RELATIONSHIP BETWEEN CLIENTS' SELF PERCEIVED STUTTERING SEVERITY AND CLINICIAN RATED STUTTERING SEVERITY IN KANNADA-ENGLISH BILINGUAL ADULTS WITH STUTTERING

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This is to certify that this dissertation entitled **"RELATIONSHIP BETWEEN CLIENTS' SELF PERCEIVED STUTTERING SEVERITY AND CLINICIAN RATED STUTTERING SEVERITY IN KANNADA-ENGLISH BILINGUAL ADULTS WITH STUTTERING"** is a bonafide work in part fulfillment of the degree of Master of Science (Speech-Language Pathology) of the student (Registration No. 13SLP020). This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

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CERTIFICATE

This is to certify that this dissertation entitled **"RELATIONSHIP BETWEEN CLIENTS' SELF PERCEIVED STUTTERING SEVERITY AND CLINICIAN RATED STUTTERING SEVERITY IN KANNADA-ENGLISH BILINGUAL ADULTS WITH STUTTERING"** is a bonafide work in part fulfillment of the degree of Master of Science (Speech-Language Pathology) of the student (Registration No. 13SLP020). This has been carried out under my guidance and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

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DECLARATION

This dissertation entitled **"RELATIONSHIP BETWEEN CLIENTS' SELF PERCEIVED STUTTERING SEVERITY AND CLINICIAN RATED STUTTERING SEVERITY IN KANNADA-ENGLISH BILINGUAL ADULTS WITH STUTTERING"** is the result of my own study under the guidance of Dr. Santosh M, Reader in Speech Sciences, Department of Speech-Language Sciences, All India Institute of Speech and Hearing, Mysore, and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

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Dedicated to My Parents

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"Gratitude is an attitude that takes us to Altitude"

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Chapter 1

Introduction

Individuals with stuttering exhibit both overt and covert behaviours. The overt behaviours include sound/syllable repetitions, prolongations, blocks, and monosyllable whole word repetitions. The covert behaviours include increase in anxiety, avoidance behaviours, and attitudinal changes (Conture & Curlee, 2007). For the precise diagnosis of stuttering, reliable judgment of above mentioned stuttering behaviours is necessary. Traditionally, percentage of syllables stuttered (%SS) and severity ratings (SR) are the two most commonly used measures to document stuttering severity (Wingate, 1977). % SS is calculated by counting total number of dysfluent syllables and then dividing this value with the total number of syllables, and multiplying it with 100. Although it is one of the most commonly used measures in the assessment of stuttering, its validity is limited as it takes into count only the dysfluent episodes of speech (Karimi, Jones, O'Brian, & Onslow, 2014). In SRs, clinicians allot a value on the ordinal scale that represents the perceived stuttering severity (O'Brian et al., 2004a). There are multiple scales available for rating stuttering severity (Onslow, Andrews, and Costa, 1990; Martin, 1965; Young, 1961; Sherman and colleagues, 1956; O'Brian, Packman, Onlsow, 2004b). These scales were found to have high intra-judge and inter-judge agreement. The advantages of SRs are that they are simple to use and need little or no training (O'Brian et al., 2004b).

Apart from scales where clinicians rate the severity, several studies have also used speaker's self-evaluation of stuttering severity using rating scales (Onslow, Costa, Andrewsm Harrison, & Packman, 1996; O'Brain et al., 2004b; Karimi et al.,

2014). Such scales can be used as feedback tools for monitoring treatment benefits both within as well as outside the clinical settings. Further, such scales can provide common platform for both clinician and for the client to discuss the nature of stuttering severity in daily situations (O'Brian et al., 2004b). However, SRs are reported to have limitations in terms of measurement bias and recall bias.

Limited evidence is available about the relationship between clinician's % SS and clinician's SR, and clinician's SR and speaker's SR. Typically these studies report good to strong agreement between above mentioned measures (O'Brain et al., 2004a; O'Brain et al., 2004b; Karimi et al., 2014;). In Karimi et al study, relative reliability was found to be high between clinician SR and speaker SR. Harmony between speaker SR and clinician SR found to be very good (measured within one point on the scale) which is elevated up to 78%. This implies that 8 out of 10 judgments' of stuttering severity ratings are similar. However, all these studies were with monolinguals who stutter. It is not known whether the same amount of agreement exists when the clinician and the client rate their stuttering severity in two languages. Hence, present study aims to investigate the relationship between clients' self- perceived stuttering severity and clinician rated stuttering severity in Kannada-English bilingual adults who stutter.

Over the years, studies have reported three different patterns of stuttering manifestation in bilingual persons with stuttering (PWS) (Nwokah, 1988). The first pattern is that bilingual PWS stutter only in one language. As per our knowledge, there is only one research support for this proposition. Dale (1977) reported that all four Spanish-English bilingual adults in his study exhibited stuttering only in Spanish. The second pattern is that bilingual PWS stutter in both the languages, and their

stuttering frequency between two languages is not significantly different (same hypothesis) (Howell et al., 2004; Howell et al., 2009; Jayaram, 1977; Lebrun, Bijleveld, & Rousseau, 1990; Lee, Robb, Ormond, & Blomgren, 2014; Van Riper, 1971). The third pattern is that bilingual PWS stutter in both their languages, and their stuttering frequency is significantly different in both languages (different-hypothesis) (Ardila, Ramos, & Barrocas, 2011; Bernstein Ratner & Benitez, 1985; Howell et al., 2009; Jankelowitz & Bortz, 1996; Jayaram, 1983; Lim, Lincoln, Chan, & Onlsow, 2008; Nwokah, 1988; Roberts, 2002; Schäfer & Robb, 2012; Taliancich-Klinger, Byrd, & Bedore, 2013). For the last pattern two different findings are reported in the literature. Few studies have reported that bilinguals stutter more in their 'native' or 'fluent' language (Howell et al., 2004; Jayaram, 1983; Lee et al., 2014; Taliancich-Klinger et al., 2013), whereas few other studies reported bilinguals stutter more in their 'less proficient' or 'non-dominant' language (Jankelowitz & Bortz , 1996; Lim et al., 2008; Nwokah, 1988; Roberts, 2002; Schafer & Robb, 2012). Lim et al. (2008) investigated the influence of language dominance on the stuttering severity in 30 Mandarin-English bilingual PWS. Using a self-reported classification tool, the participants were classified into 3 groups as English-dominant, Mandarin-dominant, and balanced bilinguals. %SS, clinician rated SR was calculated for all three groups. The results revealed that balanced bilinguals had identical % SS and SR ratings in both the languages. The English-dominant group and the Mandarin-dominant group had greater stuttering and higher SRs in non-dominant language.

Need for the study

Present study aims to compare the clinician rated SR and clients' self-perceived SR in Kannada English adults who stutter. Such comparisons with bilinguals are relevant as large majority of the clients who visit our clinics are bilinguals in nature. Given that they are simple, easy to use, and are not influenced by the experience of the listeners, self perceived SRs by clients in two languages may play major role in the monitoring of treatment progress with BWS. Along with traditional stuttering moment counts, these scales can also be used to track progress in therapy both within and outside the clinical situations.

Aim of the study:

To investigate the relationship between Clinician %SS, Clinician SR and self-reported Speaker SR in Kannada - English bilingual adults who stutter

Objectives of the study:

1. To compare clients' self-rating of stuttering severity and clinician's rating of stuttering severity individually for two languages in Kannada-English bilingual adults with stuttering.
2. To compare clinician and clients' stuttering severity ratings between Kannada and English languages.
3. To compare the percentage of syllables stuttered (%SS) between Kannada and English languages.
4. To correlate clinician's rating of stuttering severity and percentage of syllables stuttered individually for Kannada and English languages.
5. To correlate clients' self-rating of stuttering severity and percentage of syllables stuttered individually for Kannada and English languages.

CHAPTER 2

REVIEW OF LITERATURE

There are different measures to document severity, speech naturalness, clients' own judgment of severity, clients' perceptions towards their problem, their listener's perceptions, and their attitudes and beliefs. In the current review studies conducted specifically on clients' self-perceived stuttering severity and stuttering in bilinguals are reviewed. The review is organized under the following sub-headings:

a. Self-rating of stuttering severity
b. Bilingualism and stuttering

Self Rating

Self rating scales are one of the best ways to know one's own perspective with regard to their disability or any severity. Scaling is an equipment-free and convenient means for speech-language pathologists (SLP's) and for the clients to evaluate stuttering severity in any situations that the person may come across. However, self reports of stuttering have not been demonstrated to be a stable measures of changes of severity during therapy, although self rating might reveal the stutterers' feelings and judgments about their stuttering and they are useful in the initial diagnostic work-up . These reports are especially useful in describing such inner behaviors as avoidance, expectancy, and struggle (Woolf, 1967). Numerical formulae such as words stuttered per minute and number of blocks per 100 words have proven to be the most reliable type of severity measurement (Minifie and Cooker, 1964). Since 1953, multiple studies were conducted to understand the relationship between clients' self perceived stuttering severity and clinician rated stuttering severity.

Naylor (1953) conducted a study in which both student clinician and adults with stuttering (AWS) were instructed to rate the stuttering severity on which they have been trained. Ratings were made on a 9-point rating scale ranging from 1 (least severe stuttering) to 9 (most severe stuttering). Later clinician and stutters ratings were compared the results revealed a positive correlation between stutter's self rating and that of student clinician.

Sherman and Trotter (1956) evaluated the relationship between the frequency of stuttering and the mean severity of individual moments of stuttering by considering reading speech sample recorded from twenty persons with stuttering. The recorded samples were presented to 11 raters (all of them had training in stuttering therapy), and they were asked to rate the samples based on the severity of the stuttering. They judged the stuttering on a nine-point equal-appearing interval scale which ranges from 1 (least severe stuttering) and 9 (most severe stuttering). They also obtained frequency counts of words stuttered by each person with stuttering during each reading sample. Results revealed that there was a considerable variation from stutterer to stutterer with respect to the relationship between frequency and rated severity measures. Frequency of stuttering tended to vary directly with an average severity of individual moments of stuttering; and a decrease in frequency of stuttering by the individual are general, and accompanied by an average decrease of severity of individual moments of stuttering. On the basis of their results the following statements were made: (a) frequency and mean rated severity of individual moments of stuttering are significant and positively correlated, (b) the strength of the relationship between the two measures does not vary significantly over the course of five successive readings of the same passage, (c) the relationship between the two measures is not significant enough to say that one measure would be useful for predicting the other. A complete evaluation of the overall

severity of the audible characteristics of stuttering should be considered in description of both frequency and severity of individual moments of stuttering.

Aron (1967) conducted a study in which he employed 46 AWS. AWS were instructed to read aloud the rainbow passage. Later along with the clinician, AWS rated the stuttering severity on a 9-point stuttering severity rating scale ranging from 1 (no stuttering) to 9 (very severe stuttering). The correlation between AWS rating and clinician rating was 0.50. On comparison with the present study results, the correlation between clinician and stutter ratings was high in Naylor's study (1953).

Young (1968) conducted a study on observer agreement. Ratings of stuttering severity were determined by the amount of observer agreement. The effects on observer agreement of two experimental conditions thought to increase agreement were examined. The observers participated were 10 beginning undergraduate students in speech pathology without extensive clinical training or experience with scaling. Stuttering sample consisted of 60, 20-Sec segments of the spontaneous speech of young adult male stutterers; the second 30 samples of the tape were a repetition of the first 30 samples. After listening to each session the observers rated the samples on a nine-point rating scale of stuttering severity, this has equal appearing intervals between the numerical values. Repeated rating of the same samples, and feedback to the observer of the group mean rating after each sample had been rated. Repeated rating of the same samples did not affect observer agreement. Feedback of the group mean rating did produce a shift in overall level of rating in those observers whose ratings were, on the average, far from the group mean. One more effect was a significant decline in the range of ratings on individual samples.

La Croix (1972) conducted a study in which he employed two adult stutters. They were given treatment for a period of 20 sessions which included self-recording of their own stuttering behaviour which may result in a reduced frequency of stuttering instances. Participants were given a handheld digital counter and instructed to depress the switch each time when they end up with disfluent utterances, at the same time clinician also recorded the moments of stuttering along with the participants. Results revealed that for recording, there was a good correlation between clinician and AWS with a mean agreement of 93.5%. These kinds of unique stuttering treatment procedures reduce the amount of stuttering, regardless of the accuracy of these measures.

Ingham (1982) conducted a study on the effects of self-evaluation training on the maintenance and generalization during stuttering treatment. During the treatment of two persons with stuttering the training self-evaluation of speech performance was pooled with a self-managed, performance-contingent maintenance schedule. Participant's native language was English and their age was 18 and 20 respectively. To investigate the effect of introducing this procedure for a variety of speaking situations a multiple baseline design was employed. Covert (when participants are unaware of being recorded and overt (when participants are aware that they are being recorded) assessment indicated that whenever the self evaluation training procedure was introduced to the maintain a schedule, it was observed to be associated with considerably reduced stuttering where it was maintained over a period of time, at least 6 months across various speaking situations.

Ornstein and Manning (1985) conducted a study in which they used the self-efficacy scale for adult stutterers (SESAS) and instructed the participants (20 adult stutters) to rate their level of confidence for both approach and performance. The

results suggested that during treatment self-efficacy scaling is a useful technique for measuring the aspect of change in stuttering with continued development.

Martin, Haroldson, and Woessner (1988) conducted a study on the perceptual scaling of severity of stuttering. In Experiment 1, they considered the ten-minute tape recordings that were obtained from 30 adult stutterer's spontaneous speech samples. The experimenter selected one 15-set sample from each tape recording. The samples were selected to represent a wide range of stuttering frequency and severity. Each sample contained at least one instance of stuttering in the judgment of the experimenter. The number of words in the sample ranged from 16 to 50. Thirty graduate speech language pathologists served as judges. Each of the observers judged stuttering severity on a seven-point rating scale which had an equal-appearing-interval between two points. Severity of each instance and in overall speech sample was identified and judged. And in Experiment 2, 12 adult stutterers spoke fluently and under DAF while an observer judged "on-line" the severity of each moments of stuttering (7-point rating scale). The main results that are observed are:

1) Observer reliability was acceptable for scaling severity of individual stuttering, overall stuttering speech samples, and stuttering severity "on-line."

2) The stuttering severity scale value of the overall sample was larger than the mean value of individual stuttered words within the speech sample and

3) Compound relationship obtained across measures of stuttering frequency, stuttering severity, and other characteristic of the speech signal.

Ingham and Cordes (1997) compared the several judgments that were made on stuttering across various situations. Participants employed were 15 adult stutters who judged their own stuttering in spontaneous speech as well as each other's stuttering. These stuttering speech samples were judged by a set of 10 judges in the field of

stuttering research and treatment. Based on several conditions like monologue, continuous and interval formats, judgments were made. Results indicated that, in some intervals were judged consistently by all judges to be as stuttered or non stuttered speech sample. There was a significant difference in stuttering judgments across speakers, judges, and judgment conditions.

Green (1999) studied the differences in the stuttering experience history with children and adults who stutter. Participants included one-hundred individuals, out of which 40 children were from elementary school, and 60 were adults. Communication Situation Scale was administered to specify perceived severity of their stuttering, and the comprehensive system for the Rorschach Inkblot Test to show the extent to which self-conception might be based on the participation within their social interactions. Children findings revealed a positive relationship between these two variables, particularly with regard to interactions in dyads (pairs) and strangers, and in adults a negative relationship was observed. The relationships between two variables were considerably contradicting between adults and children, especially with regard to the interactions.

Riley, Riley, and Maguire (2003) described the Subjective Screening of Stuttering (SSS) and quantified the self reports of person with stutter (PWS) in pre therapy, during, and post therapy conditions. The three areas that are screened by SSS are the level of internal or external locus of control, perceived stuttering severity, and word or situation avoidance that are reported. Each of the domains had two to three items rated for three audiences on a 1 to 9 point rating scale. The results revealed that using SSS with 16 PWS indicated the percent of syllables stuttered had a perfect correlation with stuttering severity ($r = 0.75$) and with locus of control ($r = 0.43$) but

negative correlation was found for avoidance situation. For research and clinical screening purpose, the reliability and validity of SSS were judged satisfactory

O'Brian, Packman, and Onslow (2004) conducted a study on self-rating of stuttering severity using a severity rating scale. They investigated the extent to which the severity ratings of 10 adult persons with stuttering (PWS) made immediately after their spontaneous speech and another time after listening to the recordings 6 months later. The results revealed good agreement between clinician and clients' severity ratings. 9 out of 10 speakers had a good agreement between SLP's rating and to those initial ratings of the individuals and those of the SLP. There was also good agreement between initial ratings and those made from recordings 6 months later for 8 of the 10 speakers. Signifying that the severity ratings made at the time of speaking were consistent, by this clinical study, we can draw a conclusion that we can use the 9 – point rating scale as a clinical measurement procedure in daily practice.

Hoffman, Wilson, Copley, Hewat, and Lim (2009) conducted a study to estimate SLPs' reliability in using 9-point severity rating (SR) scale when measuring severity of stuttering in an unfamiliar language. The unfamiliar language was employed to measure severity of stuttering in a language that was different from their native language. 26 Australian SLPs rated 20 stuttering speech samples [10 Mandarin and 10 Australian English (AE)] of adults who stutter using a 9-point SR scale on two separate situations. Judges were qualified practicing SLP (N=26). When using the scale to measure stuttering in Mandarin samples judges showed poor agreement. Results revealed that 50% of individual judges were unable to reliably measure the severity of stuttering in AE. Present results highlighted the need for the SLPs to develop intra- and inter-judge agreement before using the 9-point Severity Rating

scale to measure severity of stuttering in their native language (in this study AE) and in unfamiliar languages.

Karimi, Jones, O'Brian, and Onslow (2013) conducted a study on Clinician percent syllables stuttered, clinician severity ratings and speaker severity ratings. The aim of the present study was to establish the relationship between Clinician %Syllable Stuttered, Clinician Severity Rating and self-reported Speaker Severity Rating and to investigate whether Clinician Severity Ratings and Speaker Severity Ratings can be used interchangeably. The study consisted of 3 experienced speech–language pathologists (SLP) who are considered as judges and 87 adults person with stuttering (PWS). They received a 10-min unscheduled telephone call; at the end of the telephone conversation they self-reported a Severity of stuttering Rating using a nine-point scale. Judges measured the stuttering for these conversations with %SS and also with the SR scale. For relative and absolute reliability the mean scores for Clinician %SS and Clinician SR were compared with the Speaker Severity Rating using appropriate indices. Present study reveals that a strong correlation was found between Clinician %SS and Clinician SR, and also between Clinician %SS and Speaker SR, although with higher values in the former case. Furthermore, very high correlations showed an acceptable relative reliability between Clinician Severity Rating and Speaker Severity Rating. The authors conclude the study by saying that Clinician Severity Rating and Speaker Severity Rating cannot be used interchangeably to measure temporal stuttering severity changes for an individual client.

Bilingualism and stuttering

Stuttering occurs across cultures and languages and has been found to exist in both bilinguals and monolinguals (Finn & Cordes, 1997; Van Borsel, Maes, & Foulon, 2001). In recent years interest in bilinguals who stutter (BWS) has increased (e.g., Bernstein Ratner,2004; Hall & Evans, 2004; Roberts & Shenker, in press; Shenker, 2006; Van Borsel et al., 2001), and research has mainly focused on speakers of Indo- European languages (e.g., Bernstein Ratner & Benitez, 1985; Dale, 1977; Jankelowitz & Bortz, 1996; Nwokah, 1988). There are fewer studies of BWS who use languages of non Indo-European origin (Jayaram, 1983; Karniol, 1992; Nwokah, 1988) and to date; limited investigations have addressed stuttering in bilinguals who speak Dravidian languages such as Kannada-English. The person with stuttering being a monolingual or bilingual also affected the measures of stuttering. Research has identified that bilingual people who stutter will commonly stutter in both languages (e.g., Bernstein Ratner & Benitez, 1985; Jankelowitz & Bortz, 1996). Moreover, severity of stuttering may vary between languages (Shenker, 2011).

Jankelowitz and Bortz (1996) investigated the relation between bilingualism and stuttering. Language proficiency in English and African language was assessed with cloze test and language proficiency tests. The subject who participated in the study was a 63-year-old English-Afrikaan, compound bilingual male with stuttering. Stuttering phenomena like anticipation, adaptation and consistency of stuttering were investigated. According to the modified version of the Systematic Disfluencies Analysis (SDA) stuttering characteristics that were analyzed are Frequency, distribution and nature of disfluencies on narrative and procedural tasks. The participant was more proficient and stuttered less in his dominant language and

indicated that frequency, distribution, and nature of disfluencies were influenced by language proficiency.

Jayaram (1983) analyzed the reading and spontaneous speech of 10 Kannada monolingual stutterers and 10 Kannada-English bilingual stutterers. The bilingual stutterers were further sub-grouped into Kannada bilingual stutterers and English bilingual stutterers, based on the dominant language. The results revealed that stuttering was more in monolingual group compared to bilingual group. In bilingual group results indicated that there was no significant difference between two languages in pattern or distribution of stuttering, but there was significant difference with respect total severity of stuttering. Bilinguals stuttered more in L1 (Kannada) compared to L2 (English). Nowak (1988) compared stuttering behaviour in 16 Igbo-English balanced bilingual adults with stuttering. Results supported the stutterers belief that stuttering was more in one language compared to the other and the imbalance of stuttering behaviour in two languages were explained in terms of selection and processing of lexical and syntactic features of the languages. All these studies had methodological issues, did not consider proficiency of the second language.

Howell, et al. (2003) compared monolingual Spanish speakers with stuttering in the age range 3 to 68 years and bilingual Spanish-English speakers with stuttering to find the developmental changes in the loci of stuttering. Results showed that monolingual young Spanish stutterers had high percentage of disfluencies on function words than content words, and content word stuttering increased with age. Bilingual speakers with stuttering showed more stuttering on function words in non dominant language English which was similar to the pattern observed in young monolingual speakers and content words were more stuttered in dominant language Spanish which

was similar to the pattern observed in adult monolingual speakers. But the stuttering was high in dominant language Spanish which is conflicting to the above studies.

Borsel and Pereira (2005) conducted a study on the assessment of stuttering in a familiar versus an unfamiliar language with an aim to investigate how well individuals with knowledge about stuttering are able to make disfluencies judgments in individuals who speak apart from their native language. 14 native speakers who speak Brazilian Portuguese identified and judged stuttering in Dutch speakers as well as in Portuguese speakers. In a similar way, 14 native speakers of Dutch identified and judged stuttering in Brazilian Portuguese speakers as well as in Dutch speaking individuals. Results revealed that there were no differences found in the judgment of both the groups. Judges could judge similarly in both native and foreign language, and that native and foreign judges can judge in similar level irrespective of native or foreign language differences. However, the Dutch judges performed significantly better in identifying the native stutterers when compared to foreign stutterers. With respect to the identification of non-stutterers, both groups performed better in their own native language than in the foreign language. In native language both of them performed better than the other groups. Both the Brazilian Portuguese and the Dutch speaking group were less confident, and found that identification of stuttering is more difficult in the foreign language when compared to native language. Adding to it, when the individuals were asked for the characteristics that helped them identify stutterers, as expected they provided more details in the native language comparison to the foreign language. Also a number of differences were found between the two groups which authors attributed it to the differences in training or cultural background of the participants.

Lim, Lincoln, Chan, and Onslow (2008) investigated the influence of language dominance on stuttering severity in 30 English-Mandarin Bilingual speakers with stuttering in the age group of 12 to 44yrs. The participants were classified into 3 groups using a self-report classification tool as- English dominant, Mandarin dominant, and balanced bilingual. Conversation speech sample were recorded in both English and Mandarin languages. Percentage of syllable stuttered, severity rating and type of stuttering were measured in both languages. Results revealed that balanced bilinguals had identical scores in percentage of syllable stuttered and severity rating for both languages. The English dominant group had higher percentage of syllable stuttered and severity rating for Mandarin than for English language. The Mandarin dominant group also had similar pattern that stuttering was greater in non dominant language i.e., English. The type of stuttering across the two languages revealed no significant difference and also it did not vary as a function of language dominance across the three bilingual groups.

Schafer and Robb (2012) examined the stuttering like dysfluency and distribution of stuttering on content and function words in 15 German-English bilingual adults with stuttering. Results showed that severity of stuttering was high in non dominant language English. Comparison of languages to find the distribution of stuttering on content and function words revealed that higher percentage of disfluencies on function words in English than German, whereas within German language high percentage stuttering were on content words.

Borsel, Leahy, and Pereira (2008) conducted a similar study in Dutch speakers with stuttering in order to examine the hypothesis that “closeness to the listener’s native language is a deciding factor when identifying stuttering in an unfamiliar

language". Results revealed that confirming the existence of a familiarity of language influence.

Lim, Lincoln, Chan, & Onslow (2008) carried out a study on stuttering in English–Mandarin bilingual speakers to check the influence of language dominance on stuttering severity. The authors have investigated whether the type and severity of stuttering is different in English and Mandarin and in English–Mandarin bilinguals, and whether to know this difference was influenced by language dominance. They considered 30 English–Mandarin bilingual adults who stutter (BAWS) whose age ranges between 12–44 years and they were categorized into 3 groups (4 Mandarin-dominant, 15 English-dominant and 11 balanced bilinguals) with the help of a self-report classification tool. Three 10-minutes spontaneous stuttering speech samples in English and Mandarin were assessed by two English–Mandarin bilingual speech language pathologists for percent syllables stuttered (%SS), perceived stuttering severity (SEV), and types of stuttering behaviours using the Lidcombe Behavioural Data Language. Results revealed English-dominant and Mandarin-dominant BWS exhibit elevated percentage of syllables stuttered (%SS) and clinician perceived stuttering severity (SEV) scores in their less proficient language, in other hand the scores of the balanced bilinguals were comparable for both languages. The difference in the percentage of stutters per LBDL category between English and Mandarin was not noticeably different for any bilingual group. The authors concluded the study by saying that the severity of stuttering may be influenced by the language proficiency but it will not influence the types of stuttering behaviours in BWS. Clinicians in practice need to assess language dominance when diagnosing stuttering severity in bilingual stutters.

Stuttering may not manifest similarly across all the language that the stutters speaks in terms of nature, characteristics, and severity of stuttering. It may dependent on language dominance, proficiency and use of the particular language. To identify the stuttering in an unfamiliar language one should be very proficient in that language in order to do the assessment. Research point outs that individuals who stutter are more proficient and stuttered less in their dominant language and also indicated that stuttering characteristics like frequency, distribution and nature of disfluencies are not influenced by language proficiency.

CHAPTER 3

Method

The present study was carried out to investigate the relationship between clinician percentage syllable stuttered (%SS), clinician severity rating (SR), and self-reported speaker severity rating (CR) in Kannada - English bilingual adults with stuttering (BAWS).

Participants

10 male Kannada-English bilingual adults with stuttering (BAWS) (Mean age range of 23.55, SD = 10.89) participated in the present study. A self-reported questionnaire was used to obtain the demographic details of the participants. Based on the questionnaire, it was observed that none had any history of hearing, vision, intellectual, neurological, or other communication disorders. To measure the stuttering severity, Stuttering Severity Instrument for Children and Adults—Third Edition (SSI-3) (Riley, 1994) was used. Stuttering severity was assessed in both the languages. In Kannada, three participants were diagnosed with very mild stuttering; three with mild stuttering, two were diagnosed with moderate and one with severe stuttering. In English, three participants were diagnosed with very mild stuttering, five with moderate stuttering, and one with very severe stuttering. One participant had very mild stuttering with a SSI score of less than 10, and hence was not included in the study. Out of the remaining 9 participants, only one did not attend therapy. Age of onset of stuttering was less than five years for all the participants. Table 3.1 shows the demographic details of the participants.

Table 3.1

Demographic details of bilingual adults with stuttering (BAWS)

BAWS.	**Age**	**Onset of stuttering**	**Previous therapy**	**Severity in Kannada**	**Severity in English**
S1	20	8 years	Yes	Very mild	Very mild
S2	29	7 years	yes	Mild	Moderate
S3	24	8 years	yes	Very mild	Very mild
S4	24	8 years	No	Moderate	Moderate
S5	20	5 years	yes	Mild	Moderate
S6	21	10 years	yes	Moderate	Moderate
S7	26	5 years	yes	Mild	Moderate
S8	19	7 years	yes	Severe	Very severe
S9	29	10 years	yes	Very mild	Very mild

Language proficiency assessment

For determining proficiency in Kannada (L1) and English (L2) languages, all the participants were administered Language efficiency and proficiency Questionnaire (LEAP-Q). LEAP-Q questionnaire is a self-rating scale, which was originally developed by Marian, Blumenfeld, and Kaushanskaya (2007). This questionnaire was adapted to Indian context by Ramya (2009). This questionnaire provides information regarding the number of languages known by each of the participant, language history during childhood, acquisition of language, proficiency of language, usage of language in different contexts, and exposure to different languages. It assesses the bilingual proficiency under four main domains: understanding, speaking, reading, and writing. Rating of the language proficiency is done on a 4-point rating scale. Each domain has a zero to four point rating score, where 0 indicates zero proficiency and 4 indicates native like proficiency. Rating scale includes self rating of language usage and language background.

All the participants had their native language as Kannada, and English was their second language. They had a minimum of 6 years of exposure to English. In Kannada (L1) all nine participants rated their proficiency as native like for all the four domains. In English (L2) four participants (S2, S3, S4, S8) rated as having good proficiency for all the four domains, and three participants (S5, S7, S9) rated their proficiency as native like proficiency for all the four domains, and other two participants (S1, and S6) rated good for understanding and speaking. However for reading and writing they reported native like proficiency. Table 3.2 shows the language proficiency details of the participants.

Table 3.2

Description of language proficiency of BAWS including their age of exposure to English, and LEAP-Q scores in L1 (Kannada) and L2 (English)

BAWS	*Age of Exposure to L1*	*Age of Exposure to L2*	*LEAP-Q scores for L1*	*LEAP-Q scores for L2*
S1	*15*	*15*	U-4; S-4; R-4; W-4	U-3; S-3; R-4; W-4
S2	*29*	*19*	U-4; S-4; R-4; W-4	U-3; S-3; R-3; W-3
S3	*24*	*18*	U-4; S-4; R-4; W-4	U-3; S-3; R-3; W-3
S4	*24*	*14*	U-4; S-4; R-4; W-4	U-3; S-3; R-3; W-3
S5	*20*	*13*	U-4; S-4; R-4; W-4	U-4; S-4; R-4; W-4
S6	*21*	*10*	U-4; S-4; R-4; W-4	U-3; S-3; R-4; W-4
S7	*26*	*15*	U-4; S-4; R-4; W-4	U-4; S-4; R-4; W-4
S8	*19*	*08*	U-4; S-4; R-4; W-4	U-3; S-3; R-3; W-3
S9	*29*	*14*	U-4; S-4; R-4; W-4	U-4; S-4; R-4; W-4

Note :(1-Zero proficiency; 2-Low Proficiency; 3-Good Proficiency; 4-Native like/Perfect) U-Understanding; S-Speaking; R-Reading; W-Writing

Task: Speech samples were audio recorded for both the languages in both within and outside clinical situations. Within clinic recordings included speaking with the clinician, and speaking over a phone. Outside clinic recordings included speaking with a friend and speaking over a phone. All the speech samples were based on the spontaneous speech task. Tasks for spontaneous speech were hobbies, places, and personal information. All these tasks were not emotionally loaded.

Procedure

The duration of the recording was for 10 minutes for each language. A sample size of at least 300 syllables was collected in each language. At the end of each situation, participants were asked to rate their severity of stuttering on a 9-point rating scale (O'Brian, Packman, and Onslow 2004) for each language. The severity rating scales are easy and convenient because they are handy, free to use, for both clinician and participants with little or no training (O'Brian, Packman, and Onslow 2004).

This severity scale is a horizontal line with equal marks for nine numbers. And the rater was to judge severity of stuttering based on the following instructions: On a scale of 1 to 9 the participants were instructed to rate anywhere between 1 or 9 where 1 indicates least stuttering and 9 indicates extreme stuttering the participants were clearly instructed to give one number provided on the rating scale. The participants were asked not to make use of more than one number at a time. All judgments were to correspond to a digit from 1–9. There was no right or wrong answers, only a personal judgment. Participants were asked to judge their speech as either '1' or '9', or something in between two numbers based on the severity of their own stuttering immediately. For all six situations six separate ratings were obtained from each participant in both the languages.

Analysis

The recorded samples were played to one independent Kannada-English bilingual speech-language pathologist. This SLP had more than 5 years of experience in the assessment and management of stuttering. This SLP's language proficiency was assessed similar to BAWS participants. And the LEAP Q scores of the SLP for both L1 and L2

suggested that he was proficient in all the four domains i.e., speaking, understanding, reading and writing.

SLP rated the samples for overall stuttering severity using the same rating scale. For all the samples as a supplementary analysis, the SLP calculated the percentage of syllables stuttered. SLP first orthographically transcribed the samples and then identified the different types of disfluencies. Stuttering disfluencies included three categories and seven descriptors, based on stuttering behaviors described in the LDBL (Lidcombe Behavioral Data Language) (Teesson, Packman and Onslow 2003). LBDL is a taxonomy of stuttering, which categorizes stuttering behaviors, just as other taxonomies. The following were the three categories and seven descriptors: (a) repeated movements (syllable repetition, incomplete syllable repetition, multisyllable unit repetition), (b) fixed postures (with audible airflow and without audible airflow), and superfluous behaviors (verbal and non-verbal). The percentage of syllables stuttered (%SS) were calculated for each language by dividing the total number of disfluencies by the total number of syllables and multiplied by 100.

Statistical analysis

The data analyzed were entered in to SPSS (17.0 version) software, and quantitative analysis was done. The following statistical analyses were used:

1. Wilcoxon's signed rank test was used to compare the clinician's (SLP) rating of severity with the participants' rating of severity. Non parametric test was used as the parameters were not following the normal distribution and the sample size was small.

2. Spearmen's rank correlation coefficient was used to check the relationship between the percentage of disfluencies and the severity ratings given by both the clinician and the participant.

Inter - and intra-judge reliability

Both intra-judge and inter judge reliability was established for 10 percent of the recorded samples. For intra-judge reliability, the samples were rerated after a month. For inter- judge reliability another SLP was asked to rate the severity of the recorded samples using the same 9-point rating scale. Further, %SS were calculated for all the 10% of the samples using the same procedure as described above.

For, inter-judge reliability, Cronbach's alpha value was 0.869 which suggests a good reliability between the judges. For, intra-judge reliability, the cronbach's alpha value was 0.946 which suggests a good agreement between the two ratings carried out with a time interval of one month. For intra-judge reliability for percentage syllables stuttered, the Cronbach's alpha value was 0.972 which again suggests good reliability between two calculations.

CHAPTER 4

RESULTS

The present study was done to investigate the relationship between clients' self-reported severity rating (CR), clinician severity rating (SR), and clinician measured percentage syllable stuttered (%SS) in Kannada - English bilingual adults with stuttering (BAWS).

Results are discussed under five sections.

1. Comparison between clients' self-rating of stuttering severity and clinician's rating of severity separately for two languages in Kannada-English bilingual adults with stuttering.
2. Comparison of clinician and clients' severity ratings between Kannada and English languages.
3. Comparison of percentage of syllables stuttered between Kannada and English languages.
4. Correlation between clinician's rating of stuttering severity and percentage of syllables stuttered separately for Kannada and English languages.
5. Correlation between clients' self rating of stuttering severity and percentage of syllables stuttered separately for Kannada and English languages.

4.1 Comparison between clients' self-rating of stuttering severity and clinician's rating of stuttering severity separately for two languages in Kannada-English bilingual adults with stuttering.

In both Kannada and English languages, across all the conditions, the mean and median severity ratings of clinician were higher than the clients' (table 4.1 and table 4.2 respectively). However, results of Wilcoxson's signed ranked test showed no statistically significant difference ($p > 0.05$) between clinician's and clients' ratings across all conditions.

Table 4.1

Comparison of clinician stuttering severity ratings and clients' self perceived stuttering severity ratings in Kannada

Condition	**Situation**	**Clinician's Rating**			**Clients' Rating**				
		Mean	**Median**	**SD**	**Mean**	**Median**	**SD**	**/Z/**	**p**
Within	**Clinician**	7.4	4.0	10.5	6.4	3.5	9.1	1.5	0.13
	Phone	8.0	4.0	11.3	6.8	3.5	9.7	1.7	0.08
Outside	**Friend**	6.2	3.0	8.9	4.8	2.5	6.9	1.7	0.07
	Phone	6.8	3.5	9.7	5.4	3.0	7.7	1.8	0.06

Table 4.2

Comparison of clinician's stuttering severity rating and clients' self perceived stuttering severity rating in English

Condition	Situation	Clinician's Rating			Clients' Rating				
		Mean	**Median**	**SD**	**Mean**	**Median**	**SD**	**/Z/**	**p**
Within	**Clinician**	7.8	4.5	11.1	6.4	3.5	9.2	1.8	.065
	Phone	8.4	5.5	12.0	6.6	3.0	9.5	1.8	.065
Outside	**Friend**	7.8	4.5	11.1	6.0	3.0	8.6	1.8	.065
	Phone	7.8	4.5	11.1	5.6	3.0	8.0	1.9	.049

4.2 Comparison of clinician and clients' severity ratings between Kannada and English languages.

The clinician's median severity ratings in English were higher than that of the Kannada across all the conditions (table 4.3). However, such a trend was not noticed for mean values. The results of Wilcoxson's signed ranked test showed no statistically significant difference ($p > 0.05$) in clinician's ratings between two languages across all conditions.

The clients' mean and median severity ratings did not vary between two languages (table 4.4). The results of Wilcoxson's signed ranked test showed no statistically significant difference ($p > 0.05$) in clients' ratings between two languages across all conditions.

Table 4.3

Comparison of clinician's stuttering severity ratings between Kannada and English languages

Condition	Situation	Clinicians Rating/L1			Clinician Rating/L2				
		Mean	Median	SD	Mean	Median	SD	/Z/	p
Within	**Clinician**	7.4	4.0	10.5	7.8	4.5	11.1	1.0	0.3
	Phone	8.0	4.0	11.3	8.4	5.5	12.0	1.1	0.23
Outside	**Friend**	6.2	3.0	8.9	7.8	4.5	11.1	2.2	0.2
	Phone	6.8	3.5	9.7	7.8	4.5	11.1	1.8	0.07

Table 4.4

Comparison of clients' severity ratings between Kannada and English languages

Condition	Situation	Client Rating/L1			Client Rating/L2				
		Mean	Median	SD	Mean	Median	SD	/Z/	p
Within	**Clinician**	6.4	3.5	9.1	6.4	3.5	9.2	0.0	1.00
	Phone	6.8	3.5	9.7	6.6	3.0	9.5	0.7	0.48
Outside	**Friend**	4.8	2.5	6.9	6.0	3.0	8.6	1.98	0.04
	Phone	5.4	3.0	7.7	5.6	3.0	8.0	0.63	0.52

4.3 Comparison of percentage of syllables stuttered between Kannada and English languages.

Across all the conditions the mean percentage of syllables stuttered in Kannada was higher than the mean percentage of disfluencies in English (table 4.5). However, results of Wilcoxson's signed ranked test showed no statistically significant difference (p

>0.05) between percentage of syllables stuttered in Kannada and English languages across all conditions.

Table 4.5

Comparison of percentage of syllables stuttered between Kannada and English languages.

Situation	Conditions	% SS in Kannada		% SS in English		SD	/Z/	P
		Mean	Median	Mean	Median			
Within	Clinician	7.3	4.7	7.5	2.9	11.3	178	.859
	Phone	8.5	2.6	6.9	3.2	12.9	178	.859
Outside	Friend	9.6	4.3	5.1	2.3	10.3	1.955	.051
	Phone	8.2	4.9	5.2	3.14	14.2	1.836	.066

4.4 Correlation between clinician's rating of stuttering severity and percentage of syllables stuttered separately for Kannada and English languages.

In both Kannada and English languages the clinician's mean severity ratings had a significant (p<0.05) positive correlation with the mean percentage of syllables stuttered (table 4.6 and table 4.7 respectively) in all conditions except in outside clinic phone conversation task.

Table 4.6

Correlation results between clinician stuttering severity ratings and percentage of disfluencies in Kannada

Situation	Conditions	Clinician Severity rating	% SS	R	p
Within	Clinician	7.4	7.2	.82	.004
	Phone	8	8.4	.67	.033
Outside	Friend	6.2	9.6	.89	.000
	Phone	6.8	8.2	.07	.10

Table 4.7

Correlation results between clinician stuttering severity ratings and percentage of disfluencies in English

Situation	Conditions	Clinician severity rating	% SS	r	p
Within	Clinician	7.8	7.4	.87	.001
	Phone	8.4	6.9	.73	.016
Outside	Friend	7.8	5.1	.95	.000
	Phone	7.8	5.2	.58	.076

4.5 Correlation between clients' self rating of stuttering severity and percentage of syllables stuttered separately for Kannada and English languages.

The clients' mean severity rating scores in Kannada had a significant correlation ($p<0.05$) with the mean percentage of syllables stuttered only within clinic phone conversation task (table 4.8). For other conditions there was no significant correlation between two variables. However, for English, there was no significant correlation ($p >$

0.05) between clients' mean severity rating scores and mean percentage of syllables stuttered for all the conditions (table 4.9).

Table 4.8

Correlation results between clients' stuttering severity ratings and percentage of syllables stuttered in Kannada

Situation	**Conditions**	**Client severity rating**	**% SS**	**R**	**p**
Within	Clinician	6.4	7.2	.61	.059
	Phone	6.8	8.4	.66	.034
Outside	Friend	4.8	9.6	.45	.184
	Phone	5.4	8.2	.62	.055

Table 4.9

Correlation results between clients' stuttering severity ratings and percentage of syllables stuttered in English

Situation	**Conditions**	**Client severity rating**	**% SS**	**R**	**p**
Within	Clinician	6.4	7.4	.59	.070
	Phone	6.6	6.9	.29	.407
Outside	Friend	6	5.1	.48	.160
	Phone	5.6	5.2	.52	.117

Chapter 5

Discussion

The aim of the present study was to investigate the relationship between clinician calculated percentage syllable stuttered (%SS), clinician's severity rating (SR), and self-reported speaker severity rating in Kannada - English bilingual adults with stuttering (BAWS). The results revealed several points of interest. First, the mean severity ratings of clinician were not statistically significant from the client's self rating of stuttering severity. This suggests that clinician and clients' rating had a good agreement. The results were consistent in both Kannada and English languages. Present results are in agreement with O'Brain et al. (2004) study. O'Brain et al. also mentioned that there was a good agreement between clinician rating and those of the participant's self ratings. Current study extended O'Brian et al's findings to bilingual persons with stuttering.

Second, no significant difference in the client's and clinician's ratings was consistent across all clinical conditions (both within and outside the clinical situations). As both clinician and client agree across the clinical situations, self rating of stuttering severity may help the clinicians to track the generalization of treatment effects outside the clinical situations. Further, self rating of stuttering severity can be used as supplementary clinical tool for other traditional measures like percentage syllables stuttered. This was clear from our correlational analysis between client's self rating of stuttering severity and clinician measured percentage of syllables stuttered. There was significant positive correlation between the client's self rating and the clinician measured percentage

syllables stuttered in most of the clinical conditions except outside the clinical situation's phone conversation.

Third, there was no significant difference between client's as well as clinician's severity ratings between two languages. This was consistent with our other finding where we found that there was no significant difference in the percentage syllables stuttered between L1 and L2. This finding coincided with our another finding where found significant correlation between the clients' self rating with the clinician's measured percentage of syllables stuttered. Current findings highlight that both the client and SLP may be their rating overall severity based on the number of stuttering moments.

Fourth, the results revealed that stuttering frequency did not vary between two languages. This supports the "same- hypothesis" (Nwokah, 1988), which states that stuttering is present in both languages and is same in two languages. No significant difference in stuttering frequency between two languages could be explained on the basis of role of language proficiency. LEAP-Q Scores from our participants suggested that all our participants had native like/perfect proficiency in Kannada language, further scoring in English suggested good proficiency. Due to good proficiency in L2 (English) our participants may experience less linguistic demand while formulating the linguistic features of the L2 (Jankelowitz & Bortz, 1996; Lim et al., 2008). This may further result in fewer loads on their deficient speech motor system which in turn may influence the frequency of stuttering (Lim et al., 2008). Current results are in contrast to Jayaram (1983) findings in Kannada-English bilingual adults who stutter. Jayaram reported higher stuttering in L1 compared to L2. This difference between ours and Jayaram's finding

could be because of differences in the proficiency of the participants between the two studies. As there was no clear documentation about the proficiency of the participants in L1 and L2 in Jayaram (1983)'s study it is difficult to draw any comparisons.

To summarize, present study aimed to compare the clinician rated SR and client's self-perceived SR in Kannada English adults who stutter. Such comparisons with bilinguals are relevant as large majority of the clients who visit clinics are bilinguals in nature. Given that self rating scales are simple, easy to use, and are not influenced by the experience of the listeners, self perceived SRs by clients in two languages may play major role in the monitoring of treatment progress with BWS. Along with traditional stuttering moment counts, these scales can also be used to track progress in therapy both within and outside the clinical situations.

Chapter 6

Summary and Conclusion

The objective of the present study was to investigate the relationship between clients' self-reported severity rating (CR), clinician severity rating (SR), and clinician measured percentage syllable stuttered (%SS) in Kannada - English bilingual adults with stuttering (BAWS). The participants for the study included 10 male Kannada-English bilingual adults with stuttering (BAWS) (Mean age range of 23.55, SD = 10.89). To measure the stuttering severity in bilingual adults, Stuttering Severity Instrument for Children and Adults—Third Edition (SSI-3) (Riley, 1994) was used. Stuttering severity was assessed in both the languages. LEAP-Q questionnaire was administered on each participant to evaluate the language proficiency in both the languages. Spontaneous speech samples were audio recorded for both the languages in both within and outside clinical situations. At the end of each situation, participants were asked to rate their severity of stuttering on a 9-point rating scale for both the languages (1 and 9 representing least and most severe stuttering respectively) (O'Brian, Packman, and Onslow, 2004). For all six situations six separate ratings were obtained from each participant, in each language.

Analysis was done by playing the recorded samples to one independent Kannada-English bilingual speech-language pathologist this SLP had more than 5 years of experience in the assessment and management of stuttering. SLP rated the samples for overall stuttering severity using the same rating scale. For all the samples a supplementary analysis was carried out. Identification of the different types of dysfluencies which included three categories and seven descriptors, based on stuttering

behaviors described in the LDBL (Lidcombe Behavioral Data Language) (Teesson, Packman and Onslow 2003). The SLP calculated the percentage of syllables stuttered (%SS) in each language by dividing the total number of disfluencies by the total number of syllables and multiplied by 100. Both intra-judge and inter judge reliability was established for 10 percent of the recorded samples. These data were analyzed using SPSS (17.0 version) and results are summarized below:

1. The overall stuttering severity ratings of clinician were higher than the clients' in both Kannada and English languages, across all the conditions. However, there was no significant difference ($p > 0.05$) between clinician's and clients' ratings across all conditions. This suggests clients' and clinicians rating were in consensus to each other.
2. The clinician's median severity ratings in English were higher than that of the Kannada across all the conditions. However, such a trend was not noticed for mean values. The statistical analysis did not show any significant difference ($p > 0.05$) in clinician's ratings between two languages across all conditions.
3. The clients' mean and median severity ratings did not vary between two languages. And there was no statistically significant difference ($p > 0.05$) observed in clients' ratings between two languages across all conditions.
4. Across all the conditions the mean percentage of syllables stuttered in Kannada was higher than the mean percentage of disfluencies in English. However, there was no statistically significant difference ($p > 0.05$) observed between the mean percentages of syllables stuttered in Kannada and English.

5. In both Kannada and English languages the clinician's mean severity ratings had a significant ($p<0.05$) correlation with the mean percentage of syllables stuttered in all conditions except in outside clinic phone conversation task.
6. The clients' mean severity rating scores in Kannada had a significant correlation ($p<0.05$) with the mean percentage of syllables stuttered only in within clinic phone conversation task. For other conditions there was no significant correlation between two variables. However, for English, there was no significant correlation ($p > 0.05$) between clients' mean severity rating scores and mean percentage of syllables stuttered for all the conditions.

The present results highlight that, the ratings of the clinician and clients' were in consensus. Further, results also revealed that there was a good correlation between the severity ratings score and percentage of disfluencies calculated in both the languages. Hence, stuttering severity rating scale can be used in clinics for assessment and treatment of stuttering with BAWS.

Limitation of the study:

- All the participants employed were males; hence a comparison could not be done between genders.

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Future directions:

1. Similar studies on severity rating in bilingual adults who stutter can be extended in other Indian languages.

2. Similar studies can be carried out in multilingual adults who stutter.

3. Comparison of stuttering severity rating between different proficiency speakers, i.e., simultaneous and sequential bilinguals can be done.

4. Further, similar studies can be replicated in Kannada – English bilingual children.

References

Ardila, A., Ramos, E., & Barrocas, R. (2011). Patterns of stuttering in a Spanish/English bilingual: A case report. *Clinical linguistics & phonetics, 25*(1), 23-36.

Aron, M. L. (1967). The relationships between measurements of stuttering behaviour. *Journal of the South African Speech and Hearing Association, 14*(1), 15.

Bernstein Ratner, N. (2004). Fluency. In goldstein (Eds), *Blingual Language development and disorders in Spanish-English speakers* (pp.287-310). Baltimore, MD:Brookes Publishers.

Borsel, J., Leahy, M. M., & Britto Pereira, M. (2008). Judging stuttering in an unfamiliar language: The importance of closeness to the native language. *Clinical linguistics & phonetics, 22*(1), 59-67.

Borsel, J., & de Britto Pereira, M. M. (2005). Assessment of stuttering in a familiar versus an unfamiliar language. *Journal of Fluency Disorders, 30*(2), 109-124.

Conture, E. G., & Curlee, R. F. (Eds.). (2011). *Stuttering and related disorders of fluency*. Thieme.

Dale, P. (1977). Factors related to dysfluent speech in bilingual Cuban-American adolescents. *Journal of Fluency Disorders, 2*(4), 311-313.

Finn, P., & Cordes, A. K. (1997). Multicultural identification and treatment of stuttering: A continuing need for research. *Journal of Fluency Disorders, 22*(3), 219-236.

Green, T. (2000). The relationship of self-conception to perceived stuttering severity in children and adults who stutter. *Journal of fluency disorders, 24*(4), 281-292.

Hoffman, L., Wilson, L., Copley, A., Hewat, S., & Lim, V. (2014). The reliability of a severity rating scale to measure stuttering in an unfamiliar language. *International Journal of speech-language pathology, 16*(3), 317-326.

Howell, P. (2004). Effects of delayed auditory feedback and frequency-shifted feedback on speech control and some potentials for future development of prosthetic aids for stammering. *Stammering research, 1*(1), 31.

Howell, P., Davis, S., & Williams, R. (2009). The effects of bilingualism on stuttering during late childhood. *Archives of disease in childhood, 94*(1), 42-46.

Ingham, R. J. (1982). The effects of self-evaluation training on maintenance and generalization during stuttering treatment. *Journal of Speech and Hearing Disorders, 47*(3), 271-280.

Ingham, R. J., & Cordes, A. K. (1997). Identifying the Authoritative Judgments of StutteringComparisons of Self-Judgments and Observer Judgments. *Journal of Speech, Language, and Hearing Research, 40*(3), 581-594.

Jankelowitz, D. L., & Bortz, M. A. (1996). The interaction of bilingualism and stuttering in an adult. *Journal of Communication Disorders, 29*(3), 223-234.

Jayaram, M. (2013). Linguistic analysis of stuttering patterns of bilingual stutterers. *Journal of the Indian Institute of Science, 59*(11), 363.

Jayaram, M. (1983). Phonetic influences on stuttering in monolingual and bilingual stutterers. *Journal of communication disorders, 16*(4), 287-297.

Karimi, H., Jones, M., O'Brian, S., & Onslow, M. (2014). Clinician percent syllables stuttered, clinician severity ratings and speaker severity ratings: are they interchangeable?. *International Journal of Language & Communication Disorders, 49*(3), 364-368.

Karimi, H., O'Brian, S., Onslow, M., & Jones, M. (2014). Absolute and Relative Reliability of Percentage of Syllables Stuttered and Severity Rating Scales. *Journal of Speech, Language, and Hearing Research, 57*(4), 1284-1295.

LaCroix, Z. E. (1972). Management of disfluent speech through self-monitoring procedures. *Journal of Speech and Hearing Disorders, 38,* 272-274.

Lebrun, Y., Bijleveld, H., & Rousseau, J. J. (1990). A case of persistent neurogenic stuttering following a missile wound. *Journal of Fluency Disorders, 15*(5), 251-258.

Lee, A. S., Robb, M. P., Ormond, T., & Blomgren, M. (2014). The role of language familiarity in bilingual stuttering assessment. *Clinical linguistics & phonetics, 28*(10), 723-740.

Lim, V. P., Lincoln, M., Chan, Y. H., & Onslow, M. (2008). Stuttering in English–Mandarin bilingual speakers: The influence of language dominance on stuttering severity. *Journal of Speech, Language, and Hearing Research, 51*(6), 1522-1537.

Marian, V., Blumenfeld, H. K., & Kaushanskaya, M. (2007). The Language Experience and Proficiency Questionnaire (LEAP-Q): Assessing language profiles in

bilinguals and multilinguals. *Journal of Speech, Language, and Hearing Research, 50*(4), 940-967.

Martin, R. R., Haroldson, S. K., & Woessner, G. L. (1988). Perceptual scaling of stuttering severity. *Journal of fluency disorders, 13*(1), 27-47.

Martin, R. (1965). Direct magnitude-estimation judgments of stuttering severity using audible and audible-visible speech samples. *Communications Monographs, 32*(2), 169-177.

Naylor, R. V. (1953). A comparative study of methods of estimating the severity of stuttering. *Journal of Speech and Hearing Disorders, 18*(1), 30-37.

Nwokah, E. E. (1988). The imbalance of stuttering behavior in bilingual speakers. *Journal of Fluency Disorders, 13*(5), 357-373.

O'Brian, S., Packman, A., & Onslow, M. (2004). Self-rating of stuttering severity as a clinical tool. *American Journal of Speech-Language Pathology, 13*(3), 219-226.

Onslow, M., Andrews, C., & Costa, L. (1990). Parental severity scaling of early stuttered speech: Four case studies. *Australian Journal of Human Communication Disorders, 18*(1), 47-61.

Onslow, M., Costa, L., Andrews, C., Harrison, E., & Packman, A. (1996). Speech outcomes of a prolonged-speech treatment for stuttering. *Journal of Speech, Language, and Hearing Research, 39*(4), 734-749.

Ramya, M. (2009). *Language Proficiency Questionnaire: An Adaptation of LEAP-Q in Indian context*. An unpublished dissertation submitted to University of Mysore; Mysore.

Ratner, N. B., & Benitez, M. (1985). Linguistic analysis of a bilingual stutterer. *Journal of Fluency Disorders, 10*(3), 211-219.

Riley, G. D. (1972). A stuttering severity instrument for children and adults. *Journal of Speech and Hearing Disorders, 37*(3), 314-322.

Riley, J., Riley, G., & Maguire, G. (2004). Subjective screening of stuttering severity, locus of control and avoidance: research edition. *Journal of fluency disorders, 29*(1), 51-62.

Roberts, P. M. (2002). Disfluency patterns in four bilingual adults who stutter. Journal of Speech-Language Pathology and Audiology, 26 (2002), pp. 5–19.

Schäfer, M., & Robb, M. P. (2012). Stuttering characteristics of German-English bilingual speakers. *Clinical linguistics & phonetics, 26*(7), 597-612.

Shenker, R. C. (2006). Connecting stuttering management and measurement: I. Core speech measures of clinical process and outcome. *International Journal of Language & Communication Disorders, 41*(4), 355-364.

Sherman, D., & Trotter, W. D. (1956). Correlation between two measures of the severity of stuttering. *Journal of Speech and Hearing Disorders, 21*(4), 426-429.

Teesson, K., Packman, A., & Onslow, M. (2003). The Lidcombe behavioral data language of stuttering. *Journal of Speech, Language, and Hearing Research, 46*(4), 1009-1015.

Taliancich-Klinger, C. L., Byrd, C. T., & Bedore, L. M. (2013). The disfluent speech of a Spanish-English bilingual child who stutters. *Clinical linguistics & phonetics, 27*(12), 888-904.

Van Riper, C. (1971). *The nature of stuttering*. Englewood Cliffs, NJ: Prentice-Hall.

Wingate, M. E. (1977). Criteria for stuttering. *Journal of Speech & Hearing Research, 20*(3), 596-607.

Woolf, G. (1967). The Assessment of Stuttering as Struggle, Avoidance, and Expectancy. *International Journal of Language & Communication Disorders, 2*(2), 158-171.

Young, M. A. (1961). Predicting ratings of severity of stuttering. *Journal of Speech & Hearing Disorders,7,*31-54.

Young, M. A. (1969). Observer Agreement: Cumulative Effects of Repeated Ratings of the Same S# x0026les and of Knowledge of Group Results. *Journal of Speech, Language, and Hearing Research, 12*(1), 144-155.