.00	13.39	26.67
Verb Tenses	55.55	15.71	66.67
Subject Verb Agreement & Negation	31.11	21.37	22.22
Sentence Repetition & Judgment	31.10	14.48	33.33
Pronouns	24.44	27.66	22.22
Plural, Comparatives & Superlatives	17.77	9.93	11.11

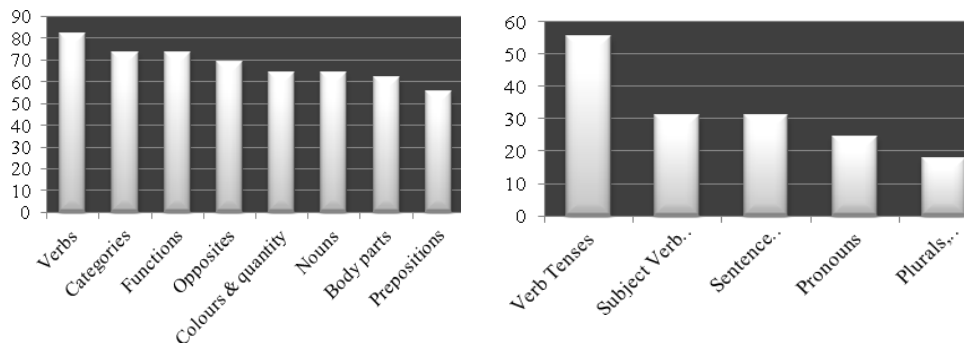


Figure 3: ELTIC scores of ME CWA

Monolingual Hindi (MH) CWA group: Parental Proficiency scores were uniform across both parents.

Table 4: Data of MH CWA

Language Age-Hindi	MH		
	Mean	S.D.	Median
Comprehension	11.00	1.22	11.00
Expression	10.20	0.83	10.00
Parental Proficiency-Hindi			
Father's Proficiency Scores	14.40	2.30	16.00
Mother's Proficiency Scores	14.40	2.30	16.00
Semantic subsection	47.60	11.78	51.00
Naming	64.00	16.73	70.00
Semantic Discrimination	61.33	12.82	66.67
Lexical Category	53.33	12.47	53.33
Polar Questions	48.00	8.36	50.00
Paradigmatic Relations	40.00	14.14	40.00
Antonymy	36.00	16.73	40.00
Semantic Anomaly	36.00	16.73	40.00
Homonymy	32.00	10.95	40.00
Semantic Similarity	32.00	10.95	40.00
Synonymy	28.00	17.88	40.00
Syntagmatic Relations	28.00	17.88	40.00
Semantic Contiguity	22.00	14.83	20.00
Syntax subsection	34.60	9.60	37.00
Plural Forms	56.00	21.90	60.00
Transitive, Intransitives, Causatives	56.00	20.73	60.00
Predicates	56.00	11.40	60.00
PNG Markers	48.00	13.03	50.00
Case Markers	44.00	20.73	50.00
Tenses	40.00	14.14	40.00
Conjunctions, Comparative, Quotatives	36.00	15.16	30.00
Sentence Types	20.00	10.00	20.00
Participial Constructions	20.00	10.00	20.00
Conditional Clauses	16.00	11.401	20.00

The LPT semantic sub-section scores revealed that scores on the first three sections of the hierarchy, i.e., Naming, Semantic Discrimination and Lexical Category were significantly greater than the rest of the sections. Evidence from autism suggests a sparing of lexical and semantic memory (Shalom, 2003). The Syntax section showed a uniform distribution with significantly lower scores in the sections assessing Sentence types, Participial Constructions and Conditional Clauses. Roberts et al. (2004) suggested that the data supported a specific morphology deficit within more general language impairment in CWA. The autism group exhibited specific delays in grammatical complexity (Eigsti et al., 2007). A comparison of the semantics and syntax sections of LPT revealed 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 et al., 1990; Tager-Flusberg, 1994).

The language age scores across the two languages of the Bilingual Hindi-English (BA) group revealed that the participants were balanced bilinguals. The parental proficiency scores indicated that both the parents were Hindi Dominant bilinguals. Several case studies indicated that monolingual dominant parents had successfully raised balanced bilingual children (Kamada, 1997; Arnberg, 1987; Cunningham-Andersson & Andersson, 2004).

The ELTIC semantic sub-section scores revealed that the scores on Preposition section were significantly lower than all the other sections.

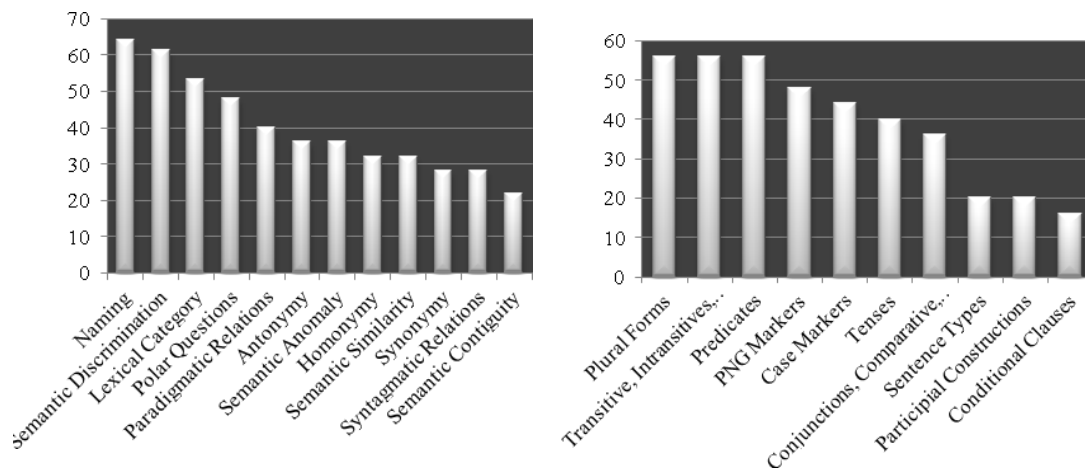


Figure 4: LPT scores of MH CWA

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 (Hermelin & O'Connor, 1970).

Table 5: Data of BA CWA

Language Age	English		
	Mean	S.D.	Median
Comprehension	10.4	1.34	11.00
Expression	9.8	0.83	10.00
Parental Proficiency Scores			
Father's Proficiency	12.0	2.54	12.00
Mother's Proficiency	9.2	3.63	9.00
ELTIC Semantic subsection	60.2	17.61	58.33
Verbs	71.1	16.84	66.67
Body parts	71.1	26.75	77.78
Colours & quantity	71.1	16.85	77.78
Nouns	66.6	26.05	55.56
Opposites	64.4	25.33	66.67
Functions	51.1	23.04	44.44
Categories	44.4	24.84	44.44
Prepositions	42.2	21.37	44.44
ELTIC Syntax subsection	39.5	29.62	42.22
Verb Tenses	60.0	36.51	66.67
Pronouns	60.0	54.77	100.00
Sentence Repetition & Judgement	48.8	21.66	55.56
Plural, Comparatives & Superlatives	22.2	43.74	0.00
Subject Verb Agreement & Negation	11.1	19.24	0.00

The ELTIC morphology and syntax sub-section scores reveal significantly lesser scores on Subject Verb Agreement and Negation than all of the other sections. It is possible that the burden of acquiring the two distinct systems of English and Hindi could slow down the acquisition process in bilingual children, causing them to be behind monolingual children in their overall progress in grammatical development. A comparison of the semantics and syntax-morphology sections of ELTIC revealed no significant 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).

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. 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 (Reyes, 1995; Grosjean, 1992, 1997; Hernandez, Bates, & Avila, 1994; Gutierrez-Clellen, 1996; Paradis, 1997). The LPT syntactic sub-section scores revealed a uniform distribution across all the subsections.

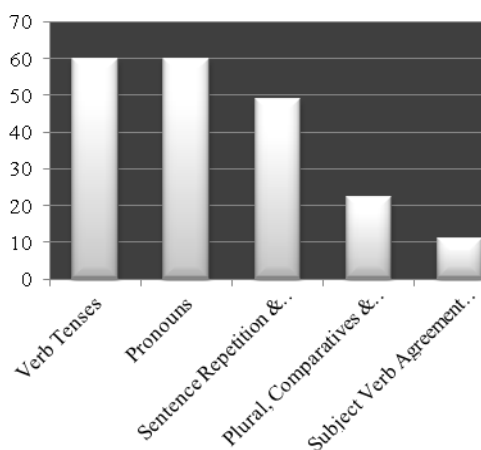
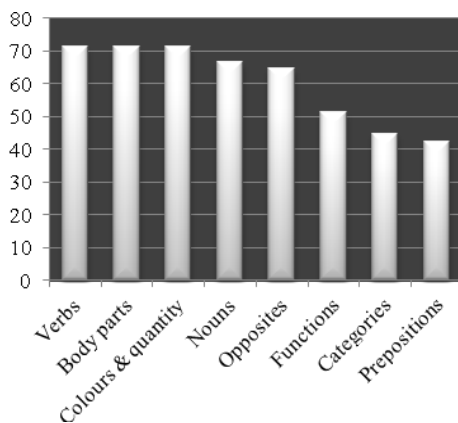


Figure 5: ELTIC scores of BA CWA

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). A comparison of the semantics and syntax

sections of LPT reveal no significant differences across the two language skill areas. Wartenburger et al. (2003) found that while semantic tasks were largely dependent on proficiency level; age of acquisition mainly affected the grammatical processes.

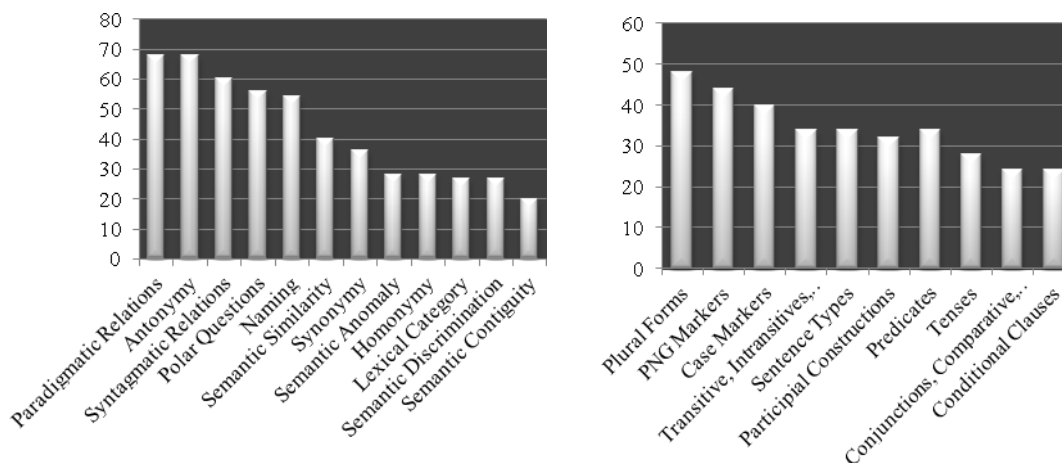


Figure 6: LPT scores of BA CWA

Table 6: Data of BA CWA

Language Age	Hindi		
	Mean	S.D.	Median
Comprehension	10.40	1.34	11.00
Expression	9.80	0.83	10.00
Parental Proficiency Scores			
Father's Proficiency	15.80	0.44	16.00
Mother's Proficiency	16.00	00.00	16.00
LPT Semantics subsection	41.80	12.91	36.00
Paradigmatic Relations	68.00	22.80	60.00
Antonymy	68.00	10.95	60.00
Syntagmatic Relations	60.00	24.49	60.00
Polar Questions	56.00	16.73	60.00
Naming	54.00	17.10	50.00
Semantic Similarity	40.00	28.28	20.00
Synonymy	36.00	16.73	40.00
Semantic Anomaly	28.00	10.95	20.00
Homonymy	28.00	17.88	40.00
Lexical Category	26.66	22.60	20.00
Semantic Discrimination	26.66	29.81	6.67
Semantic Contiguity	20.00	14.14	20.00
LPT Syntax subsection	29.80	10.94	0.00
Plural Forms	48.00	30.33	40.00
PNG Markers	44.00	18.16	50.00
Case Markers	40.00	18.70	30.00
Transitive, Intransitives, Causatives	34.00	16.73	30.00
Sentence Types	34.00	11.40	30.00
Participial Constructions	32.00	13.03	30.00
Predicates	34.00	15.16	30.00
Tenses	28.00	10.95	20.00
Conjunctions, Comparative, Quotatives	24.00	11.40	20.00
Conditional Clauses	24.00	5.47	20.00

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. 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).

An across groups' comparison of Monolingual Hindi (MH) and Bilingual Hindi-English (BA) group across language age and across parental proficiency scores in Hindi showed no statistically significant differences among these variables. The most influential factor in bilingual language acquisition was the languages spoken by parents and by others with whom the child comes into contact (Romaine, 1989). The semantic section reveals significantly greater scores of the bilingual participants in the sub sections of Lexical Category, Antonymy, Paradigmatic Relations and Syntagmatic Relations. Recent research 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. The comparisons on syntax section 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. The overall data reveals no statistically significant differences between the

bilingual and monolingual groups in Hindi language across both sections of Semantics and Syntax. Sheng, McGregor, and Marian (2006) 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.

The Monolingual English (ME) and Bilingual Hindi-English (BA) group were matched in language ages in both the receptive and expressive domains. A comparative analysis revealed differences in parents' proficiency scores across the bilingual and monolingual groups, with parents' of monolingual English participants scoring better. The statistical analysis (Wilcoxon Test) revealed that the bilingual and monolingual participants scored equally well on all the tasks of the semantic and syntax subsections of ELTIC. Research has provided evidence to state that bilinguals approach or meet monolingual levels of performance toward the end of elementary school (Oller & Eilers, 2002; Marchman et al., 2004; Gathercole & Thomas, 2005; Thordardottir et al., 2006; Gathercole, 2007; Nicoladis et al., 2007).

All language and communication domains were not equally affected in CWA. Whereas impairments were consistently observed in "pragmatics", "lexical" abilities involving individual words were generally spared (Walenski et al., 2006). 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). Semantic judgment tasks require metalinguistic abilities and have been used and the findings by Doherty and Perner (1998) confirm that metalinguistic awareness deficits are related to the theory of mind.

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. 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). But a number of researchers have also concluded that syntactic deficits are not central to the communicative impairments in ASD (Howlin, 1984).

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. 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). Many studies have shown that children from bilingual backgrounds tend to score lower on standardized vocabulary tests in comparison to monolingual children (Duran, 1988; Saville-Troike, 1991; O'Brien, 1992; Valdes & Figueroa, 1993; Pefia & Quinn, 1997). 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, 1977). 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. 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).

According to the Bilingual Advantage 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. 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. 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.

Conclusions

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. It was concluded that bilingualism had neither a positive or negative effect on language abilities in children with autism. This study also provides additional support for the argument that parents' language practices are particularly influential in the case of children with autism. 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. The present study did not find significant evidence of a selective interaction of bilingualism and language impairment on any type of task. This study suggests that CWA have the potential to be bilingual, and that speaking Hindi at home and English in school and in therapy should not be considered a disadvantage to the language development of CWA. 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).

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). There are multiple outside variables including general language differences, the interrelationship of culture/language, socioeconomic status, as well as the age of participants. One must consider that languages are all very different. Therefore, the structure of the languages being learned plays a significant role in the development of a bilingual individual (Gathercole, 2007). A research study or task may be given in both languages, yet still present unseen favoritism to the underlying structure of one language or another, thereby 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. In the present study, the possibility cannot be excluded that monolingual children could have had some knowledge of the other language. The different amount of speech-language therapy and behavioral therapy between the two groups may also be seen as a limitation. 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. Anecdotal evidence tells us that there is a notion of perceived shame around having a CWA in the Asian community.

Implications and Future Directions

This study can assist early educators in developing appropriate curriculum for these children, supporting development in both languages. It shall also create awareness 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. 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 is a need to determine levels of bilingualism in greater detail. It's important to compare bilingual children with autism to normally developing bilingual children. There is a need to determine if bilingual children with Autism show evidence of enhanced executive functions. Future studies should focus on identifying the predictors of success. Investigate the possibility of facilitative cross-linguistic interactions in the morphosyntactic development of bilingual children, with and without autism.

References

- American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychiatric Association.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychiatric Association.
- Arnberg, L. (1987) *Raising Children Bilingually: The Preschool Years*. Clevedon: Multilingual Matters.
- Baer, D. M. & Guess, D. (1971). Receptive training of adjectival inflections in mental retardates. *Journal of Applied Behavior Analysis*, 4, 129-139.
- Ben-Zeev, S. (1977). The influence of bilingualism on cognitive strategy and cognitive development. *Child Development*, 48(3), 1009-1018.
- Besnard, C. (2008) . *The learning of foreign languages by high functioning autistic children*. Poster session presented at the annual meeting of the International Society for Autism Research, London.
- Bhuwaneshwari (2009). *English Language Testing for Indian Children*, Dissertation submitted as a part fulfillment to the University of Mysore.
- Bialystok, E. (2001). *Bilingualism in development: Language, literacy and cognition*. New York: Cambridge University Press.
- Chapnik-Smith, M. (1997). How do bilinguals access lexical information? In A. de Groot & J. F. Kroll (Eds.), *Tutorials in bilingualism* (pp. 145-168). Mahwah, NJ: Erlbaum.
- Chengappa, S. & Ray, J. (2007) A tachistoscopic study of monolingual and bilingual children. *Journal of All India Institute of Speech and Hearing*, 26, 86-93.
- Chen, H. C. (1992). Lexical processing in bilingual or multilingual speakers. In R. J. Harris (Eds.),

- Cognitive processing in bilinguals* (pp. 253–264). Amsterdam: Elsevier.
- Clahsen, H. (1991). *Child Language and Developmental Dysphasia*. Amsterdam: John Benjamins
- Cohen, D. J., & Volkmar, F. R. (1997). *Handbook of Autism and Pervasive Developmental Disorders* (Eds.). New York: John Wiley & Sons.
- Cortina, J., Garza, R., & Pinto, P.M. (2000). No Entiendo: The Effects of Bilingualism on Hispanic Earnings. http://www.stat.columbia.edu/~gelman/stuff_for_blog/rudy.pdf
- Cummins, J.: 2001, *Negotiating Identities: Education for Empowerment in a Diverse Society*, (second edition), California Association for Bilingual Education, Los Angeles.
- Cunningham-Andersson, U. and Andersson, S. (2004) *Growing up with Two Languages: A practical Guide*, Routledge
- Dehaene, S., Dupoux, E., Mehler, J., Cohen, L., Paulesu, E., Perani, D., et al. (1997). Anatomical variability in the cortical representations of first and second languages. *Neuroreport*; 8: 3809-15.
- Doctor, E., & Klein, D. (1992). Phonological processing in bilingual word recognition. In R. Harris (Ed.), *Cognitive processing in bilinguals* (pp. 237–252). Amsterdam: Elsevier.
- Duran, E. (1988). Teaching the moderately and severely handicapped student and autistic adolescent: With particular attention to bilingual special education. Springfield, IL: Charles C. Thomas Publisher.
- Eigsti, I.M., Bennetto, L. & Dadlani, M.B. 2007. Beyond Pragmatics: Morphosyntactic Development in autism. *J Autism Develop Disord*, Vol.37, No.3,(September, 2007), pp.1007-1023. ISSN 0162-3257.
- Feltmate, K., & Kay-Raining Bird, E. (2008). Language learning in four bilingual children with Down syndrome: A detailed analysis of vocabulary and morphosyntax. *Canadian Journal of Speech-Language Pathology and Audiology*, 32, 6-20.
- Gathercole S. E. (2007). Working memory and language. In G. Gaskell (Ed.), *Oxford Handbook of Psycholinguistics*. Oxford University Press.
- Gawlitzeck-Maiwald, & Tracy, R. (1996). "Bilingual Bootstrapping." *Linguistics* 34-5, 901-926.
- Genesee, F., Paradis, J. & Crago, M. (2004). *Dual language development & disorders: A handbook on bilingualism & second language learning*. Baltimore: Paul H. Brookes Publishing Co.
- Grainger, J. (1993). Visual word recognition in bilinguals. In R. Schreuder & B. Weltens (Eds.), *The bilingual lexicon* (pp. 11–26). Amsterdam: John Benjamins.
- Grimm, H. (1993). Patterns of Interaction and communication in Language Development Disorders . In G.Blanken , J. Dittman, H. Grimm, J.D. Marshall, & C.W. Wallesch (Eds.), *Linguistic disorders and pathologies: An international handbook* (pp. 691-711). Berlin: de Gruyter.
- Grosjean, F. (1982). *Life with Two Languages: An Introduction to Bilingualism*. Cambridge, Mass: Harvard University Press, 370.
- Grosjean, F. (1989). The bilingual as a person. In Titone, R. (Ed.), *On the Bilingual Person*. Ottawa: Canadian Society for Italian Studies.
- Grosjean, F. (1992). Another view of bilingualism. In Harris, R. (Ed.). *Cognitive Processing in Bilinguals*. Amsterdam: North-Holland.
- Grosjean, F. (1997). The bilingual individual. *Interpreting*, 2(1/2), 163-187.
- Grosjean, F. (1998). Transfer and language mode. *Bilingualism: Language and Cognition*, 1(3), 175-176.
- Grosjean, F. (1999). Bilingualism: a communicative competence in its own right. *Educateur Magazine*, 12, 18-21.
- Grosjean, F. (2010). *Bilingual: Life and Reality*. Cambridge, MA: Harvard University Press.
- Gutiérrez-Clellen, V. F. (1996). Language diversity: Implications for assessment. In K. N. Cole, P. S. Dale, & D. J. Thal (Eds.), *Assessment of communication and language* (pp. 29–56). Baltimore, MD: Paul H. Brookes.
- Hambly, C., & Fombonne, E. (2009). *The impact of bilingual exposure on the expressive language of children with autism spectrum disorders*. Poster session presented at the annual meeting of the International Society for Autism Research, Chicago.
- Harris, R. J., & McGhee-Nelson, E. M. (1992). Bilingualism: Not the exception any more. In R. Harris (Eds.), *Cognitive processing in bilinguals* (pp. 3–14). Amsterdam: Elsevier.
- Hermelin, B. & O' Connor, N. (1970). *Psychological experiments with autistic children*, by Oxford, New York, Pergamon Press.]
- Hernandez, A., Bates, E., & Avila, L. (1994). On-line sentence interpretation in Spanish-English bilinguals: What does it mean to be "in between"? *Applied Psycholinguistics*, 15, 417-446.
- Iglesias, A. (2001). Narrative transcription accuracy and reliability in two languages. *Topics in Language Disorders*, 28, 178–188.
- Kamada, L. (1997). *Bilingual Family Case Studies (Vol. 2). Monographs on Bilingualism No. 5*. Japan: Japan Association of Language Teachers Bilingualism Special Interest Group.
- Karant P., Pandit, & Gandhi, (1986). *Normative Studies of Language Development in Children*. Report of the Workshop on Developmental Norms for Children, NIPCCD: New Delhi.
- Kay-Raining Bird, E., Trudeau, N., Thordardottir, E., Sutton, A., & Thorpe, A. (2005). The language abilities of bilingual children with Down syndrome. *American Journal of Speech-Language Pathology*, 14, 187-199.
- Kim, K. H. S., Relkin, N. R., Lee, K. M., & Hirsch, J. (1997). Distinct cortical areas associated with native and second languages. *Nature*, 388, 171–174.

- Kohnert, K. (2007). *Language disorders in bilingual children and adults*. San Diego, CA: Plural Publishing Inc.
- Kim, K. H. S., Relkin, N. R., Lee, K. M., & Hirsch, J. (1997). Distinct cortical areas associated with native and second languages. *Nature*, 388, 171–174.
- Kremer-Sadlik, T. (2005). To be or not to be bilingual: Autistic children from multilingual families. In J. Cohen, K. T. McAlister, K. Rolstad, & J. MacSwan (Eds.), *Proceedings of the 4th International Symposium on Bilingualism* (pp. 1225-1234). Somerville, MA: Cascadilla Press.
- Kroll, J. F., & de Groot, A. M. B. (1997). Lexical and conceptual memory in the bilingual: Mapping form to meaning in two languages. In A. de Groot & J. Kroll (Eds.), *Tutorials in bilingualism: Psycholinguistic perspectives* (pp. 169–199). Mahwah, NJ: Erlbaum.
- Leadbitter, K., Hudry, K., & Temple, K. (2009). *Does bilingualism affect language development in young children with autism?* Poster session presented at the annual meeting of the International Society for Autism Research, Chicago.
- Maag, L., & Farrar, M. J. (2002). Early language development and the emergence of a theory of mind. *First Language*, 22, 197–213.
- Macnamara, J., & Kushnir, S. (1971). Linguistic independence of bilinguals: The input switch. *Journal of Verbal Learning and Verbal Behavior*, 10, 480–487.
- Marian, V., Blumenfeld, H. K., & Kaushanskaya, M. (2003). Developing a language experience and bilingual status questionnaire. Poster presented at the annual meeting of the Midwestern Psychological Association, Chicago.
- Marian, V., & Spivey, M. (2003). Competing activation in bilingual language processing. *Bilingualism: Language and Cognition*, 6, 97–115.
- Marian, V., Spivey, M., & Hirsch, J. (2003). Shared and separate systems in bilingual language processing: Converging evidence from eye tracking and brain imaging. *Brain and Language*, 86, 70–82.
- Oller, D.K., & Eilers, R. E. (2002). *Language and literacy in bilingual children*. Clevedon, England; Multilingual Matters.
- Pancsofar, N., & Feagans L. (2006) Mother and father language input to young children: Contributions to later language development. *Journal of Applied Developmental Psychology*, 27:571–587.
- Paradis, M. (1997) The cognitive neuropsychology of bilingualism. In A. de Groot & J. Kroll (eds.), *Tutorials in bilingualism: psycholinguistic perspectives* (pp. 331-354). Hillsdale, NJ.: Lawrence Erlbaum.
- Paradis, J., Crago, M., Genesee, F., & Rice, M. (2003). French-English bilingual children with SLI: How do they compare with their monolingual peers? *Journal of Speech, Language, and Hearing Research*, 46, 113-127.
- Paradis, J. & Genesee, F. (1995). Language differentiation in early bilingual development. *Journal of Child Language*, 22, 611–631.
- Paul, R., & Cohen, D. (1985). Comprehension of indirect requests in adults with autistic disorders and mental retardation. *Journal of Speech and Hearing Research*, 28, 475–479.
- Pearson, B. Z., Fernandez, S. C., & Oller, R. E. (1993). Lexical development in bilingual infants and toddlers: Comparison to monolingual norms. *Language Learning*, 43, 93-120.
- Pefia, E., & Quinn, R. (1997). Task familiarity: Effects on the test performance of Puerto Rican and African American children. *Language, Speech, and Hearing Services in Schools*, 28, 323-332.
- Peña, J.M. (2001). Bilingualism under threat in Navarre. Navarre government Language policy. *Contact bulletin* 17 (2): 8.9. Brussels, European bureau for lesser used Languages.
- Perani, D., Paulesu, E., Galles, N. S., Dupoux, E., Dehaene, S., Bettinardi, V. (1998). The bilingual brain: Proficiency and age of acquisition of the second language. *Brain*, 121, 1841–1852.
- Petersen, J.M. (2003). Lexical skills in bilingual children with Autism Spectrum Disorder (Master's thesis). Retrieved from <http://circle.ubc.ca/>
- Reyes, B. A. (1995). Considerations in the assessment and treatment of neurogenic disorders in bilingual adults. In H. Kayser (Ed.), *Bilingual speech language pathology. An Hispanic focus* (pp. 153-182). San Diego, CA: Singular Publishing, Inc.
- Roberts, C., Baynham, M., Shrubshall, P., Barton, D., Chopra, P., Cooke, M. Hodge, R., Pitt, K., Schellekens, P., Wallwe, C., Whitfield, S. (2004) English for Speakers of Other Languages (ESOL) - Case Studies of Provision, Learners' Needs and Resources London: NRDC.
- Roberts, J.A., Rice, M.L., & Tager-Flusberg, H. (2004). Tense marking in children with autism. *Applied Psycholinguistics*, 25(3), 429-448.
- Rosenblum, T. and Pinker, S. (1983). Word magic revisited: Monolingual and bilingual children's understanding of the word-object relationship. *Child development*. 54.773-780.
- Ruffman, T., Slade, L., Rowlandson, K., Rumsey, C., & Garnham, A. (2003). How language relates to belief, desire, and emotion understanding. *Cognitive Development*, 18, 139–158.
- Saville-Troike, M (1991) Teaching and Testing For Academic Achievement: The Role of Language Development. NCBE Focus: Occasional Papers in Bilingual Education, Number 4, Spring 1991.
- Schopler, E., Reichler, R. J., & Renner, B. R. (1986). *The Childhood Autism Rating Scale (CARS)*. Los Angeles: Western Psychological.
- Shalom Lappin (2003), "Semantics" in R. Mitkov (ed.), *The Handbook of Computational Linguistics*, Oxford University Press, Oxford, pp. 91-111.
- Sheng, L., McGregor, K. K., & Marian, V. (2006). Lexical-semantic organization in bilingual children: Evidence from a repeated word

association task. *Journal of Speech, Language, and Hearing Research*, 49, 572-587.

Sparrow, S. (1997). Developmentally based assessments. In D. J. Cohen & F. R. Volkmar (Eds.), *Handbook of autism and pervasive developmental disorders* (2nd ed., pp. 411-447). New York: Wiley.

Swapna, N., Jayaram, M., Prema, K.S., & Geetha, Y.V. (2005-2006-2010). ARF Project undertaken under AIISH, Mysore.

Tager-Flusberg, H., Calkins, S., Nolin, T., Baumberger, T., Anderson, M., & Chadwick-Denis, A. (1990). A longitudinal study of language acquisition in autistic and Down syndrome children. *Journal of Autism and Developmental Disorders*, 14, 281-289.

Tager-Flusberg, H. (1994). Dissociations in form and function in the acquisition of language by autistic children. In H. Tager-Flusberg (Ed.), *Constraints on language acquisition: Studies of atypical children* (pp. 175-194). Hillsdale, NJ: Erlbaum.

Tager-Flusberg, H. (2000). The challenge of studying language development in children with autism. In L. Menn & N. Bernstein Ratner (Eds.), *Methods for studying language production* (pp. 313-331). Mahwah, NJ: Erlbaum.

Thordardottir, E. T., Weismer, E.S., & Smith, M. E. (1997). Vocabulary learning in bilingual and monolingual clinical intervention. *Child Language Teaching and Therapy*, 13(3), 215-227.

Tucker, G. R. (1998). A global perspective on multilingualism and multilingual education. In J. Cenoz & F. Genesee (Eds.), *Beyond bilingualism: Multilingualism and multilingual education* (pp. 3-15). Clevedon: Multilingual Matters.

Vaid, J., & Hull, R. (2002). Re-envisioning the bilingual brain using fMRI. In F. Fabbro (Eds.), *Advances in the neurolinguistics of bilingualism* (pp. 315-355). Udine, Italy: Forum.

Valicenti-McDermott, M. D., Schouls, M., Molly, G., Tarshis, N., Seijo, R., & Shulman, L. H. (2008). *Language skills in young children with autism spectrum disorder (ASD): Are there differences between monolingual English and bilingual English-Spanish toddlers?* Poster session presented at the annual meeting of the International Society for Autism Research, London.

Venkatesan (2009). Re-adapted from 1997 Version NIMH Socio Economic Status Scale. Secunderabad, National Institute for the Mentally Handicapped.

Vygotsky, L. S. (1962). *Thought and language*. Cambridge, MA: MIT Press

Wartenburger, I., Heekeren, H.R., Abutalebi, J., Cappa, S.F., Villringer, A., Perani, D., 2003. Early setting of grammatical processing in the bilingual brain. *Neuron* 37, 159-170.

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:

Parent	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 Cost Accountants, IT Professional, Architects, Audiologists, Group A Jobs, Large Scale business with Turn over 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.):

Member	>= 75 lakhs	25-50 lakhs	10-20 lakhs	1-5 lakhs	<1 lakhs
Father					
Mother					
Others					

e. Property

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

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

II. Brief family history

- Family Status: Nuclear/Joint/Extended
- Total number of persons in the family: <3/4-6/7-8/>8
- Consanguinity: -ve /+ve (I degree/II degree/III degree)
- Family history of associated problems: Yes/No

III. Language History:

- 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	Neighborhood
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 months)						Language Used			
	0	< 1	1-3	3-6	6-12	>12	Hindi	English	Both	Others (specify)
Speech Language Therapy										
Occupational Therapy										
Physiotherapy										
Special Education										
Behavior Therapy										
Others (Specify)										