ASSESSMENT OF AFFECTIVE FACTORS IN 8-12 YEAR OLD CHILDREN WITH AND WITHOUT STUTTERING

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University of Mysore

Mysuru

ALL INDIA INSTITUTE OF SPEECH AND HEARING

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May 2019

CERTIFICATE

This is to certify that this dissertation entitled "**Assessment of Affective Factors in 8-12 Year Old Children With and Without Stuttering"** is a bonafide work submitted in part fulfillment for degree of Master of Science (Speech-Language Pathology) of the student Registration Number: 17SLP018. 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 award of any other Diploma or Degree.

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CERTIFICATE

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DECLARATION

This is to certify that this dissertation entitled "**Assessment of Affective Factors in 8-12 Year Old Children With and Without Stuttering**" is the result of my own study under the guidance of Dr. Sangeetha Mahesh, Clinical Reader, Department of Clinical Services, All India Instutute of Speech and Hearing, Mysuru, and has not been submitted earlier to any other University for award of any other Diploma or Degree.

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May 2019

*Dedicated to my dear **amma** and **acha***

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CHAPTER I

INTRODUCTION

Fluency is “the effortless production of long continuous utterances at a rapid rate, be it the first language or second language” (Starkweather, 1986). “Stuttering is a disorder in the rhythm of speech in which the individual knows precisely what he wishes to say, but at the same time is unable to say because of an involuntary repetition, prolongation or cessation of a sound ” (WHO, 1997).

Multidimensional nature of stuttering

Research in the field of stuttering traditionally labeled the disorder as having a single causative factor; however, more recently, the view that the disorder may be multi-dimensional has gained popularity. Several multidimensional models of stuttering were proposed by many authors (Smith, 1999; Zimmerman, 1980; DeNil, 1999; Riley & Riley, 2000; Ritto, Costa, Juste, & Andrade, 2016). Multidimensional theories consist of demand capacity model (Starkweather, 1990) which states that stuttering is caused when child’s cognitive, linguistic, motor, or emotional ability are lower than the demands experienced by the child. Smith and Weber, 2017 “The Multifactorial Dynamic Pathways Theory” states how stuttering occurs when there is an increased psychosocial demands and linguistic demands. CALMS model (Healey, Scott, Trautman, & Susca, 2004) states cognitive, affective, linguistic, motor, and social contribute to the development and maintenance of stuttering.

Affective components and stuttering

Affective component measures emotions, attitude and feelings that are associated with speech and communication. Initially, it was the believe of many researchers that the children with stuttering did not have any concern about their speech hence most study focused on evaluating attitude of adults (Culatta, Bader, McCaslin, & Thomason, 1985; Silverman, 1970).In the later years, researchers found negative attitude towards speech even in children who stutter (Clark, Conture, Frankel, & Walsen, 2012; Kawai, Healey, Nagasawa, & Vanryckeghem, 2012; Vanryckeghem, 2001). Post therapy outcome depends on the attitude of the person (Guitar, 2006). Mc Clure and Yaruss in 2003 stated that when change in attitude was taken a goal for therapy it resulted in better results.

Erickson in 1969 developed the first attitudinal rating scale; this was revised by Andrews and Culter (1974) and they came up with Erickson S-24 scale for adults. Grims (1978) and Guitar and Grims (1979) developed A 19 scale for children. Later Communication Attitude Test (CAT) was developed by Brutten in 1984. Vanryckeghem and Brutten (1997) did a study on 6-17-year-old Flemish children with stuttering (CWS) using CAT and found that 6 years onwards CWS show more negative attitude when compared to peers. In a meta- analysis study done by Guttormsen, Kefalianos, and Naess in 2015, 18 studies that considered speech attitude in CWS were analyzed. Preschool and school-aged children showed significant difference in communication attitude between children with no stuttering (CWNS) and CWS. Authors concluded that negative attitude may not be of stuttering, but it may lead to maintenance of stuttering.

CALMS rating scale (Healey, 2012) was developed based on the CALMS model of stuttering by Healey, Trautman and Susca, (2004). CALMS Rating Scale assesses all the five components proposed in CALMS model. CALMS helps to obtain a baseline of the child in each of the components. CALMS rating scale was translated to Persian language (Jalilian, Yadegari, Ebadi, Ebrahi, & Hajizadeh, 2017) and was administered on 115 children with stuttering. They concluded that CALMS-P was a reliable tool that can be used for the comprehensive assessment in CWS. Results also suggested that as age increases awareness about stuttering also increases.

Need for the study

All the dimensions of fluency need assessment as well as treatment since stuttering is a multidimensional disorder. Western studies have documented the presence of negative attitude in CWS, which indicate the need to assess and include them as part of treatment program. Researchers have found that attitude differences exist in CWS; at an earlier age rather than what was believed in the past (Vanryckeghem & Brutten, 1997). Cognitive development that happens during school age enables them to compare themselves with others. Schooling has a greater influence on children's emotional and attitude development. Peers might tease and bully CWS when they experience communication breakdowns. The risk of experiencing bullying is more for CWS when compared to typically developing children (Blood & Blood, 2007). Also, CWS might experience negative reactions from parents and others in the environment. Negative feeling like guilt, shame and embarrassment may stem from increase in self-awareness (Yairi & Seery, 2011), and these feelings can cause negative attitude. Mal–adaptive attitude increases the tension during speech which further increases the dysfluencies.

Negative attitude and social reactions can lead to anxiety syndrome in CWS. The CWS had increased chances of social anxiety disorder (Iverach, Jonesb, McLellana, Lyneham, Menziesc, Onslow, & Rapeeaa in 2016). All these issues in CWS can negatively affect quality of life.

Post therapy outcome is related to the extent of negative attitudes toward speech (Guitar, 1976). Chances of relapse are more if negative attitudes about speech persist. Thus, pre-treatment attitude measurement can be na indicator of recovery and relpase (Guitar, 1976). The affective feature among CWS also needs early clinical consideration. Hence, it is very important for the Speech Language Pathologist to assess affective features in the child before starting intervention.

In the Indian context to the best of our knowledge, no test or rating scale has been developed to assess affective factors in CWS. Therefore, this study was planned to develop rating scale to check affective factors in school aged children with stuttering which in turn will help to determine the affective factors in school-aged children who stutter. The detailed profiling of CWS would help the clinician to have a better, global and comprehensive understanding of the disorder.

Aim of the study: The aim of the study was to investigate the affective factors of 8-12 year old Kannada speaking children who stutter.

Specific objectives of the study

- To develop rating scale for the assessment of affective factors in Kannada
- To compare and analyze the affective scores of children who stutter and children without stuttering using the developed rating scale.

- To compare and analyze the affective factors in CWS across varying degree of severity.

CHAPTER II

REVIEW OF LITERATURE

"Stuttering is a developmental disorder characterized by frequent and protracted sound prolongations, sound, syllable, word and phrase repetitions and silent blocks that interfere with the efficient production of speech" (Bloodstein,1995).

Wingate in 1964 defined stuttering as " The term 'stuttering' means: I. (a) Disruption in the fluency of verbal expression, which is (b) characterized by involuntary, audible or silent , repetition or prolongation in the utterance of short speech element, namely: sounds, syllables, and words of one syllables. II. Sometimes the disruptions are (e) accompanied by accessory activities involving the speech apparatus, related or unrelated body structure, or stereotypes speech utterances. III. Also, there are not infrequently (f) indications or report of the presence of an emotional state, ranging from general conditioning of 'excitement' or 'tension' to more specific emotions. (g) The immediate source of stuttering is some incoordination expressed in the peripheral speech mechanism; the ultimate cause is presently unknown and may be complex or compound"

Views about stuttering

Throughout 1940s and 1950s the accepted explanation about stuttering was the diagnosogenic theory proposed by Johnson (1959). Johnson stated that stuttering develop because of the diagnosis of stuttering. The label as a person with stuttering made children more self-conscious. Their effort to talk without any dysfluencies would have resulted in

muscle tension which again increased listener's negative reactions. All of the multiple factors elevated the problem. The diagnosogenic theory was later discarded.

Later, many theories emerged which considered stuttering purely as a physiological disorder. Traditionally, stuttering was viewed as a unidimensional disorder, which included only speech disruptions. However, in the recent years stuttering is considered as a complex disorder which includes more than just speech disruptions. Hence, multidimensional view about stuttering emerged. According to multidimensional views, stuttering is caused by interaction of several factors including cognitive, linguistic, motoric, social and emotions. Some of multidimensional theories include Demand Capacity model (Starkweather, 1990), Smith and Weber's (2017), "The Multifactorial Dynamic Pathways Theory", Dual Diathesis-Stressor Model of Stuttering (Walden, Frankal, Buhr, Johnson, Conture, & Karras, 2012) and CALMS model of stuttering (Healey, et al., 2004).

Demand capacity model states that, "Stuttering results when demands for fluency from the child's social environment exceed the child's cognitive, linguistic, motor, or emotional capacities for fluent speech" (Starkweather, 1990). According to Demand capacity model the onset and development of stuttering is based on Motoric, Linguistic, Socio-emotional and Cognitive dimensions. The demands can be internal or external environment or both. They include time pressure, innate and environmental pressure to use more complex language, high levels of excitement, anxiety and parental demand for increased cognitive functioning. As long as the child's capacity for producing fluent speech is ahead of the demands for fluency that the child's environment presents, the child will speak fluently. When the child's demand becomes too great or the capacities

have not developed fast enough he or she will not be able to speak fluently. Because demands vary according to a number of factors such as the speech situation, the listener and even certain words and sentences, the child's ability to speak fluently will also vary.

Walden et al. in 2012, proposed Dual Diathesis-Stressor Model of stuttering. According to the authors "both linguistic requirements and skills, and emotion and its regulation, are hypothesized to contribute to stuttering". The model talks about emotional diathesis which consists of stable emotional reactivity (experience of intense emotional arousal) and emotional regulation (regulating emotional related physiological process) Emotional stressors are situations that cause stress, which lead to unstable emotional diathesis and change in environment. Model also includes speech and language diathesis which are the processes involved in the planning and production of speech and language. Language stressors are situations that demand high communication efficiency. Emotional stress activates emotional diathesis, when this occurs many behavioral, physiological changes occur in human system. This sympathetic arousal can disrupt the speech planning and production system which can cause dysfluent speech. If both emotional and linguistically demanding situation occur simultaneously like in public speaking, it will cause more severe dysfluencies. Hence, this model also explains why frequency of stuttering varies in different situations. Individuals who experience negative emotions and reduce regulation of emotion during communication would be more affected by stuttering.

Another multifactorial, nonlinear theory by Smith and Weber (2017) 'The Multifactorial Dynamic Pathways Theory' argues that CNS generates patterns of motor commands necessary for fluent speech and that this mechanism is disturbed in stuttering.

The theory states that “Neural systems that interact with unstable speech motor networks place pressures on the collective system and push it outside the boundaries of fluent operation” (Smith & Weber, 2017). This occurs when there is an increased psychosocial and linguistic demand. The theory talks about five subsystems essential for the production of fluent speech. They are motor control, auditory integration, language processing, emotional aspects and none of them operates in isolation. Each subsystem should function smoothly for fluent speech. In individuals with stuttering either one or more of the system fail to function effectively leading to dysfluent speech. Factors have different weightage in individuals with stuttering, thus each child has a unique dynamic pathway.

CALMS multidimensional model (Healey et al., 2004) includes cognitive, affective, linguistic, motor, and social (CALMS) components, which can be measured and defined quantitatively and qualitatively. Cognitive components include thoughts, awareness, perception and understanding about stuttering. Feeling, emotions and attitude of the individual comprises the affective components. Linguistic factors consist of language skills, message formulation abilities and discourse complexity. Motor component include timing and coordination of speech movements, type and form of stuttering and stuttering severity. Finally in the last component, social include avoidance of speech situation, reactions from the listeners and impact of various situations. Model states that these five components equally contribute to development and maintenance of stuttering. They suggest comprehensive assessment and management of stuttering include consideration of all the components.

Impact of stuttering on children with stuttering

Stuttering will have significant negative impact on the lives of individuals psychologically, socially and in terms of quality of life by limitations in communication activities and restrictions in participation in daily life. Common among adults with stuttering are negative emotional reactions like guilt, fear, shame, anger etc., (Yaruss & Quesal, 2006). Low self-confidence, low self-esteem, and reduced self-efficacy are some of the cognitive reactions of stuttering. High prevalence of anxiety disorder is also noted in individuals who stutter. All of this can lead to poor quality of life. Several studies have reported the presence of lower social status and below average academic performance in school aged children who stutter (Blood & Blood, 2007; Klompas & Ross, 2004; Langevin, Packman, & Onslow, 2009; Langevin, Packman, & Onslow, 2010).

It is important to have an idea about the social consequence of stuttering on child as well as on parents. In Langevin, Packman and Onslow (2010) study they tried to understand parent's perception of impact of stuttering on themselves and their preschoolers. Participants were 139 parents of preschoolers who stutter between the ages of 3-6 years. For the study the authors developed the Impact of Stuttering on Preschool Children and Parents (ISPP) based on literature review. Stuttering on Preschool Children and Parents consisted of a total of 19 questions of which 15 related to impact on stuttering on children and 4 about impact of stuttering on parents. Out of 15 questions related to stuttering two questions were open ended questions. The rating scale was mailed to all the participants and was asked to mail back when they have completed the rating scale. Out of 139 seventy seven participants were included in the final analysis. Results showed that emotional and psychological consequences of stuttering were evident

in preschoolers, they exhibited frustration (most frequent and common) and anger, sadness upset, and negative comments about the way they talk. Parents also reported of teasing and bullying from peers, which indicates that teasing and bullying related to stuttering starts early than previously thought. It was found that parents were also negatively affected by their child's stuttering. Parents reported that sometimes they responded in an inappropriate way to the child when they stuttered, parents blamed themselves for child's stuttering and worried about child's future, self-confidence and social relationships.

Majority of the studies done on quality of life (QOL) of stuttering population focused on adults who stutter. However, Lankman, Yaruss and Franken (2015) did a study where they tried to examine the Quality of life of children with stuttering. Quality of life was investigated by using Dutch version of the Overall Assessment of the Speaker's Experience of Stuttering for School-age children (OASES-S). A total of 152 children participated in the study in the age range of 7-12 years. They were divided into two group, 101 in children with stuttering group and 51 in children without stuttering group. OASES-S which consists of a total of 60 questions about the impact of stuttering was translated to Dutch (OASES-S-D) using forward and backward translations. OASES-S-D was then administered to all the participants. Results showed that CWS scored more than CWNS supporting the view that stuttering has a greater impact on children with stuttering and poorer quality of life.

Another study that used OASES to assess the reaction of children and adolescents who stutter was done by Beilby, Byrnes and Yaruss (2012). The study also measured the relation between impact of stuttering and stuttered speech frequency. Participants

included 50 children with stuttering (8-11 years), 45 adolescents with stuttering (12-17 years) and a group of 95 children and adolescents who do not stutter. To calculate stuttering speech frequency, 2000 syllable sample was obtained from 95 stuttering participants during natural conversation. The original OASES (Yaruss & Quesal, 2010) was adapted in the study to suits children and adolescents (OASES-C). OASES-C consisted of 100 questions to be rated on a 5 point rating scale. All participants without stuttering were administered OASES-NC, an adapted version of original scale and participants with stuttering completed OASES-C. Outcome of the study showed that both children and adolescents who stuttered had higher score on OASES-C when compared to children and adolescents with no stuttering. These point to the fact that young people with stuttering had greater adverse impact on their speech than their typical peers. They reported reduced self-awareness, reduced knowledge about their speaking ability, and greater affective, behavioral, and cognitive reaction to speaking ability. Another important finding from this study is that children and adolescents who stuttering has poorer quality of life than their peers. They also found a significant correlation between percentage of syllable stuttered and self-awareness and knowledge of their stuttering experience.

Social anxiety disorder characterized by fear of social based situation is documented as negative consequence of stuttering (Iverach & Rapee, 2014). The high prevalence of anxiety disorder in adults is well studied and documented, but there are only few studies that comprehensively evaluated the prevalence of anxiety disorder in children with stuttering. One such study was done by Iverach, Jones, McLellan, Lyneham, Menzies, Onslow and Rapee (2016) to determine the prevalence of anxiety

disorder in children with stuttering when compared to children with no stuttering. Participants consisted of 75 children who stutter and 150 control subjects in the age range of 7-11 years. Parents and children responded to Youth Online Diagnostic Assessment (Lyneham, Wuthrich, Kangas, Iverach, McLellan, Hudson, & Rapee, 2015) which is an online diagnostic assessment, Spence Children's Anxiety Scale, Child and Parent Report (Nauta, Scholing, Rapee, Abbott, Spence, & Waters, 2004) and Strengths and Difficulties Questionnaire, Parent Report (Goodman, 2001), Short Mood and Feelings Questionnaire, Child Report (Angold, Costello, Messer, Pickles, Winder, & Silver, 1995) and Personal Experiences Checklist, Child Report (Hunt, Peters, & Rapee, 2012). Results showed that rate of anxiety disorder among stuttering children was four times higher than controls. The stuttering group had six time more chances for having social anxiety disorder and seven times increased chances for subclinical generalized anxiety disorder. They also had significantly higher score on cultural bullying scale of personal experiences checklist, when compared to control group. Overall finding suggest the need to assess the presence of social anxiety disorder in children with stuttering.

Attitude of children with stuttering

Several researchers have documented the disruptive impact that negative attitude have on fluency, as well the impact of mal-attitude on prognosis and relapse have also been studied up on. One school of thought is that stuttering develop due to the strong belief that speech is difficult (Bloodstein, 1995). They attributed negative attitude to be the cause of tension and fragmentation which leads to stuttering. Some other authors like Perkins, 1960 believed that negative attitude occur as a result of "repeated stuttering

experience that are associated with negative feelings". All of these studies show a link between attitudes and stuttering, however their cause and effect relationship is not clear.

Earlier researchers believed that stuttering in children will not lead to mal-attitude. It was after the development of scale to check attitude in children with stuttering like Communication attitude test the researchers confirmed difference between the attitude of children with stuttering (CWS) and children without stuttering (CWNS).

Findings from one of the earlier studies done to assess the speech associated attitudes of children with stuttering using Dutch version of communication attitude test (CAT-D) suggested the importance of addressing negative attitude during assessment and intervention. In the study De Nil and Brutten (1991) took 70 children who stutter and 271 children with no stuttering as participants. CAT-D was administered individually to each of the stuttering and non-stuttering children. Results showed that CAT-D scores of CWS were twice that of CWNS. For CWS as age increased CAT-D score also increased, while for CWNS it decreased. Scores of females in stuttering group were higher than that of male, although it was not statistically significant. From the study it can be concluded that children as young as 7 years showed a significantly more negative attitude than typically developing children.

Communication attitude test was translated in many languages and was used by several clinicians to investigate the mal-adaptive attitudes of children with stuttering. In one recent such study done by Vanryckeghem and Brutten (2016), they administered CAT on 55 Dutch speaking Belgian student with stuttering and 55 who did not, in the age range of 6-13 years (mean age of 9 year 3 months). All the 55 CWS were attending

speech therapy at the time of study. CAT-D was administered for both the group by researchers. Result showed that there is a statistically significant difference between score of CWS and CWNS. The mean CAT score of CWS are 2SD above the mean of CWNS. CAT score for children with stuttering increase with age while an opposite trend was found for CWNS. The CAT scores for CWNS decreased with age. Results agreed with the previous findings that CWS has significant more negative mal-attitude that their peers (DeNil & Brutten, 1991) and also between group discrepancy about negative attitude increases with age. Study highlights the important of therapeutic management, at an early age, since the results show a significance difference between the attitude of CWS and CWNS from 6 year onward, and for CWS, the negative attitude increase with age.

In the same year Kawai et al., 2012 tested communication attitude of 80 CWS and 80 CWNS (5-12) using CAT-J Japanese version. 30% of CWS had mild stuttering, 31% were moderately severe, and 39% had severe stutters. CAT-J was translated to Japanese using forward and backward translation, it included a total of 32 questions. CAT-J was administered individually to each student by special education teachers. ANOVA was conducted and found that there is a significant difference between the score of CWS and CWNS. While no significant difference between groups to grade interaction was found. Result also showed an increase in score with increase in severity of stuttering. The mean score of CWNS (9.59) is slightly higher and mean score CWNS (14.68) is slightly lower when compared to western studies, researchers attributed this difference in score to the fact that Japanese people avoid self-disclosure when compared to Americans. In contrast to few other studies (De Nil & Brutten, 1991), showed no significance difference between scores (both CWS & CWNS) score low on 1st grade than all others grade, which

shows that in general Japanese children had more positive attitude in lower grade compared to children in high grade. These studies prove that negative attitude of CWS, is universal phenomenon and not cultural specific.

A meta-analytic review of eighteen studies that assessed the attitude of pre-school and school aged children with stuttering compared to CWNS was performed by Guttormsen, Kefalianos, and Naess in 2015. Results showed the existence of significant difference in communication attitude between CWNS and CWS preschool and school aged children. Children who stutter showed signs of more negative attitude than their peers. Authors concluded that child's awareness of stuttering and emotional functions might influence their communication attitude. Few studies also showed some CWS to present no negative attitude, so they concluded that negative attitude is not inevitable one, but a common consequences of stuttering (Vanryckegham, 1995). They also found that as age increases negative attitude also increases. They attributed it to increase in negative experiences and increase in communication situation which demands good speaking skills in school like oral reading and presentations in class. Alternatively it can also be due to persistence of stuttering. From the meta-analysis review they could not find any significant difference from boys and girls who stutter in terms of their attitude.

Authors have concluded that, negative attitude is not a causative or contributing factors for stuttering since, stuttering onset in most of the children is 2-3 years old. Specifically, in that particular age children are not able to compare themselves with others , which may lead to negative communication attitude development. But it is more likely that negative attitude about communication can lead to the persistence of stuttering.

Negative Emotions and stuttering

Another important aspect of stuttering syndrome is the negative emotional reaction person with stuttering have to speaking situation. Individuals who stutter experience emotional reactions such as fear, anger, loneliness, guilt, shame etc. Several authors including Brutten in 1965 developed "The Speech Situation Checklist for children" and studies have shown negative emotional reaction in children with stuttering, which is directly proportional to their speech disruption. Most of the studies done focused on emotional reaction of adults, with very few studies on emotional reactions of school age children with stuttering.

Vanryckeghem, Hylebos, Brutten and Peleman (2001) investigated the relationship between communication attitude and emotions. Study was done on 143 children with stuttering in the age range of 7-13 years. For each child first CAT-Dutch was administered which consisted of a total 35 questions. Post administration mal-attitude questions were identified and circled. Later a 5 point rating scale was given (not at all to very much) were given to children to rate their emotional reactions, to specific CAT question who's numbers where circled based on child's CAT rating. Children were unaware about the latter rating scale until CAT was completed. Results showed that a strong interaction between negative attitude and negative emotions among CWS. This point to the bidirectional aspects of stuttering, which means mal-attitude and negative emotion influence each other. Study also shows the presence of mal-attitude developing in CWS at an earlier age than previously believed. The study also found positive correlation between age and negative emotion i.e. negative emotional reaction to CAT statement, which were identified as mal-attitude showed a statistically significant

increase from age of 7 to 13. The relation between severity of stuttering and negative emotional reaction was done by grouping the CWS in three categories; mild, moderate and severe and a positive correlation between severity and negative emotions were found.

Emotional, social and behavioral development of children who stutter was studied by Mc Allister (2016). He conducted a longitudinal study at the age of 3, 5 and 11, collecting data from ongoing prospective community called the Millennium Cohort study (MCS). Parents of the children had to indicate whether their children had stuttering or not at 3, 5 years of age. Strength and difficulty questionnaires (SDQ) were administered. "SDQ, a widely used tool for screening for behavioral, emotional and social development, it has 5 subscales emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and pro-social behavior" (Goodman, 1997) and a total of 25 questions were developed, which had to be rated on a 0 to 2 point scale, with (zero indicating not true and 2 certainly true). At each age level two groups were made, one consist of those children whose parents reported stuttering and the other group were parent didn't report any speech and language issues. Regression analysis was done at 3, 5 and 11 years, and results showed that children whose parents reported to have stuttering had significantly more likely than their peers to have high scores on most of the subscales. Three year-olds who stuttered had higher scores on the hyperactivity/inattention, total difficulties and impact scales analyses but results were not statistically significant. Five year-olds and eleven year olds who stuttered had significantly higher scores that their counter parts, except for emotional scale in five years and pro-social scales in eleven years. From the study it can be concluded that early

social, emotional and behavioral difficulties may be found in children who stutter as young as 5 years and will increase as age increases.

Bullying and Teasing

Stuttering is a social communicational disorder. Stuttering is influenced by the thoughts and feelings of speaker, as well as, how other's responded and reacts to one's stuttering. Public reaction and response impact negative stereotypes and stigmatization for individuals who stutter (Boyle & Blood, 2015). Bullying is the intentional harmful act of physical, verbal, relational or cyber aggression over a targeted individual by an individual with power (Olweus, 1993).Bullying includes negative verbal command, physical abuse, threats, and rejecting (Blood & Blood, 2007). Bullying has negative psychological, social and academic effects. It can affect self-confidence, self-esteem, poorer peer relationship all of which lead to poor quality of Life (Takzawa, Danese, Maughan, & Arseneault, 2014). Bullying and teasing is also linked to anxiety disorder. Children who were bullied have 2-3 times more likely to have anxiety disorder than who had a good peer relation (Copeland, Wolke, Angold & Costello, 2013). Children who have stutter are at a higher rate of experiencing bullying than children who do not stutter. In a study done by Ezrati-Vinacour, Platzky, and Yairi (2001), children as young as 3 years can differentiate between fluent and stuttering speech. They also found that from 3 years of typically developing children evaluated stuttering speech as negative. Negative peer reaction also started around the same age as reported by Langevi, Kleitman, Packman, and Onslow (2009). From this study it can be concluded that CWS experience teasing or bullying from peers from a young age than previously thought.

The two major consequences of stuttering are bullying by the peers and development of anxiety disorder in individuals who stutter. In an attempt to expand the earlier works done on the relationship between anxiety and bullying in children with stuttering, Blood and Blood (2007) did a study in boys with stuttering. They hypothesized that children with stuttering will have higher scores on anxiety scale and bullying than those without stuttering and interaction between higher anxiety and bullying experience would be observed for CWS rather than in CWNS. Eighteen children with stuttering and eighteen children without stuttering in the age range of 11-12 participated in the study. In both the groups 'Revised Children's Manifest Anxiety Scale' (Reynolds & Rchmond, 2002) and Life in School (Arora, 1994) was administered to measure anxiety and bullying experienced respectively. A result shows that 61% of children with stuttering reported bullying while only 4% reported bullying in CWNS group, which clearly shows that CWS are at a higher risk of experiencing bullying than CWNS. Twenty-six percentages of CWS also had higher score in social anxiety scale than the latter group. A significantly positive correlation was observed between bullying and anxiety sclaes. The study support the notion that individual who experienced more bullying are at higher risk of developing anxiety issues.

Same authors conducted a study to find out the long term consequence of childhood bullying in adults who stutter was studied by same authors in 2016. Study was conducted on 36 PWS and 36 PWNS in each group. All participants with stuttering has availed speech therapy at some point either during their primary, secondary or university education. Retrospective bullying questionnaire (RBQ) which has 3 sections including physical, verbal and relational and an additional 4 section about frequency was done for

the study, was completed by the for primary school, secondary school and university environments. They classified the participants into five groups (bully, victim, bully-victim, bystander and uninvolved). Participants also completed Social Interaction Anxiety Scale (Mattick & Clarke, 1998), Fear of Negative Evaluation scale (Watson & Friend, 1969), Rosenberg Self-Esteem Scale by Rosenberg, 1965, and Satisfaction With Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985). The results showed that person with stuttering score high on social interaction anxiety scale, the fear of negative evaluation scale which showed that they are at a higher risk of social anxiety disorder. Participants scored higher on Fear of Negative Evaluation Scale and the SWLS indicated that PWS worried about being judged and poorer life satisfaction. These results supported previous studies. Important finding from this study is the bullying victims had higher score on all the scales in both PWS and PWNS. This indicates that childhood bullying can lead to poorer psychosocial skills in person's with stuttering.

To summarize from the above studies it can be concluded that stuttering in children will have psychological, emotional, attitudinal issues apart from the obvious speech disturbances. Stuttering leads to negative, emotions, feeling and attitudes in children with stuttering which in turn can lead to anxiety disorder and reduced quality of life. It can be concluded that multidimensional view about stuttering should be focused upon rather than the just focusing on the surface behaviors of the disorder. Even though many studies that concentrated on studying affective features of children with stuttering in western literature, there are limited studies that focused on the same in Indian context. There are many western scales and questionnaires that assess affective factors which includes Communication Attitude Test-Revised (Brutten, 2003), What's True For You

rating scale (Chmela & Reardon, 2001), Framing My Speech Rating scale (Chmela & Reardon, 2001), Teasing inventory (Dugan, 2004) and CALMS Rating Scale (Healey, 2012). There is great need to develop such assessment materials in Indian languages also

CHAPTER III

METHOD

The present study examined affective factors in children between the age of 8-12 with and without stuttering. Participants for the children without stuttering group were recruited from a public Kannada medium school and participants for the stuttering group from AIISH, Mysore, who were presently availing the services at AIISH or who had availed services at AIISH.

3.1. Participants

A total of 122 school-aged Kannada speaking children in the age range of 8-12 years were considered for the study. From that 92 were children without stuttering (CWNS) and 30 children with stuttering (CWS). Children with no stuttering were divided into four groups. The group details and number of subjects in each group are summarized in the table 3.1. Stuttering group consisted of ten subjects each in mild, moderate and severe group. Stuttering group consisted of four females and twenty-six male with stuttering.

Inclusion criteria for Group 1 (CWNS)

- No repetition of grade level
- No history of hearing, speech, language, neurological, visual, or psychological impairment.
- Should be native Kannada speaker
- Individuals in the mid-socio-economic status

Table 3.1.
Details of participants in CWNS

Groups	Age range	Males	Females	Total number of participants
1	8-9 years	9	9	18
2	9-10 years	10	14	24
3	10-11 years	9	9	18
4	11-12 years	13	19	32

Inclusion criteria for Group 2 (CWS)

- Diagnosed as having a mild-severe degree of severity of stuttering by a qualified speech-language pathologist.
- Should be native Kannada speaker.
- Individuals in the mid-socio-economic status
- Participants were considered prior to attending therapy or those who haven't received any intervention for past 6 months.
- No repetition of grade level
- No history of hearing, language, neurological, visual, or psychological impairment except stuttering.

The ethical consent from the caregiver was obtained before considering them for study.

Table 3.2.
Details of participants in CWS

Groups	Age range	Males	Females	Total number of participants
1	8-9 years	7	1	8
2	9-10 years	4	-	4
3	10-11 years	7	3	10
4	11-12 years	8	-	8

Exclusion criteria

Participants with a history of neurological, psychological, hearing and other medical conditions were not be considered for the study.

3.2. Materials

1. Stuttering severity instrument-4 (Riley, 2009).
2. NIMH socio-economic scale (Venkatesan, 2011).
3. Developed affective component scale for children with stuttering.

3.3. Procedure

The study included 2 phases and the details are as follows.

Phase 1- Development of rating scale for the assessment for affective factors in Kannada for school aged children

Phase 2- Assessment of affective components in children who stutter

3.3.1 Phase 1: Development of rating scale for the assessment affective factors in Kannada

Rating scale was developed in Kannada language to assess the affective factors in Kannada speaking children in school age. Rating scale included questions to assess attitudes, emotions, and bullying experienced by the child. Questions were developed referring to Communication Attitude Test-Revised (Brutten, 2003), What's True for You rating scale (Chmela & Reardon, 2001), Framing My Speech Rating scale (Chmela & Reardon, 2001), Teasing inventory (Dugan, 2004) and CALMS Rating Scale (Healey, 2012). A total of forty questions were developed based on the review of literature and developmental scales. Thirty-five questions to assess affective factors and five questions on teasing and bullying. Affective questions included questions that check the attitude, emotions and feelings of the child. Five point rating scale (1- Never, 2 -Rarely, 3- Sometimes, 4- Mostly and 5- Always) was developed to rate each question.

To check the validity and comprehensibility of the questions by children between 8-12 years of age, the developed rating scale was given to 5 SLP's who were experienced in the field of stuttering for more than 5 years. The SLPs were asked to rate each question based on suitability on the Indian context and comprehensibility to children in a 3 point rating scale (0–not at all suitable/comprehensible, 1-partially suitable, 2-completely suitable/comprehensive). Adequacy of five point rating scale to rate each question was determined by asking the 5 SLPs to rate whether the five point rating scale was adequate or not by the children to rate each question. Content Validity Index (CVI) was calculated for each question based on the average score obtained by five SLPs. The Content validity was calculated by the formula:

$$\text{Content validity index} = \frac{\text{Number of Speech Language Pathologists who rates the item as either 1or 2}}{\text{Total number of Speech Language Pathologists}}$$

Questions with an average score of more than 0.8 were included whereas; score less than 0.8 were rejected. The value of 0.8 was considered to be significant based on an Indian study Bajaj, Varghese, Bhat and Deepthi (2014).

3.3.2. Phase 2: Assessment of affective components in children who stutterand do not stutter

Each participant was made to sit comfortably in proper lighting condition. Detailed case history from each participant's caregiver about the age of onset and nature of the problem, family history, reactions to speech/stuttering, duration of therapy and details about intervention were taken. NIMH socio-economic scale (Venkatesan, 2011) was administered to determine the socio-economic status of the participants, Stuttering severity instrument-4 (Riley, 2009) was used to objectively measure and quantify the stuttering severity for children in stuttering group.

In the stuttering group 15 participants were considered prior to attending therapy and the other 15 consisted of those who had not received any intervention for past 6

months. Affective rating scale was administered to each child. Each child took approximately 15 minutes to fill the questions. The rating scale was given to each of the child and was instructed to read each question carefully and to circle the number which they think is right for each question from the 5 point scale (1- Never, 2 -Rarely, 3- Sometimes, 4- Mostly and 5- Always). The explanation for what each number indicated was written under the respective number for each question and was also explained to participants prior to administration of rating scale. Examiner made sure that the children understood the instruction prior to the starting of test. Children were instructed to rate all the 30 questions. Children were also instructed to seek help from the examiner, if they needed clarification for any questions. Few children at the age of 8 year had difficulty in reading the question, so examiner read out the questions for them. Clarification of doubts and reading out the questions to the children were done making sure that, it will not bias their ratings. The rating scale was mailed to parents of 15 participants in stuttering group based on their convenience and was instructed not to interfere or give any suggestions, while child was filling the rating scale. If the child had difficulty in answering any questions, parents were instructed to note them and these were later clarified by the clinician through phone call.

Participants for the CWNS group were from nearby Kannada medium school. Examiner administered the rating scale as age group for each age range. Group instruction was given before starting of the test. Same instructions and test procedure was followed for the CWS group also. Children were instructed to clarify with the examiner, if they had any doubts regarding any of the questions. Questions were read aloud for children in the age range of 8-9, since few of them had difficulty in reading. Care was

taken not to bias their rating while doing so. Examiner monitored to reduce interaction between children during the procedure.

3.4. Scoring

Final rating scale consisted of 30 questions. Each question had to be rated on a 5 point rating scale so each question carries a maximum score of 5, so a total score of 150 for a total of 30 questions. For each child after administration of rating scale, total score was calculated based on their responses.

Statistical Analysis

The statistical analyses were done using SPSS (version 20.0) software. The below mentioned statistical analyses were performed.

1. Test- Retest reliability
2. Test of normality was done using Shapiro Wilks test for normality. The data did not follow normal distribution. Therefore the following non parametric tests were used .
3. Descriptive statistical analysis was performed to obtain Mean, Median, and Standard Deviation.
4. Kruskal- Wallis test
5. Mann- Whitney U
6. Spearman's rank-order correlation

CHAPTER IV

RESULTS AND DISCUSSION

The present study aimed at developing a rating scale for the assessment of affective factors in Kannada and to analyze and compare the affective scores of children with stutter and children without stutter between the ages of 8 to 12 years of age. Further the study also compared the affective factors in CWS across varying degrees of severity (Mild, Moderate, and Severe).

The results and discussion of the present study are explained under the following sub sections:

1. Development of rating scale for assessment of affective factors in Kannada
2. Test - Retest reliability
3. Test of normality
4. Comparison data: Difference in affective factors in Children with stuttering and children without stuttering
5. Affective factors and age
6. Affective factors and gender
7. Affective factors and severity of stuttering
8. Teasing and Bullying in children with no stuttering
9. Teasing and Bullying in CWS
10. Comparison of in Teasing and Bullying in CWS and CWNS

1. Development of rating scale for assessment of affective factors in Kannada

Rating scale was developed in Kannada language to assess the affective factors in Kannada speaking school age children. Rating scale included questions to assess attitude, emotions, and bullying experienced by the child. A total of 40 questions were developed referring to Communication Attitude Test-Revised (Brutten, 2003), What's True for You rating scale (Chmela & Reardon, 2001), Framing My Speech Rating scale (Chmela & Reardon, 2001), Teasing inventory (Dugan, 2004) and CALMS Rating Scale (Healey, 2012) and literature review. Thirty-five questions to assess affective factors and five questions on teasing and bullying. Affective questions include questions that check the attitude, emotions and feelings of the child. These questions involved a 5 point rating scale such as 1- Never, 2 -Rare, 3- Sometimes, 4- Mostly and 5- Always.

To check the relevance and comprehensibility of the questions by children between 8-12 years of age, the developed rating scale was given to 5 SLP's who were experienced in the field of fluency disorder for more than 5 years. The SLPs were asked to rate each question based on relevance of the questions on the Indian context and comprehensibility to children between the age of 8 to 12 in a 3 point rating scale (0–not at all relevant/comprehensible, 1-partially relevant /comprehensible, 2-completely relevant /comprehensive). Adequacy of five point rating scale to rate each question was determined by asking the 5 SLPs to rate whether the five point rating scale was adequate or not by the children to rate reach question. Content Validity Index (CVI) was calculated for each question based on the average score obtained from five SLPs. The Content validity was calculated using the formula:

$$\text{Content validity index} = \frac{\text{Number of Speech Language Pathologists who rate item as either 1or 2}}{\text{Total number of Speech Language Pathologists}}$$

The questions that got an average score of 0.8 or more in both comprehensibility rating and suitable in Indian context were only selected. Questions with an average score less than 0.8 in either one rating were rejected. The value of 0.8 was considered to be significant based on an Indian study by Bajaj, Varghese, Bhat and Deepthi (2014). The details of the content validity index for all questions are given in the Table 4.1.

After calculating content validity index it was found that 10 out of 40 questions had a content validity index less than 0.8, so those questions were excluded from final rating scale. All the 5 SLPs rated that a five point rating scale is adequate for the children to rate the questions. The final rating scale consists of a total of 30 questions. Twenty-seven questions to check affective factors and three for teasing and bullying, which had to be rated on a five point rating scale (Appendix).

Table 4.1.
Content validity index of initially developed 40 questions for rating scale.

Sl.no	***CVI-1 (Understandability)***	***CVI-2 (Relevancy)***	***Selected/ Rejected***
1.	1	1	Selected
2.	1	1	Selected
3.	1	1	Selected
4.	1	1	Selected
5.	1	1	Selected
6.	1	1	Selected
7.	1	1	Selected
8.	1	0.8	Selected
9.	1	1	Selected
10.	0.4	1	Rejected
11.	2	1	Selected
12.	1	0.6	Rejected
13.	2	0.8	Selected
14.	2	0.8	Selected
15.	1	0.8	Selected
16.	2	1	Selected
17.	1	0.2	Rejected
18.	2	1	Selected
19.	2	1	Selected
20.	1	1	Selected
21.	1	1	Selected
22.	0.8	0.4	Rejected
23.	2	1	Selected
24.	2	1	Selected
25.	0.4	0.4	Rejected
26.	1	1	Selected
27.	1	0.8	Rejected
28.	1	1	Rejected
29.	1	1	Selected
30.	0.8	0.8	Selected
31.	0.4	1	Rejected
32.	0.2	1	Rejected
33.	2	1	Selected
34.	1	1	Selected
35.	2	1	Selected
36.	2	1	Selected
37.	2	1	Selected
38.	0	0.2	Rejected
39.	2	1	Selected
40.	2	1	Selected

Note. CVI = Content validity index

The developed rating scale was used for the comprehensive assessment of affective factors in 8-12 year old children. Questions related to their feelings, attitude and emotions about their speech were included. Three questions related to bullying and teasing were also included since earlier researcher had indicated the high prevalence of bullying and teasing in CWS. The most widely used rating scale to assess affective factors in CWS is Communication attitude test (Brutten, 2003). CAT consists of 35 Yes or No questions, developed for children between the age ranges of 7- 12 years. Since yes or no question will not give a complete picture of extent to which they experience negative affective factors and bullying experienced, 5 point rating scale was used to rate each question in the present rating scale. The general teasing and bullying rating scales that were developed for school aged children like Teasing inventory (Dugan, 2004), does not include teasing and bullying related to speech. So in the present rating scale the teasing and bullying they experience specifically related to speech were also included (Q29-My classmates say that I talk funny). Framing My Speech Rating scale (Chmela & Reardon, 2001) just tackle the emotions experienced by the child. What's True for You rating scale (Chmela & Reardon, 2001) consist of 11 questions about child's attitude towards speech, which should be rated on a seven point rating scale. However questions about teasing and bullying were not included. There are no rating scales or questionnaires developed in Indian languages to assess the affective factors. The present rating scale was developed considering the limitation of other rating scales. Present rating scale include questions about attitude as well as bullying and teasing experiences which Kannada speaking school aged children can rate depending upon the extent to which they experience each of it on a scale of 1 to 5.

2. Test - Retest reliability

The affective rating scale was re-administered on 3 CWS and 10 CWNS after 1 week of post initial assessment. Acceptable level of reliability was obtained for all participants. Cronbach's Alpha coefficient was administered; a value of 0.87 for CWNS and 0.96 for CWS was obtained indicative of good reliability.

3. Test of normality

To check if the data shows a deviation from normality, the data was subjected to Shapiro-Wilson test for normality. The results revealed that the data is not following the normal distribution ($p<0.05$) with respect to age, gender and group also. Hence non parametric test was performed for all the statistical analysis.

4. Comparison data: Difference in affective factors in Children with stuttering and children without stuttering

One of the major aims of the study was to compare the affective scores of children who stutter and children without stuttering using the developed rating scale. The mean scores and standard deviation of both the groups are depicted in figure 4.1, presenting a mean score in CWS is 100.43 (SD-10.12) which is notably higher than the mean score of CWNS (M- 94.23, SD- 9.65). Mann-Whitney U test was performed to find out if the difference between the mean scores of both groups is statistically significant. The results showed significant difference ($Z = 3.190$, $p<0.05$) between the scores of both the groups. Results point to the fact that CWS had more negative affective features than CWNS as a group.

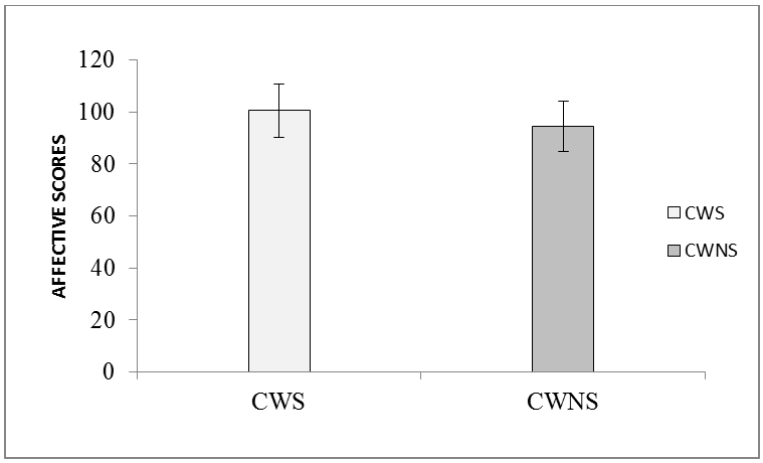

Figure 4.1.
Mean and standard deviation of affective factors for CWS and CWNS

In line with many previous studies, results of this study also confirm that CWS experience more negative communication attitude, feelings and emotions when compared to CWNS (Guttormsen, Kefalianos & Neass, 2015 ; Brace & Vanryckeghem; 2016, Vanryckeghem & Brutten, 2016). Experiencing difficulty in communication and negative reaction from peers and family can contribute to the development of mal-adaptive attitude in CWS.

One among the five subsystems mentioned in multifactorial dynamic pathway model (Smith & Weber, 2017) that are needed for the fluent speech production is emotional subsystem. According to the model when there are high psychosocial and linguistic demands, it causes the speech motor network to become unstable. CALMS (Healey, Trautman & Susca, 2004) have also included social component and affective component along with cognitive, motor and linguistic components. Affective factors include feeling and emotions about speech and social component talks about how avoidance of speech situations, reactions from listeners can lead to persistence of

stuttering. Small number of CWS was with in normal range, which shows that not all children with stuttering have negative affective factors. Such finding was also observed in other previous studies (Vanryckeghem, 1995). This indicates that negative affective factors can be a consequence of stuttering, but it is not necessarily inevitable.

The results of the investigation suggest that the developed affective factors rating scale is a useful tool in differentiating affective factors in CWS and CWNS. The finding is consistent with many of the studies done to investigate the affective factors in CWS in different countries (Bernardini et al., 2009; Brutten & Vanryckeghem, 2003, 2007; Vanryckeghem & Brutten, 1992, 1996, 1997, 2007; Vanryckeghem et al., 2001; Vanryckeghem & Mukati, 2003, 2006). Hence it can be concluded that presence of negative affective features in CWS is universal in nature.

One of the negative consequences of stuttering is the development of social anxiety disorder. Studies show that about 22-60% of adults with stuttering are at risk of developing social anxiety disorder (Iverach & Rapee, 2014). Onset of social anxiety disorder is found to be between the age of 8-15 years, which coincide with age of development of negative affective features. A strong relationship between negative attitude and emotional reactions was also found by Vancryckegham, Hylebos, Brutten and Peleman in 2001. Children with stuttering can experience emotional reactions such as fear, anger, loneliness, guilt, shame when compared to CWNS from age of 7. Not all children with stuttering will develop negative consequence to stuttering but these experiences can affect their self-esteem, communication competence, avoidance of social situations and reduce quality of life (Blumgart, Train, & Craig, 2010; Erickson & Block, 2013). Quality of life is found to be reduced in children with stuttering from the age of 7-

12 years (Lankman, Yaruss, & Franken, 2015; Beilby, Byrnes, & Yaruss, 2012). The rejection, teasing and bullying experienced by CWS, can lead to reduced peer interactions, limit social interaction opportunities (Morris, 2001) which may be the reason for poor quality of life reported by CWS. So, it is important to address these factors during management at the earliest, to prevent further negative consequences in their lives.

5. Affective factors and age

The developed affective factor scale was administered on 30 children with stuttering and 92 children without stuttering, 92 children without stuttering was divided into 4 groups based on age; 8-9 years old formed group 1, 9-10 year old formed group 2, 10-11 and 11-12 year old children formed group 3 and group 4 respectively. The participants in each age range included 18, 24, 18 and 32 CWNS. Figure 4.2 shows the mean and standard deviation of affective scores in each age group among CWNS. From the careful observation of mean scores, we can understand that 8-9 year old has higher mean scores (M- 108.33, SD-7.38), when compared to other age groups. The mean score of age 10-11 age group (M-92.42, SD-3.37) is higher than 9-10 year old children (M-94.23, SD-5.0). Children in the age range 11-12 scored the lowest (M-88.28, SD-7.96). Overall as age increased there was a reduction in the scores among CWNS.

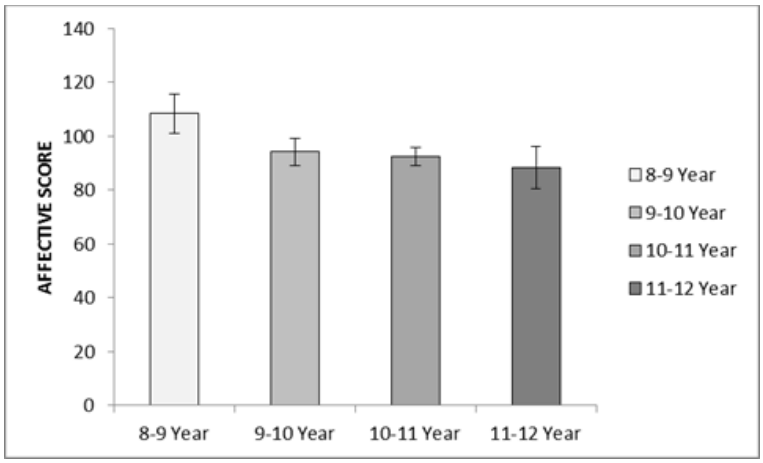

Figure 4.2.
Mean and standard deviation of 4 groups in affective rating scale for CWNS

Kruskal-Wallis test was performed to examine the effect of age in scores irrespective of gender in CWNS, It revealed that there was a significant difference ($\chi 2$ = 46.23, $p < 0.05$) in affective scores across age groups. Mann-Whitney U test was performed to check whether the observed descriptive difference between the scores across age levels was significant. Table 4.2 summarizes the findings of Mann-Whitney U test performed for the same. Findings support that there exists significant difference between the scores of all groups except between group 2 and 3.

Table 4.2.
Comparison of affective score across age groups in CWNS.

Comparison of groups	Z	P
Group 1 and 2	5.497	.000*
Group 1 and 3	5.116	.000*
Group 1 and 4	5.820	.000*
Group 2 and 3	.000	1.000
Group 2 and 4	1.721	.085*
Group 3 and 4	2.009	.044*

Note *= significance at 0.05 level

A Spearman's rank-order correlation was administered to determine the relationship between age and scores of CWNS. There was a negative correlation between age and score, which is statistically significant ($r = -0.607$, $p < 0.01$). This indicates that as age increases there is a decrease in score for children without stuttering.

To conclude the findings children in the age group 8-9 scored highest, children in the age range of 9-10 and 10-11 did not show much of a difference in their scores. There is a reduction in scores of 11-12 year olds when compared to group 10-11. The overall trend shows that children in the age group of 8-9 had a more negative affective factor and scores decrease after the age of 9 even in typically developing children. As age increases they develop more positive attitude.

The findings of the study suggest that Kannada speaking CWNS after 9 years of age tend to develop more positive attitude towards speech. Results also showed that CWNS between the age groups of 9-10 and 10-11 year, a slight difference in the mean score was noted which was not significant. This finding is contrasting to many previous studies where they have found a consistent reduction in the scores as age increased (Nil & Brutten, 1991; Kawai et.al., 2012; Vanryckeghem & Brutten, 2016). This contrast in findings can be due to limited number of participants considered in each age group or it can be due to the fact that children in the two age groups didn't differ much in their overall attitude. Again there was a reduction in scores for children in the 11-12 year old group, which indicate a further improvement in their overall affective factors. But the overall trend shows a slight reduction in scores as age increases in CWNS. More positive affective factors as age increases can be due to their increase in language proficiency and increase in confidence (Nil & Brutten, 1991). This finding is consistent with most of the

previous studies performed (Nil & Brutten, 1991; Kawai et al., 2012; Vanryckeghem & Brutten, 2016). Contrast to all the other findings study done by Bernardini, Vanryckeghem, Brutten, Cocco, and Zmarich in 2009 on 6-12 year old Italian children did not show a group by age interaction in both CWS and CWNS. From this we can assume that the amount and change in affective features with respect to age experienced by children varies depending on their culture.

In CWS as age increased the scores also increased. The mean scores of groups 8-9 years, 9-10years, 10-11 and 11-12 years were 101.14 (SD- 5.44), 95.33 (SD- 9.55), 99.25 (SD-10.60) and 114.6 (SD- 13.64) respectively. There was no significant difference between the mean affective scores of CWS and CWNS in 8-9 year age group. In fact CWS showed slightly less mean score when compared to CWNS, which indicate that children below 9 years of age are not a risk of developing negative emotions, feelings and attitude. This finding is contrast to many of the previous studies where they found that negative attitude started from age 6 (Nil & Brutten, 1991; Kawai et al., 2012; Vanryckeghem & Brutten, 2016). This difference in age of starting of difference in attitude can be due to cultural factors.

For CWS positive correlation was obtained between age and score, but the result was not significant ($r = 0.159$, $p > 0.05$). Opposite to CWNS score increases with age in children who stutter. Similar to earlier investigation findings as age increases affective scores decreases in normal group indicating a more positive attitude about their communication. While the attitude towards speech and communication will become more negative for CWS as their age increases.

Overall comparison of both the groups showed that there is no significant difference between the mean scores of CWNS and CWS from 10 years of age. After 10 years there is discrepancy in scores of both the groups, which continue to increase as age increases. This discrepancy was due to the opposite trend found in both the groups. In CWS as age increases the scores increases which indicate an upward trend while for CWNS downward trend is observed, for them as age increases affective scores decreased. It implies that as age increases more positive attitude, feelings and emotions develop about speech in CWNS, while the opposite effect is found in CWS. Figure 4.3 shows the trend difference in the performance of both the groups.

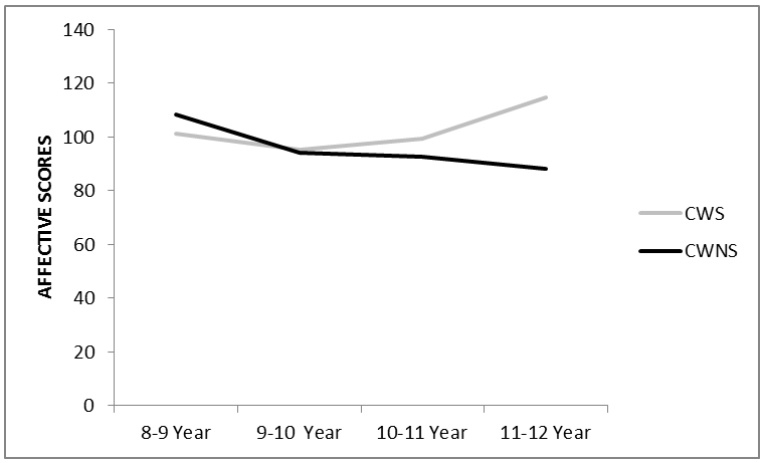

Figure 4.3.
Trend in CWS and CWNS for affective factors

Similar to Western studies the findings of this study combined with clinical observations showed that even children as young as 10 year old had developed a reactively more negative attitude about their speech skills. CWNS had a downward trend with respect to age and score, on contrast to CWS where there is an upward trend from age 8 to 12. This shows that CWS tend to become less confident in their abilities as age increase. which can be due to bullying and negative reactions that they have experienced,

which would have lead them to think that they are less competent than their peers. Study by Nil and Brutten in 1991 found a difference in attitude of CWS and CWNS from 7 years of age and difference is maximum at 12 years. Present study also showed maximum gap in score are obtained at 12 years, but the gap become evident only after 10 years. Results showed that Indian children develop negative attitude in communication much later than other Western studies. It is noted that children younger than 9 years may not have experienced negative reactions and bullying as that of western children. The current data shows that the attitude of children who stutter and those who do not is partly related to their age. This indicates the importance of addressing affective factors in therapy at the earliest.

6. Affective factors and gender

The mean total score for CWNS group among males was 91.37 (SD- 10.363) and for female subjects it was 96.53 (SD-8.455). Figure 4.4 shows the mean scores of males and females across different age groups for CWNS. The result shows that females scored higher than males. Kruskal-Wallis test was performed again to find out if the difference in scores were significant. Result showed there is a significant difference between the scores of males ($\chi 2$ =31.719, $p< 0.05$) and females ($\chi 2$ = 22.183, $p< 0.05$) as a whole. According to this study results female Kannada speaking children have a more negative affective features when compared to their male counterpart. Mann-Whitney U test was done to find if the difference in mean scores between males and females across each group are statistically significant. Table 4.3 depicts the results for the Mann-Whitney U test across age groups comparing males and females. According to test results, for age range 10-11 ($Z= 1.95$, $p <.05$) and 11-12 ($Z = 4.244$, $p <0.05$) there was a significant

difference between the score of males and females. Females had higher scores than males when they reached 10-11 years. Results shows that till the age of 9-10 males and females will have similar attitudes and after that males have better attitude about their speech than females.

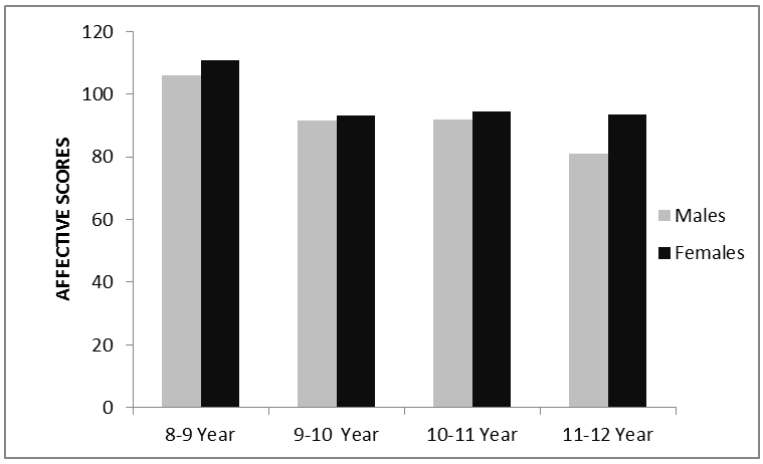

Figure 4.4.
Mean of males and females in different age levels for CWNS

Table 4.3.
Results for the Mann- Whitney U test across age group comparing males and females

Groups	Z	P
Group 1	1.284	.199
Group 2	1.266	.206
Group 3	1.95	.050*
Group 4	4.24	.000*

Note *= significance at 0.05 level

A careful analysis of mean across age for gender was done. It was found that the scores for both males and females decreased as age increased in CWNS. Mann Whitney U was done for both males and females to find if the difference in mean across age groups is statistically significant. The results of Mann-Whitney U test for the same is

shown in Table 4.4 Results showed that group 1 scores were significantly different than other groups for both males and females. For males, group 3 and 4, and group 2 and 4 also showed a significant difference, this was not found in females.

Based on the results obtained in all age groups, females had increased mean affective scores. The dominant nature of boys can be a probable reason why boys have better attitude about their speech. It can also be due to the fact that because of society's expectation to perform better for males it is less likely for males to disclose their insecurities in front of public.

Table 4.4.

Results of Mann- Whitney U test across groups for males and females in CWNS.

Groups	Males		Females	
	Z	p	Z	P
Group 1 and 2	3.679	.000 *	3.976	.000 *
Group 1 and 3	3.543	.000 *	3.589	.000 *
Group 1 and 4	3.914	.000 *	4.223	.000 *
Group 2 and 3	.165	.869	.351	.726
Group 2 and 4	3.392	.001 *	.129	.898
Group 3 and 4	3.787	.000 *	.349	.727

Note *= significance at 0.05 level

In the group of CWS, the mean scores males are 101.38 (SD- 9.48) and for females 94.28 (SD- 11.1). The mean values indicated the presence of gender difference in the attitude in both the groups. However, the number female subjects in stuttering group was small (4 participants), so separate analysis of their scores was not done.

The mean scores of males in CWS was 100.43 (SD-10.12) and for CWNS mean obtained was 91.37(SD- 10.363). Mann-Whitney U test was performed to confirm if the difference in mean was statistically significant. Results confirmed the findings that a

significant (Z= 3.61, p <0.05) difference was found between the scores of males in CWS and CWNS groups. The mean scores of females in CWNS was 96.53 (SD- 8.455) and that of CWS was 94.25 (SD- 11.17). Almost similar mean scores were obtained for females in CWS and CWNS group.

The mean and standard deviation of each age group for males in CWNS and CWS are given in the table 4.5. The test result of Mann- Whitney U test was performed to find the statistical significance across age groups in males. The results of the same are summarized in Table 4.6. The test results showed no significant difference across age groups in males with stuttering. For males in CWS, across group difference could not be obtained statistically due to limited number of participants in each age group. Based on the mean scores it can be concluded that scores across age group do not vary in CWS.

Table 4.5.
Mean and standard deviation across age groups in CWNS and CWS groups for males.

Age groups	***Mean***		***Standard Deviation***	
	CWNS	*CWS*	*CWNS*	*CWS*
8-9 Years	106.00	102.71	5.70	3.817
9-10years	91.50	96.00	4.32	9.522
10-11 years	91.78	100.71	3.83	9.928
11-12 years	93.37	103.50	4.54	13.649

Table 4.6.
Results of Mann- Whitney U test across age groups in CWNS males

Comparison of groups	Z	p-value
Group 1 and 2	1.53	.124
Group 1 and 3	1.33	.237
Group 1 and 4	.843	.442
Group 2 and 3	.927	.461
Group 2 and 4	.985	.374
Group 3 and 4	.236	.829

Overall the findings contradict other studies were they have not found any significant difference between the attitude scores of males and females. The reason for higher scores for males in affective scores can be due the increase in prevalence of stuttering in males, pressure from parent will be more for males to correct their disfluency because Indian society expect males to be highly competent. Conclusions about gender effect on affective factors cannot be made based on the present study due to limited number of female participants. Contradicting to the present study, few of the studies have found mean scores of boys slightly lower than that of girls, although it is not statistically significant (Nil & Brutten, 1991; Brutten & Dunham, 1987). From this we can assume that the amount and change in affective features with respect to age experienced by children varies depending on their culture. The investigation of whether a gender influences affective factor has to be further studied with larger sample size.

7. Affective factors and severity of stuttering

Mean scores were assessed according to three separate categories of stuttering severity, which included (1) mild, (2) moderate (3) severe. Comparison between the mean scores across severity showed that as severity increased affective scores also increases**.** The mean score of mild, moderate and severe groups and standard deviation are shown in figure 4.5. There is a significant difference between the scores of across severity based on Mann-Whitney U test. Results of Mann-Whitney U test are summarized in table 4.7. The results point to the fact that as severity increases they develop more and more negative attitude about their communication. Children with moderate and severe stuttering are at higher risk of developing negative affective factors when compared to children with mild stuttering.

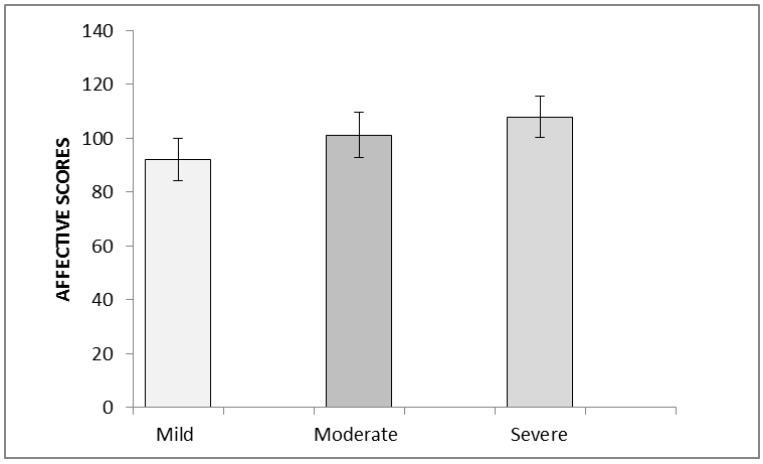

Figure 4.5.
Mean and standard deviation of affective scores across severity of stuttering

Table 4.7.
Results of Mann- Whitney U test across severity level in stuttering.

Severity	Z	P
Mild and moderate	2.425	.015*
Moderate and severe	2.196	.028*
Mild and severe	3.366	.001*

Note *= significance at 0.05 level

A significant positive correlation was found between affective scores and severity ($r = 0.708$, $p < .05$). According to test results, as severity increases affective scores are also increasing. As the severity of stuttering increases, their attitude towards speech also become more and more negative. The scores of mild group (M-92.20, SD- 7.82) did not vary much from that of CWNS (M-94.23, SD- 9.6) group based on mean scores. This shows that children who have mild stuttering tend to not develop negative affective factor when compared to moderate and severe stuttering children.

In the moderate and severe group there is an increase in affective scores above 9 years of age and the difference in scores between the CWNS and CWS increases as age increases. At 12 years of age mean score of 2 male children with moderate level of stuttering and 3 children in severe groups are 105 and 114, which is higher than mean score of CWNS (80.85).

Study done by Nil and Brutten in 1991 in 70 children with stuttering using CAT-D found increased mean score in stuttering and results attitude scores significant across severity. A similar trend is observed in present study also. Kawai et al., 2012, result also showed an increase in score with increase in severity of stuttering.

As severity of stuttering increases, the frequency, duration and associated secondary behaviors experienced by CWS also will be increased. This will create more communication interruptions and in large communication environment, which will cause more negative listeners reactions. As severity increases teasing and bullying experienced will also be more. According to Walden et al., Dual Diathesis-Stressor Model of stuttering (2012) when child experience high emotionally and linguistically demanding situations, cause sympathetic arousal which can disrupt the speech planning and production systems. Children with severe stuttering experience high level of anxiety and emotional reaction, which cause them high emotional stress and lead to imbalance in emotional diathesis.

8. Teasing and Bullying in children with no stuttering

Careful analysis of teasing and bullying questions was performed to assess the bullying and teasing experienced by school aged children. Rating scale included 3 questions (Q-28, 29, 30) specific to teasing and bullying which is rated on a 5 point scale. Maximum score that can be obtained for that section is 15. Higher scores indicate experience of teasing and bullying to a larger extent.

In children without stuttering the mean scores for bullying and teasing was 4.32 with a SD of 1.48. In normal as age increases there was a reduction in scores. The mean scores and standard deviation of each age group in CWNS are shown in the table 4.8. Significant difference was found between all groups except for group 2 and 3 and group 2 and 4. Table 4.9 summarizes the results of the Mann-Whitney U test results for teasing and bullying in CWNS. The mean scores and standard deviations of males and females

subjects are 4.48 (SD- 1.50) and 4.19 (SD-1.46) respectively. Teasing and bullying scores of males and females in CWNS did not vary much based on mean scores.

Table 4.8.
Mean scores and standard deviation for teasing and bullying in CWNS across age groups.

Age groups	Mean	Standard Deviation
Group 1	5.11	1.56
Group 2	4.90	1.48
Group 3	4.22	1.37
Group 4	3.70	1.21

Table 4.9.
Results of Mann- Whitney U test for teasing and bullying in CWNS

Comparison of groups	Z	P
Group 1 and 2	5.497	.000 *
Group 1 and 3	5.116	.000*
Group 1 and 4	5.820	.000*
Group 2 and 3	.000	1.000
Group 2 and 4	1.721	.085
Group 3 and 4	2.009	.044*

Note *= significance at 0.05 level

In the typically developing children, younger the age tendency to experience teasing and bullying is more evident. An increased in advancement of age the tendency to experience teasing and bullying has been reduced in the present study.

9. Teasing and Bullying in CWS

The mean scores for teasing and bullying in CWS was 9.03 (SD- 3.56). The mean scores for males was 9.47 (SD- 3.31) and for females it was 8.75 (SD- 3.68). The mean scores indicated greater teasing and bullying experience for males. The mean and standard deviation of males across age in CWS groups are shown in the Table 4.10. The mean scores showed a slight increase in the mean affective scores as age increases in CWS.

Table 4.10.
Mean scores and standard deviation for teasing and bullying in CWS across age groups

Age group	Mean	Standard Deviation
Group 1	8.75	4.49
Group 2	7.5	5.19
Group 3	9.6	2.11
Group 4	9.37	3.62

With respect to severity of stuttering, it was found that children with mild stuttering had lower scores (M- 6.3, SD- 3.35) when compared to moderate (M-11.1, SD-2.27) and severe groups (M-9.7, SD-2.98) on bullying and teasing subsection. Mann-Whitney U test was performed to find if the difference in mean scores is statistically significant and results are shown on the Table 4.11. There is a statistically significant difference between scores of mild and moderate ($Z=2.74$, $p < 0.05$) and between moderate and severe ($Z=2.17$, $p < 0.05$). Moderate and severe groups experience more amounts of bullying and teasing than mild group. Moderate group has a higher mean score than severe group although it is not statistically significant**.** CWS in the mild spectrum experience teasing and bullying to a lesser extent than other severity levels. Results clearly indicate that as severity increases bullying and teasing also increases.

Table 4.11.
Results of Mann- Whitney U test comparing different severity levels in CWS

Severity	Z	P
Mild and moderate	2.749	.005*
Moderate and severe	2.178	.029*
Mild and severe	.926	.393

Note *= significance at 0.05 level

10. Comparison of bullying and teasing in CWS and CWNS

When bullying and teasing scores of CWNS and CWS was compared, it was found that there is significant difference between their scores (Z= 6.30, p<0.00). CWS (M- 9.03, SD- 3.56) has higher scores on bullying and teasing questions than CWNS (M- 4.32, SD-1.48). There was a significant difference between the scores of CWS and CWNS in males. The mean scores of females in CWNS group was 4.19 (SD- 1.46) and in CWS it was 8.75 (SD-3.68). The mean scores of females also indicate a difference between both the groups, although statistical analysis could not be done due to limited number of female participants. In agreement to attitude the bullying and teasing is more related to severity than age or gender, which indicate that all children who stutter irrespective of age and gender CWS they experience same amount of bullying and teasing.

Similar results were obtained in a study done by Hugh-Jones and Smith (1999), where they found out of 328 subjects in stuttering group 83% experience bullying. Most of them reported bullying to be more prevalent between ages of between 11-13 years (41%), followed by 8-10 years (26%). They also reported male reported more bullying than female. About 18% reported it bullying to occur every day, while 41% reported

several times a week. Study done by Blood and Blood in 2007 in 18 children with stuttering and 18 children with no stuttering in the age range of 11-12 also showed that 61% of the children in CWS group experienced bullying when compared to 4 % in CWS group.

The negative effect of stuttering during social interactions, stereotypes about stuttering in the society and low social status place children who stutter at a higher risk of bullying and teasing (Blood & Blood, 2007). Bullying and teasing can also lead to anxiety disorders later in life. Blood and Blood in 2007 reported high prevalence of anxiety disorder in children with stuttering who experienced bullying. They found a correlation of .82 for children with stuttering School age is the time when children start to develop self-identity, it also the time when they start comparing themselves with peers. So at this age peer relationship matters. Negative reactions or experiences from peers will have long term negative impacts on later physical, psychological, personal, vocational and social interaction (Blood & Blood, 2016).

Overall the results showed that CWS are at higher risk for experiencing stuttering and risk of stuttering increases as they grow older. CWS with moderate and severe stuttering experience more teasing and bullying than those children with mild level of stuttering. School age is the time when children start to compare themselves with others. Children with stuttering draw more attention to them and their peers consider them as less efficient due to frequent communication breakdown experienced by CWS.

CHAPTER V

SUMMARY AND CONCLUSIONS

Over the past few years, the view about stuttering has changed considerably from a unidimensional to multidimensional dimension. According to multidimensional view, stuttering is not just an overt speech disturbance but it is a combination of several different factors including cognition, motor, affective and social. Each combines in different way in different individuals to cause stuttering. Knowledge about each factor is needed for the effective management as well as to prevent relapse. The presence of negative affective factors has been documented in several western studies. Questionnaire and tests to tackle speech related affective factors for children in Indian context are limited.

The present investigation aimed at determining affective factors of 8-12 year old Kannada speaking children who stutter. A total of 122 participants, 92 children with no stuttering and 30 with stuttering in the age range of 8 to 12 were selected for the study. Children with no stuttering were divided into four age groups, children in 8-9 age range was considered as Group 1; 9-10 age range as group 2, 10-11 years and 11-12 year olds were put in group 3 and 4 respectively. All participants in CWS group were further divided based on severity as mild, moderate and severe. Affective factor rating scale was developed to suit the Indian context based on review of literature of standardized rating scales. The developed rating scale was validated by 5 Speech language pathologists. The final rating scale consists of a total of 30 questions. Twenty-seven questions were to check affective factors and three were for teasing and bullying, which had to be rated on

a five point rating scale. Affective factor rating scale was administered for all the participants in CWS and CWNS.

The results confirm previous findings, the affective scores of school aged children who stutter and those who do not stutter differed significantly. This may be due to the negative attitude they developed as a result of adverse communication situations and negative reactions from listeners.

Another noticeable finding was that a positive correlation was found between age and affective scores in CWS, while a negative correlation was found for CWNS. This indicates that as age increases the affective scores of children with no stuttering decreases. However, an opposite trend was evident in stuttering group. It can be due to the fact that for CWNS their confidence about their ability to communication improves as they gradually master advanced language and cognitive skills. While for CWS their speech impairment lead those to believe that they are inferior compared to their peers and society is not accepting their communication style. The present findings indicated that communication attitude of the child with stuttering becomes more negative as they mature, point to the need for early identification and management of speech associated mal- attitude along with traditional line of management.

The affective scores across severity level in CWS were also determined. Significant positive correlation was obtained for severity level and scores. As severity increases their attitude towards speech becomes more negative. This can be due to the frequent communication breakdown that made them to face more bullying and negative listener's reaction.

The response for bullying and teasing question in the rating scale was separately analyzed for CWS and CWNS. Results revealed a significant difference between both the groups of children. Children who stuttered clearly faced more bullying and teasing from their peers. This can be due to their inability to communicate fluently like their peers and less support from counterparts.

In summary, the developed rating scale to assess affective factors can be used to identify the mal-adaptive attitudes and bullying faced by school aged Kannada speaking children with stuttering. A complete knowledge attitude, emotions and the bullying faced by CWS will help speech language pathologist to devise an effective treatment program. It is important to deal with CWS with a holistic approach, focusing both on overt and covert features to prevent relapse.

Clinical Implications

The rating scale that was developed as part of the study will (1) add on to the comprehensive assessment protocol in CWS, (2) will help clinician to assess the presence of negative affective factors in children with stuttering, (3) as one of the goal during therapeutic process (4) Rating scale can be used to objectively document the affective score pre and post intervention and (6) The knowledge about affective factors such as feelings and emotions, bullying and teasing faced by the child in school environment can help clinician to create awareness program and counseling to sensitize teacher and public about risk factors of increasing severity.

Limitations of the study

- The sample size considered for each age group in CWNS and in each severity level among CWS was too small.
- The samples for CWNS were only collected from public schools.

Future direction

- Normative for developed affective scale can be developed and standardized by considering large sample size in each age group.
- Affective factors can be compared across different culture and socio-economic status
- Affective scale can be used to study the their effectiveness

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