LANGUAGE ABILITIES IN PRESCHOOL CHILDREN WITH STUTTERING

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A Dissertation Submitted in Part Fulfilment for the Degree of

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ALL INDIA INSTITUTE OF SPEECH AND HEARING

MANASAGANGOTHRI, MYSORE – 570 006

MAY, 2014

CERTIFICATE

This is to certify that the dissertation entitled "**Language abilities in preschool children with stuttering**" is a bonafide work submitted in part fulfilment for the Degree of Master of Science (Speech- Language Pathology) of the student (Registration No: 12SLP006). This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier for the award of any other Diploma or Degree to any other University.

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CERTIFICATE

This is to certify that this dissertation entitled "**Language abilities in preschool children with stuttering**" has been prepared under my supervision and guidance. It is also certified that this has not been submitted earlier for the award of any Diploma or Degree to any other University.

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DECLARATION

This is to certify that this dissertation entitled "**Language abilities in preschool children with stuttering**" is the result of my own study under the guidance of Mrs. Sangeetha Mahesh, Clinical Lecturer, Department of Clinical Services, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier for the award of any Diploma or Degree to any other University.

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CHAPTER 1

INTRODUCTION

The old saying by Van Riper, that stuttering is a riddle wrapped in a mystery inside an enigma, is well known. Although it would be a far cry from the truth for us to state that, 74 years later, we have solved the riddle; we can say with plenty of certainty that advances in scientific inquiry have taken us nearer to the realm of understanding the varied elements that may trigger the onset, advancement, and maintenance of stuttering. Nonetheless, much needs to be realized, because the riddle still presents many challenges. For instance, we do not wholly comprehend why developmental stuttering occurs between the ages of 2 and 5 years, but onset after puberty is seldom seen; or why boys are more likelier than girls to develop chronic stuttering.

For more than 80 years, intellectuals and academicians have been intrigued by the plausibility of a connection between stuttering and language ability in children (Byrd & Cooper, 1989; Silverman & Williams, 1967; Wagovich & Bernstein Ratner, 2007; Westby, 1974) and the entailments that such a link would hold for unravelling the complexities concerning the nature, causes and treatment of stuttering. Several hypotheses exist that compound this belief; such as:

(1) Stuttering arises from a complex, dynamic interaction of multiple factors (Smith & Kelly, 1997).
(2) The predominant preschool-age onset of stuttering suggests that these relevant multiple factors may be rooted in the developmental process (Yairi & Ambrose, 2005).
(3) The interaction of these multiple factors lasting for a period (or periods) during the developmental years may contribute to the emergence of stuttering (Yairi & Ambrose, 2005).

Not long ago, Hall, Wagovich, and Bernstein Ratner (2007) offered several explanations as to why this topic continues to be of paramount interest to contemporary clinicians and researchers. For

example, they suggested that “effective human oral communication takes place within the context of language. Thus, to overlook skills related to language use is to ignore the context in which stuttering, and indeed, oral communication, occur”. The domain of language with respect to stuttering has received intense focus due in part to the following reasons:

(1) Significant changes (or a “language spurt”) takes place during this time frame of the preschool age; when the onset of stuttering is most likely to occur.
(2) It fosters an extensive research with both complementary and contradictory findings; with potential implications for profiling and declination of subtypes.
(3) Language skills (precocious or delayed) may make a child vulnerable or predisposed to this disorder of fluency; or may place the child at risk for persistence of stuttering.

Furthermore, the relevance of language to childhood stuttering is reflected in the fact that various linguistic factors affect the distribution and loci of instances of stuttering (Bernstein, 1981; Howell & Au-Yeung, 1995; Logan & Conture, 1997). For instance, speech disfluencies are significantly more likely to occur on longer, syntactically more complex sentences than on shorter, simpler sentences (Bernstein Ratner & Sih, 1987; Buhr & Zebrowski, 2009; Gaines, Runyan, & Myers, 1991; Logan & Conture, 1997; Richels, Buhr, Conture, & Ntourou, 2010; Sawyer, Chon, & Ambrose, 2008). Likewise, young children are more likely to stutter on:

(a) low-frequency words (Anderson, 2007; Palen & Peterson, 1982)

(b) function rather than content words (Howell, Au-Yeung, & Sackin, 1999)

(c) utterance-initial position words (Buhr & Zebrowski, 2009; Richels et al., 2010)

(d) utterances above their mean length of utterance (Zackheim & Conture, 2003).

The connexion between language challenge and disfluency, and its application to childhood fluency disorders thereof, has been explained by some in terms of speech and language “trade-offs” (dubbed the “bucket theory,” Crystal, 1987; Anderson, Pellowski, & Conture, 2005; Bernstein Ratner,

1997; Hall et al, 2007; Zackheim & Conture, 2003). In other words, when children attempt production of more complex language forms, fluency may temporarily suffer as a consequence. As children with stuttering (CWS) begin to master a range of linguistic skills, their speech, in turn, should become more fluent or, if stuttering does persist, its occurrence should not be closely tied to the production of the mastered forms.

Another perspective on the relationship between language and fluency has been foreshadowed by Bernstein Ratner (1997) when she suggested that stuttering might be related to difficulties in higher level sentence planning processes; such as, the integration of different syntactic constituents. This view has since been compounded by Bloodstein (2006) in his psycholinguistic account of stuttering, where he proposes that "incipient stuttering", stuttering at/or near onset, is related to difficulties with syntactic encoding. Rispoli, Hadley & Holt (2008) have shown that typically developing children exhibit increases in disruptions and also the emergence of specific types of disruptions as they move toward grammatical encoding. Bernstein Ratner and Silverman (1999) theorized, that in addition to these escalations in speech disruptions as a function of grammatical encoding; children with stuttering (CWS) may have a combination of reduced capacity for speech & language and perhaps heightened auditory self-monitoring which serve to promote their disfluent behavior. Contenders, however, have argued that, until children meet a certain aptitude in terms of comprehension and morphosyntax, and garner a large enough lexicon, their processes of sentence formulation would lack finesse; and hence are less likely to be corrected in the form of revisions (speech disruptions).

From a slightly different perspective, Howell's (2004) EXPLAN (EXecution and PLANning) model assumes an overlap between (linguistic) planning of upcoming utterance constituents and motor execution of preceding elements of the utterance (Ntourou, Conture, & Lipsey, 2011). According to the EXPLAN's credo, this overlap is thought to arise due to dyssynchronies between the

planning (linguistic) and execution (motor) of utterance constituents, which might contribute to stuttering.

Other psycholinguistically oriented models of stuttering, such as the Fault-Line Hypothesis (Postma & Kolk, 1993) embrace a fairly different perspective. Essentially, these models imply that fluency breakdowns are associated with hurdles in phonological/phonetic than syntactic/lexical encoding processes. Still other psycholinguistic models of stuttering underscore the suprasegmental aspects of language planning/production, citing that disfluencies might result from a dilemma in encoding suprasegmental variability (Packman et al, 1996); or integrating lexical/syntactic with suprasegmental features of utterance constituents (Karniol, 1995); or from dyssynchronous arrival of segmental and non-segmental information (Perkins et al, 1991).

As argued by the Demands–Capacities (DC) model of stuttering (Starkweather & Gottwald, 1990), when internal or external demands for fluency exceed a child's capacity in one or more areas of development, stuttering is likely to ensue. This inturn insinuates that the presence of a language disorder could make a young child vulnerable to stuttering (Bajaj, 2007; Bernstein Ratner, 1997; Blood, Ridenour, Qualls, & Hammer, 2003). An additional factor, also affiliated to the DC model, is that stuttering often increases as children attempt to produce long and grammatically complex utterances (Bernstein Ratner & Sih, 1987; Logan & Conture, 1995; Melnick & Conture, 2000; Weiss & Zebrowski, 1992). This suggests that the presence of a language disorder could make it especially difficult for a child to manage stuttering during the effort to express complex thoughts (Arndt & Healey, 2001). Moreover, given the overlap in timing between the onset of stuttering and the emergence of syntax, it has even been hinted that stuttering itself is a type of language disorder (Bloodstein, 2006).

Although these various psycholinguistically oriented models of stuttering may differ in their focus, one common thread running through them is that linguistic processes are potentially influential variables associated with stuttering. In simpler words, most of these accounts, either

implicitly or explicitly insinuate that the linguistic system of individuals with stuttering are more susceptible to encoding errors.

The outcome of earlier studies that examined the connection between stuttering and language abilities in children who stutter have yielded mixed results. Nippold (2012) has attributed several methodological limitations to these studies; some of them being:

- Failure to match the groups on key factors such as socioeconomic status (SES) and gender.
- Screening procedures that excluded CWNS from participating if they showed signs of a language disorder but included CWS regardless of their language status.
- Employment of timed speaking tasks to compare the language skills of CWNS to those of CWS; putting the latter at a definite disadvantage.

Ntourou and colleagues (2011) have listed several other methodological differences which might be potential contributors to the divergence in findings observed. A few of these include:

- Disparity in the norm-referenced language assessment tools employed – some that are fairly focused in nature (ex: Peabody Picture Vocabulary Test [PPVT]; Dunn & Dunn, 1981) as against those that more broadly assess aspects of both receptive and expressive language (ex: Test of Early Language Development, Second Edition [TELD -2]; Hresko, Reid & Hammill, 1991).
- Diversity in the measures of spontaneous language samples (ex: MLU in Kadi-Hanifi & Howell, 1992) versus developmental sentence scoring (as in Westby, 1974).
- In addition, other researchers have employed experimental measures to study the speech-language performance in CWS (ex: Lexical priming, as in Pellowski & Conture, 2005; Savage & Howell, 2008).
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CHAPTER 2

REVIEW OF LITERATURE

The issue of whether children who stutter (CWS) differ from children who do not stutter (CWNS) in terms of linguistic abilities has been a controversial topic of much interest since the early 90's. However, findings from empirical research on this population have been less than consistent. A review of research explored in the arena of language and stuttering, with respect to the present study is presented below.

Bloodstein (2001) described Incipient Stuttering as distinct from the stuttering of older children and adults in that it is a "Hesitancy in the initiation of syntactic structures"; evidenced by frequent repetition of whole words at the beginning of syntactic units and the absence of any form of stuttering on the last words of such units; failure of early stuttering to be influenced by word-bound factors such as word length, initial sound, grammatical category of words, among others; and the apparent absence of stuttering in the 1-word phase of language development.

If indeed so, then incipient stuttering has just the right features one would expect if the child was to have some type of language difficulty - be it of syntax, word retrieval, or the motor planning of syntactic units. True to Bloodstein's hypothesis, some researchers have reported lower than average scores on measures of language ability in preschool children with stuttering. Recent review of literature suggests that there is both a subgroup of preschool CWS with relatively slow language development and an almost equal proportion who seem normally adept or even superior in their language development.

Bloodstein accounts for both these subtypes by surmising that a congenital unreadiness of syntactic speech manifests itself in some children as slow language development, in others as incipient stuttering and yet in others as both. In other words, between the child who is adept at

language and the child with retarded language development, there is the child with incipient stuttering. This child has the ability to produce a grammatical utterance, but only just so, therefore he/she often does so hesitantly, with effort and repetition of its initial segment. Hence Bloodstein accounts for Early stuttering as a type of language difficulty.

Several studies have attempted to quantify the presence of language dissociations in childhood stuttering by examining differences in performance between speech and language measures in CWS and CWNS. In particular, Anderson and Conture (2000) found that CWS, when compared to CWNS, exhibit a significantly greater difference between standardized measures of receptive/expressive language and receptive vocabulary, with receptive/expressive language being better developed than receptive vocabulary. On average, CWS scored almost 30 percentile points higher on the receptive/expressive language measure than on the receptive vocabulary measure. Likewise, CWNS exhibited the same relative trend of lexical development lagging that of syntactic development, but there was only an average of a 13 percentile point difference between the two measures. Anderson and Conture took these findings to suggest that preschool CWS may have an imbalance among components of their speech-language systems (Anderson, Pellowski, & Conture, 2005).

Fundamentally, researchers have addressed the empirical question of whether the language abilities of young CWS differ from those of their fluent peers (Murray & Reed, 1977; Ryan, 1992; St. Louis & Hinzman, 1988; Westby, 1974). Specifically, some of these researchers have reported that various language abilities of young CWS are lower than those of their fluent peers, whereas others have reported no significant differences, while still others have stated that CWS have sufficient if not advanced language abilities.

2.1 Studies supporting the hypothesis of deficient or delayed language abilities in CWS

Anderson & Conture (2002) examined the language abilities (specifically receptive/expressive language and receptive vocabulary) in 20 children with stuttering with a mean age of 46.8 months. Their results indicated significantly greater difference between measures of receptive/expressive language and receptive vocabulary in CWS. However, this difference was not significantly correlated with their overall frequency of stuttering. Findings were taken to suggest that the semantic development of CWS may lag behind their syntactic development, a possible imbalance among the components of the speech language system of CWS that may contribute to the difficulties they have establishing normal speech fluency.

Bernstein Ratner and Silverman (2000) evaluated the language abilities of 15 children close to their onset of stuttering symptoms and age-gender-matched fluent children. Their results alluded to a lower performance on all measures of speech and language by the CWS group. Parents of children in the CWS group were also more accurate in the predictions of their child's communicative performance.

Murray and Reed's 1977 study aimed to determine if CWS are delayed in language abilities as compared to their fluent counterparts. Subjects included 7 preschool CWS and age-race-matched CWNS. Their results revealed that the experimental group scored significantly lower than the control group on the verbal and overall language quotient; thus lending support to Bloodstein's 1969 hypothesis.

Westby (1974) explored the syntactic and semantic language performance of 3 groups of children – typically disfluent CWNS, CWS, and highly disfluent CWNS. Her results registered significantly lower receptive vocabulary scores, with significantly more grammatical errors and significantly higher incorrect response scores on the semantic tasks for 2 groups of children; namely the CWS and the highly disfluent CWNS.

2.2 Studies that revealed no significant differences in the language abilities of CWS as compared to their typically developing fluent counterparts

Nippold, Schwarz & Jescheniak (1991) assessed the narrative abilities as well as expressive and receptive language development of school-aged boys with and without stuttering. Their results did not lend support to the hypothesis of a delayed/deficient language development in the CWS group. Their results were in concurrence with those of Bernstein Ratner and Sih (1987). Similar findings were also reported by Bonelli, Dixon, Bernstein Ratner & Onslow in 2000.

Following a common thread, Ryan (1992); Kloth, Janssen, Kraaimaat, and Brutten (1998); Anderson, Pellowski, and Conture (2005) examining the linguistic abilities of preschoolers with stuttering and their typically developing peers provided no evidence to support the claim that CWS, as a group, are more likely to have language disorders than CWNS.

2.3 Studies lending support to the hypothesis of precocious language abilities in CWS

Reilly and colleagues (2009) conducted a longitudinal, community cohort study of 1619 Australian children recruited at 8 months old and followed upto the age of 3years to document the onset of stuttering and predictive factors contributing thereof, pointed toward evidence of higher vocabulary scores in these children; with early onset not associated with a language delay. Their results duplicate the findings of Hage (2001) and Watkins (2005).

In a meta-analytical review of the language abilities of children who stutter, Ntourou, Conture and Lipsey (2011) summarized evidence from 22 studies and estimated the mean difference effect size using Hedges's g (Hedges, 1982). Their findings indicated that CWS scored significantly lower than CWNS on norm-referenced measures of overall language, receptive and expressive

vocabulary. Their findings imply that children's language abilities are potentially persuasive variable associated with developmental stuttering. Particular findings of interest to our study are summed below:

Overall language: 11 studies assessed overall language abilities of CWS and CWNS using global norm-referenced tests of language development (ex: TELD-2). Mean effect size of -0.48 was estimated; which was statistically significant with 95% CI. This indicated that CWS, as a group scored nearly half a standard deviation below CWNS. An effect size of -0.48 demonstrates that the average participant in the CWNS group exceeded the language scores of 68% of the CWS group.

Receptive Vocabulary: 16 studies assessed the receptive vocabulary of the CWS and CWNS with norm-referenced receptive vocabulary tests (ex: PPVT-R). Mean effect size of -0.52 was obtained; which was statistically significant with 95% CI. This suggests that CWS, on average scored about half a standard deviation below CWNS, indicating that the average child in the CWNS group exceeded the receptive vocabulary scores of 70% of the group with stuttering.

Expressive Vocabulary: 8 studies assessed the expressive vocabulary of CWS and CWNS with the use of norm-referenced tests of expressive vocabulary (ex: Expressive Vocabulary Test; Williams, 1997). The mean effect size was estimated at -0.41, which was significant. This statistic indicated that the typical participant in the CWNS group exceeded the expressive vocabulary scores of 66% of the CWS group.

Overall Receptive and Expressive Language: Consistent results were seen across all 4 studies undertaken; demonstrating a uniform pattern of lower language performance by CWS relative to CWNS.

Anderson and colleagues (2005) evaluated the presence of dissociations in the speech and language skills of 45 young children who do (CWS) and do not stutter (CWNS) using a correlation-based analyses on 4 standardized speech-language measures, namely: the Goldman-Fristoe Test of

Articulation (GFTA-2), Peabody Picture Vocabulary Test (PPVT-III), Expressive Vocabulary Test (EVT), and the Test of Early Language Development (TELD-3).

The children were matched by age, gender, race and parental socioeconomic status. Between-group results for these measures indicated that CWS scored significantly lower than CWNS on the TELD-3 Expressive and Receptive subtests. Their findings suggested that the overall language abilities (as based on TELD-3) of CWS maybe lower than matched CWNS; even though both groups exhibited scores well within normal limits on the other 3 standardized measures. This claim was also substantiated by the fact that CWS consistently scored lower than CWNS on all other speech-language measures; although these differences were not statistically significant.

Correlation analyses for 2 variables within the domains of vocabulary, language, oral communication, comprehension, and speech sound development revealed the following:

(i) 3 CWS met the criteria for dissociation (in the domain of vocabulary), with 2 CWS exhibiting profiles of Receptive vocabulary < Expressive vocabulary and 1 CWS exhibiting the opposite profile (Receptive vocabulary > Expressive vocabulary). A single CWNS outlier met the criteria for dissociation with a profile of Receptive vocabulary > Expressive vocabulary.

(ii) In the domain of overall expressive and receptive language; 4 CWS met the criteria for dissociation with 3 CWS exhibiting a profile of Expressive language > Receptive language and 1 CWS exhibiting the opposite pattern. A single CWNS met the criteria for dissociation with the typical profile of Expressive language > Receptive language.

(iii) Performance in the domain of oral communication revealed 5 cases of CWS dissociation with 3 having a profile of Expressive language > Expressive vocabulary while the other 2 had a profile of Expressive language < Expressive vocabulary. The only CWNS who was identified as a case of dissociation exhibited a profile of Expressive language > Expressive vocabulary.

(iv) Performance in the domain of comprehension indicated that 5 CWS and 4 CWNS met the criteria for dissociation. Out of these, 4 CWS and 3 CWNS had profiles of Receptive

vocabulary > Receptive language, while 1 CWS and 1 CWNS exhibited the opposite pattern of performance.

(v) In the domain of speech sound development (with respect to Expressive-Receptive language variables), 6 CWS were identified as cases of dissociation with half of them (n=3) exhibiting a pattern of speech sound development > Expressive language while the remaining half (n=3) had the opposite pattern of performance. Similarly, 10 CWS and 3 CWNS met the criteria for dissociation with 8 CWS and 2 CWNS having a profile of speech sound development > Receptive language. The remaining 2 CWS and 1 CWNS exhibited the opposite profile speech sound development < Receptive language.

(vi) In the domain of speech sound development versus Expressive-Receptive vocabulary; 3 CWS and 1 CWNS were identified as cases of dissociation. 1 CWS and the single CWNS had profiles of speech sound development > Expressive vocabulary; while the other 2 CWS had profiles of speech sound development < Expressive vocabulary. Similarly, only 2 CWS and 1 CWNS met the criteria for dissociation, all of whom had a profile of speech sound development < Receptive vocabulary.

Findings revealed that 56.4% of the 78 outliers for CWS met the criteria for dissociation, as against 14 of the 23 outliers for CWNS. Thus, CWS were just over 3 times more likely than CWNS to exhibit cases of dissociation across speech-language domains; hence insinuating that some speech-language abilities of CWS may not be as well developed as CWNS.

Differences in receptive vocabulary between younger (preschool-age) children who do (CWS) and do not stutter (CWNS) have often been reported (Andrews, Craig, Feyer, Hoddinott, Howie, & Neilson, 1983; Bernstein-Ratner, 1997; Bloodstein, 1995). In particular, young CWS, when compared to their fluent counterparts, have been found to score lower on the Peabody Picture Vocabulary Test (PPVT) (Dunn & Dunn, 1997), a measure of receptive vocabulary (Meyers & Freeman, 1985; Murray & Reed, 1977; Ryan, 1992; Westby, 1974). Bloodstein (1995) suggests that this “linguistic disadvantage” seen in the speech repertoire of young CWS may become less apparent

as children advance in age, a suggestion that may explain equivocalness of findings relative to differences in receptive vocabulary between older CWS and CWNS (Perozzi & Kunze, 1969; Williams, Melrose, & Woods, 1969).

If young CWS do exhibit lower scores on receptive vocabulary measures relative to their scores on other measures of language (e.g., expressive/receptive language), one possible implication is that there is an imbalance among components of their language system. This is in concurrence with Perkins, Kent, & Curlee's (1991) model which advocates that when one language skill is below the level of other language components, "the production of language is then thrown out of balance as different components arrive at a central language integrator at different times and thus have a mistimed impact on the motor production of speech" (Tetnowski, 1998). If CWS do exhibit subtle, but consistent quantitative and/or qualitative differences between lexical and syntactic abilities, these differences may be sufficient enough to disrupt, stall, or "freeze" the forward flow of speech production, resulting in repairs/corrections that are overtly manifest as hesitations, repetitions, and prolongations (Anderson & Conture, 2000).

Research by investigators scrutinizing aspects of language abilities of children with stuttering in the Indian context has been relatively scarce. However, some notable mentions are summarized below:

- Geetha (1979) investigated some linguistic aspects of stuttering in PWS between the ages of 5 and 20 years and found that content words in general are stuttered more often than function words in the following descending order of stuttering frequency: nouns, verbs, pronouns, adverbs, adjectives, determiners and conjunctions. Consonants were in general stuttered more than vowels; in line with previous findings by Bloodstein (1958). She also observed that the first 4-5 word positions contain the maximum frequency of blocks with a gradual tendency for the number of blocks to decrease with increasing word order. Further, she also noted that it is the first syllable of a word which is stuttered most often, with

syllable repetitions more frequently; followed by word, phrase, part-word and finally sentence repetitions.

- Similarly, Yashaswini (2010) in a study of the linguistic and metalinguistic abilities in children with stuttering between the ages of 8 and 12 years found poor performance of CWS (10-11 year olds) when compared to CWNS on the phonology task. No statistically significant difference between performance of CWS and CWNS was noted on the semantics section of the LPT (in consensus with findings by Perozzi & Kunze, 1969). Overall MANOVA results revealed significantly poor performance in CWS on syntax and all metaphonological tasks excepting rhyme recognition and phoneme oddity.
- In a study assessing the syntactic abilities of preschoolers with stuttering, Prachi (2001) noted that CWS scored lower on overall scores of the STASK; with the exclusion of 1 child with stuttering who scored even higher than an age-gender matched control. A similar trend was observed in the syntax comprehension scores of STASK. CWS also scored lower on the syntax expression section of STASK with the exception of 2 children with stuttering – one who scored higher than the age-gender matched control and the other who scored on par with the control subject.

In general, studies of lexical characteristics of stuttered events have consistently found regularities in terms of the distribution and loci of these stuttering events (Au-Yeung & Howell, 1998; Bernstein-Ratner, 1997; Bloodstein, 1995).Ordinarily, stuttering tends to be more common on content words for older children and adults (Brown, 1938; Howell, Au-Yeung, & Sackin, 1999); conversely, young children stutter more on function words (Bernstein, 1981; Bloodstein & Grossman, 1981; Howell et al., 1999). One interpretation of this latter finding by Bernstein-Ratner (1997), relates to ". . . the overriding effect of syntactic encoding on lexical frequency in children's speech". An alternative to this account, offered by Howell et al., is that young children who stutter have difficulties retrieving complex phonological forms (usually within content words) when the

form to be retrieved is produced in "function word context" ("see the dog" versus "see dog") (Anderson & Conture, 2000). Whichever of these reports best explain the loci of stuttering in young children, current speculation seems to suggest that multiple aspects of linguistic formulation (e.g., lexical encoding) may contribute to childhood stuttering.

NEED FOR THE STUDY

The issue of whether CWS differ from children who do not stutter (CWNS) in terms of linguistic abilities has been a topic of heated contestation. Inspite of this buildup, findings from studies investigating the speech and language abilities of CWS have been less than conclusive. On the one hand, some literature reviews have suggested that CWS may have less developed phonology, vocabulary, or overall language abilities than their normally-fluent peers (Anderson & Conture, 2000, 2004; Byrd & Cooper, 1989; Louko, Conture, & Edwards, 1999; Paden, Yairi, & Ambrose, 1999; Pellowski, Conture, Anderson, & Ohde, 2001; Silverman & Ratner, 2002). On the other hand, certain empirical studies have found no evidence to validate that the speech or language abilities of CWS are less robust than those of CWNS (Nippold, 2002).

Typical empirical studies scrutinizing the linguistic/lexical skills of persons with stuttering have focused on the adult with stuttering (Bosshardt, 1993, 1994; Bosshardt, & Fransen, 1996; Prins, Main, & Wampler, 1997), making it difficult for present-day researchers to extrapolate "backwards" from the skills of adults to those of young children, for as Yairi (1993) suggests, "advanced stuttering is markedly different from the incipient form and because confirmed stutterers represent a small minority of people who have ever experienced the disorder (Andrews & Harris, 1964), continuing attempts to infer its (stuttering's) etiology and nature or to prescribe treatment for children who stutter based on models derived from adult stuttering are indefensible" (Conture, 1991; Yairi, 1990). It would seem, therefore, that further study of the lexical abilities of CWS (especially in the pre-

school period) might have meaningful implications relative to the circumstances surrounding the onset of stuttering in early childhood. This period of preschool is critical to our understanding of developmental stuttering as it is during this period that a child experiences a phenomenal spurt in language acquisition while his motor system is still immature. Thus, stuttering has been attributed to result as a consequence of an immature speech motor system being challenged to keep in pace with the accelerated expansion of the language system.

Likewise, from a clinical perspective, recent research indicates that 3 of every 4 youngsters who begin to stutter as preschoolers will recover within a transient time frame, without formal intervention (Yairi & Ambrose, 2005). Therefore, a clear perception of their language profiles could optimize service delivery to those children who persist with stuttering.

Furthermore, there is a conspicuous lack of studies examining the possibility of these claims proving true to word in the Indian context, thereby making it all the more essential to initiate research in this area.

In summary, given the aforementioned observations, it is important to evaluate the claims of poorer language abilities in CWS closely to ensure that our knowledge infrastructure in childhood stuttering is authentic.

AIMS AND OBJECTIVES

Contemplating the reflections that imbalances between lexical abilities may contribute to childhood stuttering, the primary aim of this study is to determine whether language abilities of CWS differ from those of CWNS.

Specifically, the research objectives are:

1) To compare the overall language ability scores of CWS and their normally fluent peers

2) To evaluate the semantic and syntactic scores of CWS relative to CWNS
3) To investigate the relationship between overall language abilities and severity of stuttering in CWS.

CHAPTER 3

METHOD

3.1 Participant Selection

Participants included two groups of 10 children (N=20) between the ages of 3;0 and 5;11 (years; months) who do (CWS) and do not stutter (CWNS). The 10 CWS were distributed across the 3 severity levels of mild, moderate and severe; and were matched by gender, age and socio-economic status (Venkatesan, 1999) to the CWNS. All participants considered were native speakers of Kannada with no history of neurological, psychological, sensory or intellectual problems as per parent/teacher report and clinician observation. Children in the CWS group had no prior treatment for articulation, language, or stuttering concerns.

Criteria for Group Classification

Children who stutter (CWS)-

A child was assigned to the CWS group if he/she met the following criteria:

- The formula for Weighted SLD suggested by Anjana and Savithri (2013) was used where, Weighted SLD = [(SR + PWR) * RU + 2 * DP] and SR refers to percent sound repetition, PWR refers to part-word repetition, RU refers to repetition units, and DP refers to percent dysrhythmic phonation. The mean weighted SLD for CWS is 34.6 (SD= 38.28) with a range from 5.48 to 136.
- Received a total overall score of 11 or above (a severity equivalent of at least “mild”) on the Stuttering Severity Instrument-3 (SSI-3) (Riley, 1994) and
- Had people in his/her environment who are concerned about his/her speech fluency and/or

believe that he/she is a child who stutters or at a very high risk for becoming one.

Children who do not stutter (CWNS)-

A child was assigned to the CWNS group if he/she met the following criteria:

- The formula for Weighted SLD suggested by Anjana and Savithri (2013) was used where mean weighted SLD as per the formula for CWNS is 1.44 (SD= 1.28) with a range from 0 to 7.89.
- Received a total overall score of 10 or below (a severity equivalent of less than “mild”) on the SSI-3 (Riley, 1994) and
- Had no people in his/her environment who are concerned about his/her speech fluency and/or believe that he/she is a child with stuttering or at a very high risk for becoming one.

3.2 Materials

(a) A checklist developed to gather information pertaining to child's sociodemographic data, native language, number of language known and/or exposed to; family, birth and developmental history, general intellectual and peripheral sensory abilities, onset and severity of stuttering, etc.

(b) Stuttering Severity Instrument for Children and Adults – III edition (SSI-3) (Riley, 1994): A norm-referenced test that evaluates the parameters of Frequency, Duration and Physical Concomitants to objectively measure and quantify stuttering severity, appropriate for preschool children (ages 2-10 to 5-11).

(c) Kannada Language Test (KLT) (Unicef Funded Project, 1990; Norm standardized by Shyamala, Vijayashree, & Jayaram, 2003): A standardized test that taps the child's mastery (both comprehension and expression) of a wide spectrum of linguistic structures under the syntactic and semantic domains of the Kannada language. Applicable for use with children between the ages of 3 and 7 years. The semantic domain include the following subsections – Naming, Semantic

discrimination, Lexical category, Semantic similarity, Semantic anomaly, Semantic contiguity, Paradigmatic relations, Syntagmatic relations, Polar questions, Antonymy, Synonymy, Homonymy; while the syntactic domain includes – Morphophonemic structures, Plurals, Tenses, PNG markers, Conditional clauses, Transitives, Intransitives and Causatives, Sentence types, Conjuctives and Quotatives, Comparatives and Participle constructions respectively.

3.3 Procedure

Speaking/Testing Conditions

Participants were tested in their homes/play schools. Participants were required to participate in an informal clinician-child conversational interaction to permit the perceptual analysis of speech disfluencies. All interactions were audio recorded and verbatim transcription of their speech was done to enable postliminary administration of the Stuttering Severity Instrument (SSI-3), thereby establishing diagnosis and severity of the disorder.

Clinician-child interaction

In the child's home/play school, with the mother and/or father and/or caregiver present, but not participating, a conversational speech sample was elicited during a loosely structured clinician-child interaction. The clinician and child will be seated next to each other on the floor or at a small table with the child's favourite toys situated directly in front of him/her. Verbal interaction between clinician and child will be recorded, while playing with the toys.

Standardized speech-language tests

After completion of the clinician-child interaction, participants were administered a standardized speech-language test: the Kannada Language Test (KLT), a measure of overall (semantic/syntactic) language ability.

Data Collection/Instrumentation

A clinician trained in the assessment of stuttering administered all formal/informal tests and participated in the clinician-child interaction. All participants were audio recorded during data collection sessions lasting approximately 1 hour.

Initially the checklist was administered on each child, and only those children who passed the respective inclusionary criteria participated further. Child-Clinician audio recorded interactions were subsequently assessed using the SSI-3 to determine presence and severity of stuttering, following which the standardized language test were administered.

Scoring

Recorded samples were analyzed to study the research objectives. Scoring procedures as recommended in the KLT were used to score all the receptive and expressive items pertaining to the domains of syntax and semantics.

STATISTICAL ANALYSIS

The obtained data was subjected to a quantitative statistical analysis using the SPSS (version 17.0) software package. The following statistical analyses were executed:

1. Independent t-test was done to compare the mean Overall language scores between the 2 groups of children.
2. Mixed ANOVA was performed to compare the 2 groups across the subtests of the of the language test (KLT) as well as to examine for within subjects variability.

CHAPTER 4

RESULTS

The present study aimed to determine whether language abilities of children who stutter (CWS) differ from those of children who do not stutter (CWNS).

4.1 Demographic Data

Participants included 10 CWS between the ages of 3.1 and 5.11 years, with gradual onset of stuttering and no other associated problems or family history of stuttering. Their details are presented in Table 1. The 10 CWNS were age and gender matched to the clinical group.

Table 1: Demographic data of each participant showing their age and severity of stuttering

Participants	Age (in years)	Severity of stuttering
1	5.11	Moderate
2	3.1	Severe
3	5.9	Moderate
4	5.1	Moderate
5	3.1	Moderate
6	5.3	Mild
7	4.5	Moderate
8	5.11	Moderate
9	4.4	Mild
10	3.7	Severe

4.2 Language abilities among CWS and CWNS

Kannada Language Test (KLT) was used to assess the child's mastery of a wide spectrum of linguistic structures under the syntactic and semantic domains of the Kannada language. The semantic domain includes the following 12 subsections – Naming, Semantic discrimination, Lexical category, Semantic similarity, Semantic anomaly, Semantic contiguity, Paradigmatic relations, Syntagmatic relations, Polar questions, Antonymy, Synonymy, and Homonymy; while the syntactic domain includes the following 10 subsections – Morphophonemic structures, Plurals, Tenses, PNG markers, Conditional clauses, Transitives, Intransitives and Causatives, Sentence types, Conjuctives and Quotatives, Comparatives and Participle constructions respectively. Table 2. depicts the summary of the scores obtained by the CWS on the various sections of the KLT.

Table 2: Summary of scores of KLT in CWS

Participants	1	2	3	4	5	6	7	8	9	10
RT	48	35	40.5	58	25.5	61	55.5	59	52.5	44
ET	39.5	25.5	29.5	50.5	16	55.5	46	48.5	41	32
LT	87.5	60.5	70	108.5	41.5	116.5	101.5	107.5	93.5	76
Sem Rpt	25	20	16	28	13	31.5	32	29	25	24.5
Sem Exp	18.5	14.5	13	23.5	9.5	27	29.5	26.5	18.5	20
Sem T	43.5	34.5	29	51.5	22.5	58.5	61.5	55.5	43.5	44.5
Syn Rpt	23	15	24.5	30	12.5	29.5	23.5	30	27.5	19.5
Syn Exp	21	11	16.5	27	6.5	28.5	16.5	22	22.5	12

Syn T	44	26	41	57	19	58	40	52	50	31.5

Note: RT – Receptive Total; ET – Expressive Total; LT – Language Total, Sem Rpt – Semantic Reception; Sem Exp – Semantic Expression; Sem T – Semantic Total; Syn Rpt – Semantic Reception; Syn Exp – Syntactic Expression; Syn T – Syntactic Total.

KLT was also administered on the age and gender matched typically developing control group. Table 3. depicts the summary of scores obtained by the CWNS on the various sections of the KLT.

Table 3: Summary of scores of KLT in CWNS

Participants	1	2	3	4	5	6	7	8	9	10
RT	26	44	40.5	48	38	56	58	57	33	44.5
ET	16	30.5	31	33	24.5	50	51.5	52	35	39
LT	42	74.5	71.5	81	62.5	106	109.5	109	68	83.5
Sem Rpt	11.5	19	26	23.5	21	31	26.5	26	18.5	22
Sem Exp	8.5	16	20.5	18	14.5	29	22.5	24.5	17.5	21
Sem T	20	35	46.5	41.5	35.5	60	49	50.5	36	43
Syn Rpt	14.5	25	14.5	24.5	17	25	31.5	31	14.5	22.5
Syn Exp	7.5	14.5	10.5	15	10	21	29	27.5	17.5	18
Syn T	22	39.5	25	39.5	27	46	60.5	58.5	32	40.5

Note: RT – Receptive Total; ET – Expressive Total; LT – Language Total, Sem Rpt – Semantic Reception; Sem Exp – Semantic Expression; Sem T – Semantic Total; Syn Rpt – Semantic

Reception; Syn Exp – Syntactic Expression; Syn T – Syntactic Total.

4.2.1 Overall language ability scores of CWS and CWNS

Results for the overall language ability scores of CWS and CWNS are displayed in Figure 1. From the figure it is evident that the 2 groups in question performed on par with each other on the test for language abilities. The control group consisting of children who do not stutter (CWNS) had a mean of 80.75 and SD of 22.09 as compared against the clinical group consisting of children with stuttering (CWS) who presented with a mean of 86.30 and SD of 23.99. However, on comparison of the raw mean scores; CWS had a slightly higher overall language score as compared to CWNS. The Independent t-test results showed no significant difference between the 2 groups in terms of their overall language ability scores [$t(18) = 0.538$, $p < 0.05$].

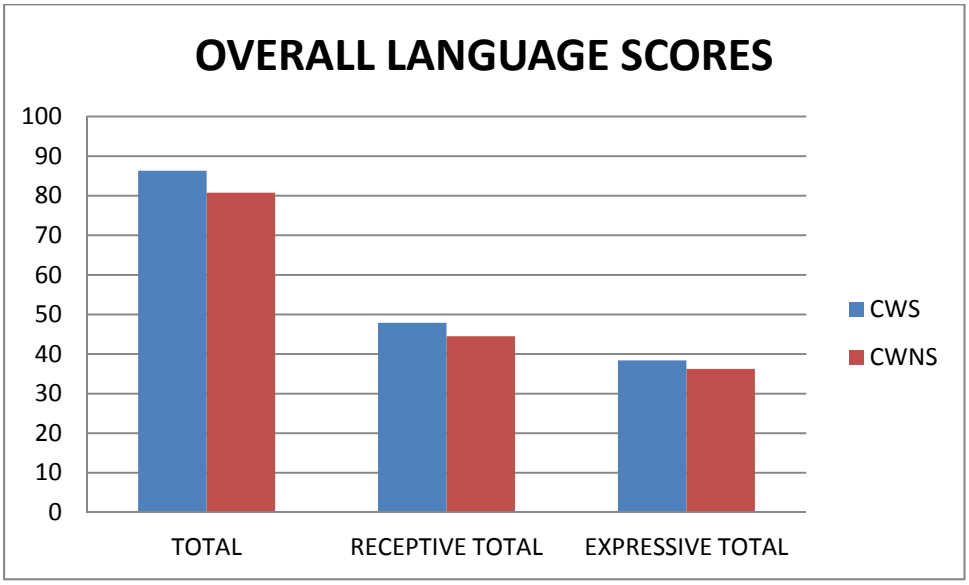

Figure 1: Comparison of mean of overall language abilities (reception and expression) in CWS and CWNS.

Furthermore, on application of Mixed ANOVA to examine group-wise comparison of Receptive Total (calculated as the sum of Syntactic Receptive and Semantic Receptive scores) and

Expressive Total (calculated as the sum of Syntactic Expressive and Semantic Expressive scores); results demonstrated that both groups behave in a similar fashion with no significant difference across the 2 groups [$F(1, 18) = 0.290$, $p < 0.05$]. Nevertheless, a significant difference was observed within groups [$F(1, 18) = 104.58$, $p > 0.05$] for receptive total and expressive total score, indicating better performance for reception compared to expression in both groups.

4.2.2 Overall Semantic and Syntactic scores of CWS relative to CWNS

Results comparing the means of overall semantic scores and overall syntactic scores across and within the 2 groups of participants are represented in the Figure 2. The CWS had a group mean of 44.45 with SD of 12.82; and a group mean of 41.85 with SD of 13.11 on the semantic and syntactic subsections respectively. The CWNS had a group mean of 41.70 with SD of 10.93; and a group mean of 39.05 with SD of 13.21 on the semantic and syntactic subsections respectively. Comparison of group means suggest that scores on semantics are slightly better than those obtained on the syntax subsection and that the CWS slightly outperformed their fluent peers.

However, the statistical procedure Mixed ANOVA showed that no significant difference [$F(1,18) = 0.290$, $p < 0.05$] exists between the 2 groups on comparison of their overall semantic and overall syntactic scores. Likewise, no significant difference [$F(1,18) = 1.390$, $p < 0.05$] was noted on comparison of overall semantic and overall syntactic scores within participants of each group.

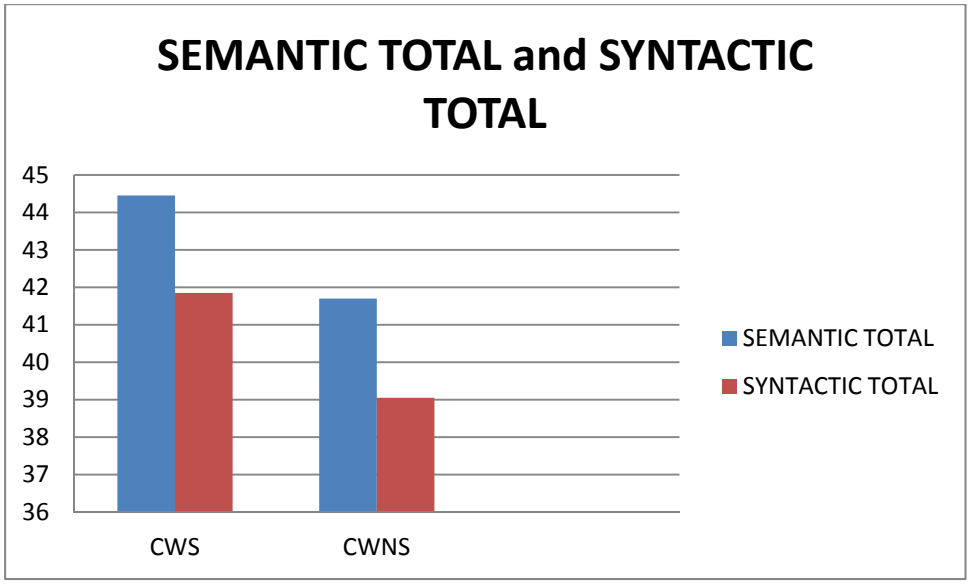

Figure 2: Comparison of group mean of semantic and syntactic scores for CWS and CWNS.

4.2.3 Semantic receptive and Semantic expressive scores

Figure 3 describes the results comparing the receptive and expressive scores on the Semantics subtest of KLT between the 2 groups investigated. The CWS had a group mean of 24.40 with SD of 6.34; and a group mean of 20.05 with SD of 6.56 on the receptive and expressive subscores respectively, while the CWNS had a group mean of 22.50 with SD of 5.93; and a group mean of 19.20 with SD of 5.68 on the receptive and expressive subscores respectively. Comparison of group means seem to suggest that the CWS had slightly better scores than the CWNS on both subscales of semantics and that receptive abilities are slightly higher than expressive abilities in the domain of semantics. On application of Mixed ANOVA, results revealed no significant difference [$F(1,18) = 0.266$, $p < 0.05$] of these scores across the groups. However, a highly significant difference was observed on comparison of the semantic receptive and semantic expressive scores [$F(1,18) = 93.845$, $p > 0.05$] within participants of each group.

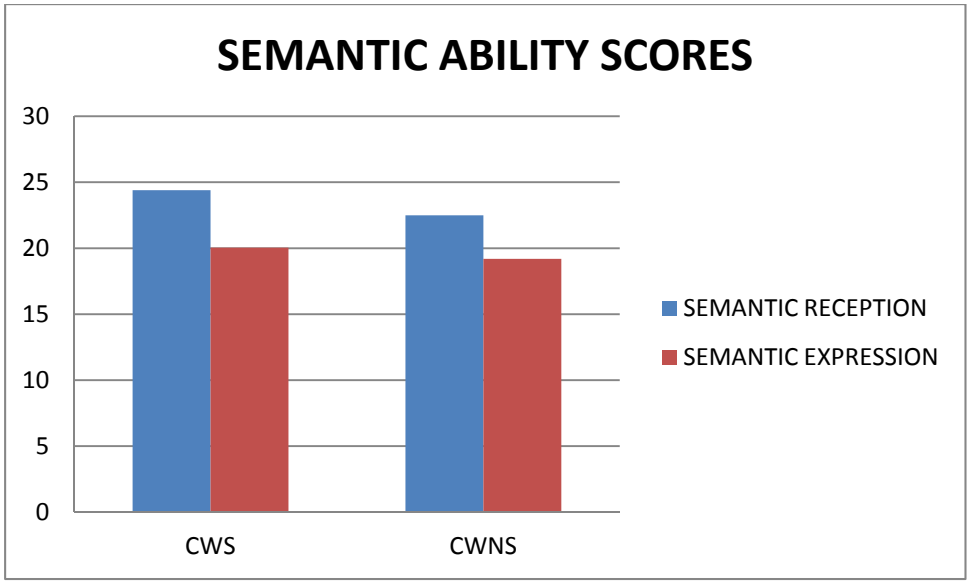

Figure 3: Comparison of group mean of semantic receptive and semantic expressive scores for CWS and CWNS.

4.2.4 Syntactic receptive and Syntactic expressive scores

Figure 4 depicts the results obtained on comparison of the receptive and expressive scores on the Syntax subtest of KLT between the 2 groups of participants. The CWS had a group mean of 23.50 with SD of 6.21; and a group mean of 18.35 with SD of 7.13 on the receptive and expressive subscores respectively, while the CWNS had a group mean of 22.00 with SD of 6.57; and a group mean of 17.05 with SD of 7.17 on the receptive and expressive subscores respectively. Comparison of group means tends to suggest that receptive abilities are slightly better than expressive abilities in the domain of syntax, and further that the CWS performed slightly better than their fluent peers on these tasks. On application of Mixed ANOVA, it was discerned that the 2 groups of children performed equally well on both measures of syntax [$F(1,18) = 0.226$, $p < 0.05$]. Nevertheless, a significant difference was noted when these scores were compared within participants of the groups [$F(1,18) = 47.76$, $p > 0.05$].

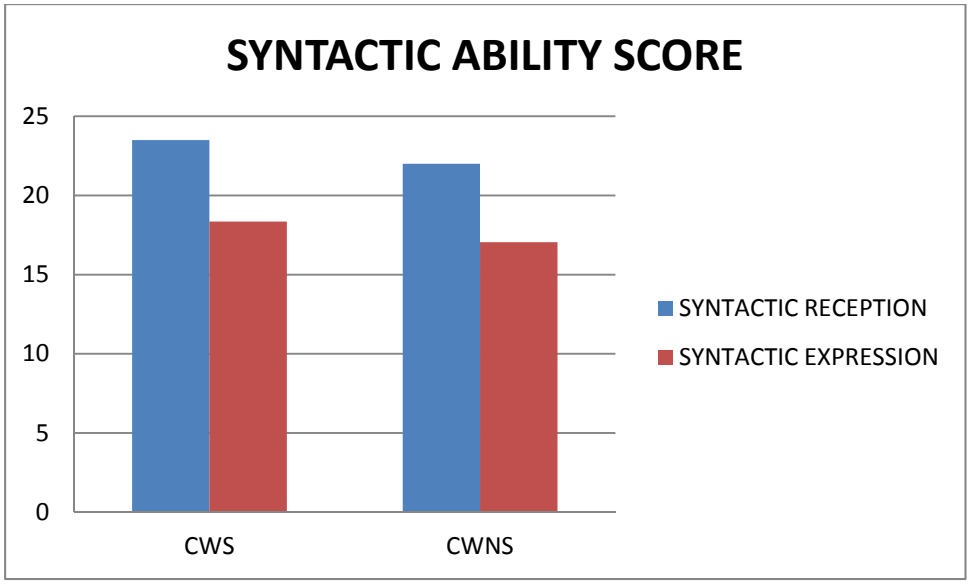

Figure 4: Comparison of group mean of syntactic receptive and syntactic expressive scores for CWS and CWNS.

4.2.5 Subgrouping CWS and CWNS with respect to language abilities

Based on their language scores, CWS and CWNS were subgrouped as having High, Low, or Average language abilities, on comparison with the standardized norms of the KLT and their chronological ages. Results after such a comparison revealed that 3 of the 10 CWS had poor language abilities, 2 CWS exhibited higher language abilities, while the remaining 5 CWS showed average age-appropriate language abilities. Surprisingly, the 1O CWNS replicated the exact pattern noted above; with 3 CWNS of the 10 showing poor language abilities, 2 CWNS exhibiting higher language abilities, and the remainder 5 CWNS displaying average language abilities.

4.3 Overall language ability and severity of stuttering

The current sample of children who participated in the study included 2 children with mild degree, 6 with moderate degree and a further 2 with severe degree of stuttering. As the sample size for each degree of severity was small, appropriate statistical analyses could not be carried out.

Hence, a descriptive discussion of the data is done instead. Overall language ability across the varied severity of stuttering is depicted in Table 4.

Table 4: Comparison of mean and SD of language scores with respect to the severity of stuttering

Language sections	Mild Mean (SD)	Moderate Mean (SD)	Severe Mean (SD)
RT	56.75 (6.01)	47.75 (12.95)	39.50 (6.36)
ET	48.25 (10.25)	38.33 (13.32)	28.75 (4.59)
LT	105.00 (16.26)	86.03 (26.25)	68.25 (10.96)
Sem Rpt	28.25 (4.59)	23.83 (7.62)	22.25 (3.18)
Sem Exp	22.75 (6.01)	20.08 (7.82)	17.25 (3.88)
Sem T	51.00 (10.60)	43.91 (15.37)	39.50 (7.07)
Syn Rpt	28.50 (1.41)	23.91 (6.41)	17.25 (3.18)
Syn Exp	25.50 (4.24)	18.25 (6.92)	11.50 (0.70)
Syn T	54.00 (5.65)	42.16 (13.13)	28.75 (3.88)

Note: RT – Receptive Total; ET – Expressive Total; LT – Language Total, Sem Rpt – Semantic Reception; Sem Exp – Semantic Expression; Sem T – Semantic Total; Syn Rpt – Semantic Reception; Syn Exp – Syntactic Expression; Syn T – Syntactic Total.

The mean score for overall language abilities was better for the Mild group, followed by the group with Moderate degree of severity and poorest scores were obtained by children with severe degree of stuttering. A similar trend was observed for the semantics and syntax section of the language test. On comparing the total scores for the semantic and syntactic subtests of KLT; children

with severe degree of stuttering had better semantic ability (mean of 39.50 with SD of 7.07) as compared to syntactic ability (mean of 28.75 with SD 3.88).

In summary, the results of our study indicate no significant differences in the language abilities among CWS and CWNS as evinced on a norm-referenced test (KLT). Although not statistically significant, CWS were found to have performed slightly better on all the language subtests as compared to their fluent peers.

CHAPTER 5

DISCUSSION

The results of the present study suggest that CWS performed on par with their fluent counterparts (CWNS) on a norm-referenced language test. Receptive abilities across the domains of semantics and syntax was found to be much higher than Expressive abilities within participants of both groups, although no significant between-group differences were noted. Additionally, the clinical group consisting of CWS slightly eclipsed the control group consisting of CWNS on the various sections of the KLT, although not statistically significant.

Due to the small sample size afforded by our study, the results are more suggestive than conclusive.

Claims that children who stutter (CWS), as a group, tend to exhibit concomitant language disorders than children who do not stutter (CWNS) are not supported by this study. Rather, it seems more appropriate to suggest that children who stutter are as likely as CWNS to show the full range of language abilities (high, average, low) as measured by their performance on norm-referenced tests. In our study, 2 CWS exhibited higher language abilities – investigations by Hage (2001); Reilly et al. (2009); and Watkins, (2005) lend support to this finding of precocious language abilities in young children stutter, in agreement with parental reports that their child had a spurt of language development just prior to their onset of stuttering. Yairi (2006) speculated that "the emergence of stuttering involves some type of trade-off in linguistic resources (ex: advanced language at the expense of motoric fluency)". Further, 5 CWS out of the 10 displayed average age-appropriate language skills (Bernstein Ratner & Sih, 1987; Bonelli, Dixon, Bernstein Ratner & Onslow, 2000; Nippold, Schwarz & Jescheniak, 1991) while 3 CWS demonstrated poorer language abilities (Anderson & Conture, 2000; Bernstein Ratner & Silverman, 2000; Murray & Reed, 1977; Westby, 1974) – supporting Bernstein's contention that "preschool stuttering may be a surface feature of

fragmentation of higher language constituents, especially the learning of adult syntactic structures" (Murray & Reed, 1977). Or as Anderson and colleagues (2000) suggested, "there maybe an imbalance among the components of the speech-language system, resulting in disruptions in the forward flow of speech-language production".

The results of the current study are in consonance with that of Kloth, Janssen, Kraaimaat, and Brutten (1998) who in their longitudinal study examined a large group of children (n=93) at a high risk for stuttering because one or both of their parents had a history of stuttering at a point in their lives. The study was executed to determine the claim that stuttering restricts children's language development over time. At the outset of the study, all the children were between 2 and 5 years of age (mean = 3.3years) and none of them had begun to stutter. The preschoolers were administered a battery of tests to assess their receptive and expressive language development. In addition to this, a sample of spontaneous speech was also elicited and analyzed for MLU as a measure of expressive language development. These children were followed up and one year later, 26 of the 93 children had begun to stutter. These 26 children were then age and gender matched to other children within the high risk group who exhibited no stuttering. All measures of language were re-administered to the 52 children. Results indicated that the groups did not differ significantly in their receptive or expressive language skills at the initial testing session nor at the follow-up session a year later. Both groups of children had made sizable leaps in their language development over the year, thus providing no evidence to the claim that stuttering may dampen a child's rate of language development.

Yarrus et al. (1998) in a study on 83 children who stutter with a mean age of 4.7 years, on formal and/or informal measures of expressive language development, examined in relation to normative data found the following results: Of the 83 children studied; 21 (25%) were Above Normal Limits [ANL], 38 (46%) were Within Normal Limits [WNL], 24 (29%) were Below Normal Limits [BNL] in Expressive language development. Likewise, in the present study, the following statistics were

obtained: Of the 10 CWS studied, 20% were ANL, 50% were WNL, while 30% were BNL; suggesting that the CWS behaved as a heterogeneous group. However, Nippold (2012) has advised using caution when interpreting these results as evidence of a high rate of language disorders in CWS. Instead, she notes that it is important to consider alternative explanations before accepting any result. A possible alternate explanation is as follows: Participants in caseload and clinic studies might not be a true representative of the larger population of CWS. There are several reasons which offer support to this statement. It may happen that some parents are not concerned about their child's speech or are unaware of services available or maybe unable to pay for them. In other instances, a family pediatrician may have advised them to "wait and see"; thereby excluding such children from studies of caseloads or clinic samples. In quite the contrary manner, it may happen that CWS who have additional issues that direct greater parental concern (ex: numerous speech sound errors, restricted expressive vocabulary) could come to the attention of a speech language pathologist much sooner than those whose only problem is fluency. Since the participants of our clinical group were all self-referrals at the All India Institute of Speech and Hearing, this may be a factor influencing the outcome of the study.

The results of the present study are in agreement with that of Ryan (1992), who in a study to examine potential differences in language abilities of 2 groups of preschool children (n=20); one group consisting of children who stutter (CWS) and the other group consisting of their fluent age, gender and maternal education-level matched peers (CWNS). The CWS were self-referrals to the university clinic and the CWNS were participants from neighboring preschools. Each child was administered the PPVT-R (Peabody Picture Vocabulary Test – Revised) and the TOLD-P (Test of Language Development – Primary; Newcomer & Hammil, 1982). His results revealed that although both groups of preschoolers performed within normal limits on the PPVT-R (CWS = 105.4, CWNS = 111.2) and the TOLD-P (CWS = 92.2, CWNS = 100.8), the CWNS as a group outperformed the CWS on the TOLD-P, a difference that was statistically significant. Nonetheless, the study provides no

evidence to support the claim that CWS, as a group, are more likely to have language disorders than CWNS.

Another possible explanation for the difference in findings by various researchers (Anderson & Conture, 2000, 2004; Byrd & Cooper, 1989; Louko, Conture, & Edwards, 1999; Paden, Yairi, & Ambrose, 1999; Pellowski, Conture, Anderson, & Ohde, 2001; Silverman & Ratner, 2002) is the fact that although the groups of children being studied were matched for age, gender, race and socioeconomic status (SES), all children in the control group had to have scored at the 20th percentile or higher on a set of norm-referenced language tests; but no such procedural requirement was expected of the children in the experimental group whose language skills were free to vary. As stated by Schiavetti and Metz (2006), this type of a "differential subject selection procedure" constitutes a serious threat to a study's internal validity. Hence, the children's language skills were free to differ if they were non-fluent but not if they were fluent. Therefore, it is not startling that the control group, who are required to meet a criterion; outperformed the children in the experimental group, who were not subjected to meet such standards. However, this sort of a differential subject selection procedure was not followed in the present study, allowing the language abilities of both groups of preschoolers to digress. This may be a possible factor influencing the outcome of the study.

Findings from Silverman and Bernstein Ratner's (2002) study revealed that children who stutter (CWS) differed from their fluent counterparts in their performance on the Expressive One-Word Picture Vocabulary Test – Revised (EOWPVT-R; Gardner, 1990) which is a measure of expressive vocabulary development, but not in their performance on the PPVT-R, which is a measure of Receptive vocabulary development. Although these results intimate a deficit in the expressive language development of CWS; it is vital to remember that a test such as the EOWPVT-R that requires a child to name a series of pictured objects, actions, and concepts maybe especially difficult for CWS because of their tendency to avoid saying certain feared sounds/words that elicit stuttering

and to substitute this with words that are easier to say. Hence, there exists a possibility that atleast for some children who stutter, poorer performance on such a test might actually reflect an attempt to avoid stuttering on certain anticipated words rather than a true weakness in their expressive language development. This holds good for the Expressive section of the language test (KLT) used in the present study, and therefore, may be a tenable aspect influencing the results seen in terms of the disparity between Receptive and Expressive language scores.

Furthermore, the absence of significant differences in the language abilities of the 2 groups under study may likely reflect the use of different language tests from those used in western literature and a diverse set of children sampled.

Albeit that several attempts to demonstrate a link between stuttering and language ability have been executed, the evidence generated to support such a link has been less than conclusive. The fact that stuttering typically occurs in early childhood when spoken language skills are just being acquired and that the linguistic characteristics associated with instances of stuttering are relatively consistent in their distribution and loci, has led to the belief that the 2 domains must somehow be linked and that the struggle to call up words and grammatical structures overloads the child's immature language system, leading to the onset of stuttering. Although these views are not being questioned, it does seem conceivable to suggest that these factors alone do not provide a logical evidence of a link between stuttering and language abilities, neither do studies that have addressed the proposed link provide evidence for it. However, this perspective must be exercised with caution.

An alternative view is to regard stuttering as a speech disorder (Olander, Smith, & Zelaznik; 2010) involving a motor control deficit wherein “the speech motor system fails to generate and/or send the motor commands to muscles that are necessary for fluent speech to continue”; and not a language disorder. In the same vein, Packman et al. (2007) have argued that developmental stuttering is a complication in syllable initiation, wherein the child is unable to move forward in speech because the speech planning system has been compromised. Further, they explained that

children do not stutter when babbling or producing their first words; instead this complication is first noticed when the child attempts to produce multisyllabic utterances requiring complex sequential movements and varied linguistic stress patterns.

CHAPTER 6

SUMMARY AND CONCLUSION

The present study was carried out with the aim to evaluate pre-existing claims of a deficiency in the language abilities of children, at concurrent periods of language acquisition and the onset of childhood stuttering. Specifically, 3 research objectives were undertaken. They were:

a) To compare the overall language ability scores of CWS and their normally fluent peers.

b) To evaluate the semantic and syntactic scores of CWS relative to CWNS.

c) To investigate the relationship between overall language abilities and severity of stuttering in CWS.

Two groups of 10 children between the ages of 3.1 and 5.11 years who do (CWS) and do not stutter (CWNS) participated in the study. All children were native speakers of Kannada with no other concomitant disorders. The 2 groups of children were matched by age, gender, and socioeconomic status. The participants of the clinical group were self-referrals to the Institute clinics, diagnosed with stuttering but who had not yet availed intervention services, while participants of the control group were recruited from neighbouring preschools. All children were administered a checklist to gather information pertaining to their sociodemographic data and other relevant details. An informal clinician-child interaction was carried out, followed by the administration of the KLT, a measure of overall language ability. Scoring procedures as recommended in the KLT were used to score the responses of the children pertaining to the domains of syntax and semantics. Statistical analyses were executed on the obtained data to evaluate findings. The results of the study, however, did not support the hypothesis of a glitch in the overall language abilities of the children who stutter in relation to their fluent counterparts. Nevertheless, a comparison of group means on the subtests of the KLT implicitly hinted at a slightly better performance by the CWS as compared to the CWNS. Additionally, within group differences showed a significant difference between reception and expression in both groups, indicating that Receptive abilities were better developed than Expressive

abilities. Due to the limitations imposed by small sample size, restricted samples in relation to the severity of stuttering, cross-sectional data, among others; these results are meant to be treated as more suggestive than conclusive. Therefore, a linguistic-based skill assessment and management for preschool children with stuttering is advised, instead of a singular focus on fluency.

IMPLICATIONS OF THE STUDY

1. The results of the present study serve to broaden our knowledge base, in terms of the linguistic abilities of children who stutter (CWS) relative to the circumstances surrounding the onset of stuttering in early childhood.
2. Subgrouping of CWS based on their language profiles/scores into Advanced, Low, or Average Language abilities, would assist clinicians in gleaning information on a child's performance and further aid them in guiding parents in terms of the linguistic demands placed on the child.

LIMITATIONS OF THE STUDY

1. The reduced sample size considered, especially across the varied degrees of severity of stuttering, reduce the internal validity of the study. Thus, the results of the present study cannot be extrapolated to the general population of CWS at large. At best, it is advised to treat these results as suggestive rather than conclusive.
2. Only a single tool/test to measure language abilities was considered in the present study. A battery of language tests could have been used instead to better gauge language abilities in children.

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