KiddyCAT: Adaptation and Validation of Communication Attitude Test for the Kannada-speaking preschool children who do and do not stutter

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CERTIFICATE

This is to certify that this dissertation entitled "**KiddyCAT: Adaptation and Validation of Communication Attitude Test for the Kannada-speaking preschool children who do and do not stutter**" is a bonafide work submitted in part fulfillment for the degree of Master of Science (Speech-Language Pathology) of the student Registration Number: P01II21S0042. This has been carried out under the guidanceof a faculty of this institute and has not been submitted earlier to any other University for an award of any other diploma or degree.

Mysuru

September 2023

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DECLARATION

This is to certify that this dissertation entitled "**KiddyCAT: Adaptation and Validation of Communication Attitude Test for the Kannada-speaking preschool children who do and do not stutter**" is the result of my own study under the guidance of Dr. M. Santosh, Professor in Speech Sciences, Department of Speech- Language Sciences, All India Institute of Speech and Hearing, Mysore and has not beensubmitted earlier to any other University for award of any other diploma or degree.

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Chapter I

INTRODUCTION

Stuttering refers to a disruption in the smooth and uninterrupted flow of speech and a failure to maintain connected rhythm of speech (Van Riper, 1971). Stuttering is characterized by overt core symptoms such as repetition of sounds or words, prolongations, and blocks. In addition, there are secondary behaviors that a person who stutters (PWS) develops as learned reactions to the core behaviors. These include speech-related negative attitudes, increased anxiety, affective reactions, and coping behaviors like escape and avoidance. In accordance with the guidelines set forth in the Diagnostic and Statistical Manual of Mental Disorders, published by the American Psychiatric Association in 2013, stuttering stands out as one of the most prevalent fluency disorders, with a prevalence rate of 1% (Bloodstein et al., 2021) and an overall incidence rate of 5% (Andrews, 1964; Månsson, 2000). When compared to girls, stuttering is four times more common in boys (Bloodstein et al., 2021). The average age of onset, according to Yairi and Ambrose (2005), is around 2.8 years, and stuttering usually starts before the age of five in 95% of children with developmental stuttering (CWS). As children advance into their later grade years, prevalence rates tend to decline, indicating a high rate of spontaneous recovery of about 75%. (Yairi & Ambrose, 2013).

Stuttering is observed to have detrimental effect on PWS's quality of life. Additionally, the cognitive aspect of stuttering has been established, and scholars have highlighted the presence of connection between stuttering and speech-related negative attitude (Vanryckeghem & Brutten, 2007, 1997; Yaruss & Quesal, 2006). Stuttering is said to have a negative impact on the overall communication attitude, which starts as early as preschool age (Iverach et al.,

2016) and increases as CWS get older. CWS may exhibit negative, affective, behavioral, and cognitive responses that are influenced by their internal and external environments (Yaruss & Quesal, 2004). Furthermore, it is well-accepted that the negative-attitudes development in PWS is influenced by emotional states such as fear or embarrassment (Beilby et al., 2012; Constantino et al., 2016; Manning et al., 2013). A lower level of accomplishment can be seen in PWS due to fear of failure and low self-esteem.

In the Past evidences (Guttormsen et al., 2015; Yaruss & Quesal, 2006) children, adolescents, and adults with chronic stuttering reported experiencing speech-associated negative attitudes, that has a significant impact on their overall communication and quality of life. Further studies conducted on both adults and adolescents (Beilby et al., 2012; Constantino et al., 2016; Manning & Gayle Beck, 2013) concluded that the stuttering severity is not related linearly to speech-associated attitude or the overall impact of stuttering. Contradicting findings to the earlier mentioned results were also noted in the literature. Stuttering in adults and adolescents has a low severity and high impact on their communication, it can also have high severity and low impact on their overall communication (Winters & Byrd, 2021). Similarly, research with school-going children (Beilby et al., 2012; Kawai et al., 2012; Vanryckeghem et al., 2001) revealed there was a connection between speech-related attitude and severity of stuttering or overall stuttering impact, indicating children who severely stutter was likely to have greater negative communication attitude. Preschoolers might experience the negative effects of their stuttering in a similar way to their school-age counterparts while saying their name, and presenting themselves to their classmates, while chatting or playing with their peers (Winters & Byrd, 2021). In

general, parents tend to observe that their young children who stutter often express self-criticism regarding their own speech (eg., I won't talk well") and avoid talking when a stuttering event occurs, they use non-verbal cues like sighing to show their frustration (Boey et al., 2009).

Overt behaviors can be used to fully characterize a PWS by measuring the frequency and stuttering severity. Stuttering frequency counts and attitudes are viewed as two distinct aspects of the stuttering problem. From this viewpoint, evaluation may become skewed if only stuttering moments are taken into account. Cooper (1977) and Guitar (1976) have argued that a meaningful assessment of PWS should take the attitude of the person into account. There is an increased recognition of the perspectives of people who stutter (PWS) in both evaluation and management, including emotional and attitudinal reactions to their stuttering. Conture (2001) has noted that during evaluation and treatment, the essential aspects of the challenges faced by individuals who stutter is frequently neglected. Clinicians are gradually shifting their attention towards creating and employing standardized self-assessment tools to investigate these fundamental intrinsic features of stuttering. These test methods have given Speech-language pathologists (SLP) a deeper understanding of stuttering PWS. Standardized examinations with norm references are available to evaluate the attitude of adults, children, and preschool children who stutter. Therefore, it is crucial to include in each individual's appraisal of their communication attitude while conducting a comprehensive speech-language assessment (Perkins, 1990).

1.1 Need for the study

The original conceptualization of Communication Attitude Test (Brutten & Dunham, 1989) led to many global experiments spanning numerous decades.

A school-aged youngster must answer 33 items on the CAT by selecting whether a given statements are “true” or “false” for them**.** The state and severity of negative attitudes towards speech can be established based on the test results**.** Numerous studies have proposed normative and psychometric data for children with stuttering and those who do not. The CAT has undergone multiple revisions and modifications since its inception in the 1980s, as well as numerous translations and research studies were conducted all around the world. Due to the presence of cultural variations, the CAT has been translated and validated in Dutch, American, Slovenian, Italian, Pakistan, and Japanese. The CAT is demonstrated to possess an internal consistency (G. J. Brutten & Dunham, 1989)**,** overall score accuracy (Brutten & Dunham, 1989; Johannisson et al. 2009; Nil & Brutten, 1991) test-retest reliability was higher (Vanryckeghem & Brutten, 1992), and validity (DeKort, 1998; Johannisson et al., 2009).

Cross-cultural studies have demonstrated that CAT makes a distinction between CWS and CWNS based on their speech related attitude. (Bernardini et al., 2009; Nil & Brutten, 1991; Vanryckeghem & Brutten, 1992; Veerabhadrappa et al., 2021). Specifically, in comparison to the CWNS, the CWS score is statistically considerably higher, showing that their speech-related beliefs are more detrimental than those of their peers who do not stutter. It was demonstrated that by the age of six, there was a clear difference between the two groups. Additionally, CAT scores differ with age among CWS and CWNS (Vanryckeghem & Brutten, 1997), Increase in age considerably reduces the negative speech-related attitude of CWNS, whereas that of the CWS increases (Vanryckeghem & Brutten, 1997)**.** The variation in CAT scores between CWS and CWNS, and the direction of their speech-associated attitudes that diverge

with age suggest that their speech-related beliefs at a young age may be different (Vanryckeghem & Brutten, 1997). Given the fact that stuttering often begins before the age of six, exploratory research was carried out on preschoolers' attitudes toward speech. It is critical to note that awareness of stuttering was present in children younger than three years (Ambrose & Yairi, 1994; Węsierska & Vanryckeghem, 2015; Ezrati-Vinacour et al., 2001). Additionally, in a study by Boey et.al (2009), the stuttering awareness tends to emerge near the time of its onset and gradually intensifies as individuals grow older. Particularly, 90% of seven-year-olds and 57% of two-year-olds were aware of speech issues.

It's evident that employing a standardized self-report tool like the CAT would not be practical for children under the age of six, as preschoolers lack the ability to effectively read or understand the test questions. As a result, KiddyCAT (Vanryckeghem & Brutten, 2007), test intended to look into the cognitive aspect of stuttering issues in preschoolers was developed. With that knowledge in mind, it is imperative to consider the behavioral, affective, and cognitive aspects of early childhood stuttering. Consequently, Clark, Conture, Franken, and Wade (2012) recommend KiddyCAT as a valuable instrument for distinguishing and diagnosing stuttering in young children. The development of KiddyCAT allowed for examining preschoolers' Communication attitudes (Clark et al., 2012).

Since its development in 2007, in the process of arriving at KiddyCAT's current format, it has undergone extensive translation and research studies all across the world. As in the literature (Vanryckeghem & Brutten, 1997), it is crucial to evaluate a person's communication attitude when they stutter. The KiddyCAT is a test that has been widely accepted and is standardized, with the rules that are created with western population in mind. Although mal-attitudes in

PWS are researched extensively since 1980s in the western context, only few tests have been translated and validated for the Indian contexts. They are BigCAT (Veerabhadrappa, Krishnakumar, et al., 2021), OASES-A (Rashmi Singh, 2018) for AWS, CAT (Veerabhadrappa, Krishnakumar, et al., 2021), and there is an absence of test to evaluate the communication attitude of preschoolers who stutter in the Indian context. Therefore, the aim of the current research is to culturally adapt and validate the KiddyCAT for use in the Kannada language, followed by its administration to preschool-aged children.

1.2 Aim of the study

The primary aim of the study is to adopt and validate the KiddyCAT for Kannada-speaking preschool children.

1.3 Objective of the study

1. To adopt and validate KiddyCAT for the Kannada.
2. To compare communication attitudes among preschool CWNS and CWS.
3. To study Internal consistency of KiddyCAT-K.
4. To Study KiddyCAT's test-retest reliability.
5. To investigate the impact of severity of stuttering on the KiddyCAT-K scores of CWS.
6. To explore relationship between gender and KiddyCAT-K scores

Chapter II

Review of literature

Since 1950's (Adams, 1984; Andrews et al., 1980; Baxter et al., 2016; Bothe et al., 2006) stuttering has traditionally been seen as an idiopathic condition within the realm of speech-language pathology. Many authors across the world have defined stuttering. According to Van Riper (1982) stuttering is "A condition related to the timing aspects of speech, arising from the inability to execute the required motor coordination to produce sound, syllable, or word at the correct moment". Stuttering is typically characterized by interruptions in the smooth flow of speech, which can include repetition of sounds, syllables or monosyllabic words, as well as prolongations and blocks in speech. Previously, a uni-dimensional knowledge of stuttering would permit these obvious speech irregularities to determine how stuttering is assessed and treated. However, this uni-dimensional approach has been questioned, and most adopted a multidimensional perspective (Johnson, 1959; Smith, 1999; Van Riper, 1971; Brutten & Shoemaker, 1967; Yaruss & Quesal, 2006; Sheehan, 1970) Numerous stuttering theories exist in an effort to provide the best answers to, "What causes stuttering?". However, the question remains unanswered to date. The literature review focuses on the communication attitude of children with stuttering and assessing communication attitudes.

2.1 Incidence and Prevalence of stuttering

According to studies conducted in the UK and the US, the prevalence rate was 1% (Bloodstein, 1975). In the United States and the United Kingdom, the 1% figure roughly corresponds to 27,40,000 people of all ages and 5,80,000 in the United Kingdom. Bloodstein (1995) reviewed 37 studies examining the

prevalence of school-going children from the continents of Europe, Africa, Australia, the West Indies, and the United States. According to these studies, stuttering more prevalent during the academic years. But a recent prevalence survey by Craig et al. (2002) estimates the prevalence rate to 0.75 percent. In a retrospective review research, Yairi and Ambrose (2013) reviewed seven studies on the prevalence of stuttering. The rate of prevalence differed in terms of age; preschool children had the highest prevalence rate of 3.46% (McLeod & Harrison, 2009; Okalidou & Kampanaros, 2001; Proctor et al., 2008), followed by school-aged children with a rate of 0.84% (Boyle et al., 2011; van Borsel et al., 2006) and adults had 1 to 2% (Drayna et al., 1999). Studies across different age groups have revealed a prevalence rate of 0.72% (Craig et al., 2002).

Data on incidence, in contrast to those on prevalence, are less certain because of varying research methodologies and stuttering definitions. Yairi and Ambrose (2013) revealed a tendency in a retrospective incidence review analysis that suggests an incidence of 5% or above, with a mean estimate of 8% or above.

2.2 Onset of stuttering

Most often, stuttering emerges between the ages of 2 and 5 during the pre-school years.(Guitar, 2013; Johnson, 1959; Yairi & Ambrose, 2013). As age advances, the risk of developing stuttering significantly decreases.

2.3 Views on stuttering

Researchers and clinicians have been baffled by stuttering because its source is uncertain. Basic research has aided in researchers' understanding of the nature of stuttering, but not its underlying causes. Many authors have put

forth many theories to understand the cause and other features of stuttering. The diagnosogenic theory proposed by Johnson (1959) was the widely accepted explanation of stuttering throughout the 1940s and 1950s. According to this theory, children become more self-conscious due to their labels as stutterers. Muscle tension in attempting to speak without interruptions would have exacerbated the listeners' negative reactions. All of the multiple factors made the problem worsen. Later this was disregarded.

Later, many theories emerged and considered stuttering a purely physiological disorder. Historically, stuttering was viewed as a unidimensional disorder with only speech interruptions. However, recent studies have accepted that stuttering is a multidimensional disorder with more than speech disruptions. According to a multidimensional perspective, stuttering occurs through the interaction of a number of elements, including cognitive, linguistic, motoric, social, and emotional factors. In 1970, Sheehan used the analogy of an iceberg to explain this multifaceted concept. Below the surface are the stuttering's unnoticed co-occurring conditions, while above the surface level are the evident and overt speech disturbances. These unnoticed co-occurring factors significantly affect the Person with Stuttering (PWS) they include shame, guilt, negative thinking, anxiety, and fear. Some of the multidimensional theories include the Demand Capacity model (Starkweather et al., 1990), “Multifactorial Dynamic Pathways Theory” as outlined by Smith and Weber (2017), and the “Dual Diathesis-Stressor model” of stuttering introduced by Walden et al. (2012) and “CALMS model” (Healey & Trautman, 2004).

According to Demands Capacity Model “Stuttering is said to occur when a child's cognitive, lingual, physical, or psychological abilities for continuous flow of speech are surpassed by the demands for fluency placed on them by their social environment” (Starkweather et al., 1990). A child will speak fluently as long as their ability to produce fluent speech outpaces the demands that their environment places on them for that ability. He or she will not be able to speak fluently when the demand is too high or the capacities haven't developed enough. Demands vary across the speaker’s situation, listeners, and even certain words and sentences.

The Dual Diathesis-Stressor Model of Stuttering was put forth by Walden et al. in 2012. The authors state that "both linguistic needs and abilities, as well as emotion and its control, are believed to contribute to stuttering". Stable emotional reactivity and emotional regulation are the components of the model's concept of emotional diathesis. Emotional stressors are situations that are emotionally stressful and might result in stress, which can then produce an unstable emotional state and a shift in the environment. This model also includes speech and language diathesis, it is the process involved in the planning and production of speech and language. The situations that require high communication efficiency are termed language stressors. This model also explains why stuttering frequency varies in different communication situations. Stuttering would be worse in people who experience negative emotions and have reduced regulation over their emotions while communicating.

Multifactorial Dynamic Pathways Theory, a multifactorial, nonlinear theory by Smith and Weber (2017), proposes that the CNS creates motor command patterns required for continuous flow of speech and claims that this

mechanism is disrupted in stuttering individuals.) "The neural networks that interface with unstable speech motor systems exert forces on the overall system, causing it to exceed the limits of smooth operation" (Smith & Weber, 2017). Higher linguistic and psychosocial demands cause this to happen. This theory discusses five subsystems that are crucial for producing fluent speech. It includes motor coordination, auditory integration, language processing, and emotional components and none of them operates in isolation. Disfluent speech will be produced because one or more systems fail to function effectively.

CALMS Multidimensional model (Healey & Trautman, 2004) consists of cognitive, affective, linguistic, motor, and social components. The cognitive aspects of stuttering include thoughts, consciousness, perception, and understanding. The emotional components of an individual are comprised of their feelings, emotions, and attitudes. Language proficiency, message composition skills, and discourse complexity are linguistic components. Timing and synchronization of speech movements are motor components.

2.4 Characteristics and Diagnosis of Stuttering

One should be aware that stuttering syndrome is a complicated, multifaceted condition while diagnosing stuttering. It is marked by interruptions in the fluent speech (Motor component) and cognitive, affective, and behavioral alterations resulting from speech disruption. Stuttering can be identified by evaluating two primary components. Primarily, fluency counts and speech rate are used to gauge motor speech activity, further, by administering surveys that can provide insight into cognitive views, such as those that tackle speech-related anxiety and attitudes. Stuttering is the primary objective of the first approach, while CWS's cognitive belief system is the focus of the second strategy.

According to the research, stuttering often manifests between the ages of 2 and 5; however, it can be identified as early as age two (Bloodstein, 1975). Due to an overlap in features between stuttering and normal dysfluencies, differential diagnosis of the same would become difficult and challenging. (Clark et al., 2012). When examining the motoric speech disruption in the stuttering speech sample, the clinician must distinguish between other disfluencies (ODs) and stuttering-like disfluencies (SLDs; Yairi, 1997). Other disfluencies commonly found in 2-4-year-old children include interjections, pauses, and revisions with monosyllabic and part-word repetitions (Yairi, 1997).

Stuttering-like dysfluencies are characterized by multiple repetitions lacking rhythm, an increasing tempo, pauses with tension, and respiratory effort (Yairi & Ambrose, 1999). While ODs are defined by revisions and word- or phrase-level repetitions, stuttering moments are marked by speech errors like blocks, repetition, and prolongation. Hence, careful analysis and observation are vital in diagnosing stuttering.

In addition to core behaviors like repetitions, blocks, and prolongation, the person with stuttering (PWS) exhibits secondary behaviors that develop as learned reactions to the core behaviors. These include speech-related negative attitudes, increased anxiety, affective reactions, and coping behaviors like escape and avoidance. The "ABCs" (Affective, Behavioural, Cognitive) of stuttering, a collection of factors that together explain the psychosocial effects of the disorder on a person, are crucial for diagnosing and treating the condition. The "Affective,", often referred to as (A) component is a negative emotional reaction a PWS generally has towards their stuttering. The “Behavioral”, or also represented as (B) component refers to the escape and avoidance behaviors.

Lastly, the “Cognitive”, or (C) component refers to negative thoughts, attitudes, or beliefs associated with speech. The PWS is best described under this multifaceted approach, which goes beyond just focusing on the speech interruptions, by including the degree to which the person engages in coping mechanisms, Additionally, it encompasses inherent traits that are associated with a negative attitude towards speech and the emotional responses connected to speech disruption (Brutten & Shoemaker, 1967; Guitar, 1976; Sheehan, 1970; Vanryckeghem & Brutten, 2007).

Social anxiety, which is frequently experienced by a person with stuttering and helps to define the (A) component of the ABCs, plays a minimal role in essence and persistence of disfluencies (Brutten & Shoemaker, 1967; Sheehan, 1970; C. Van Riper, 1971). Fear of at least one social or performance circumstance where one can come under scrutiny by others is a component of a social anxiety disorder (American Psychiatric Association & Association, 2013), and has been identified in the majority (between 22%–60%) population of PWS (Menzies et al., 2008; Blumgart et al., 2010; Iverach et al., 2009; Stein, 1996). Fear of unfavorable judgment, unfavorable thoughts, attentional biases, protective behaviors, and self-focused attention are some of the variables that may influence social anxiety disorder.

The “Behavioural”, or (B) component of ABCs indicates that stuttering episodes involve more than just obvious speech disturbances that the listener may or may not notice. Tichenor and Yaruss (2018) found that PWS describes a variety of instances prior to and during stuttering using a detailed examination of the subjective experience of stuttering. Lack of confidence, tension, anxiety, fear and uncertainty were reported by the PWS in the moments before the stuttering.

During the moments of stuttering, individuals who stutter reported a lack of control and responded by engaging in physical actions such as struggling and pushing, Additionally, they described feeling anxiety and fear during these moments (Tichenor & Yaruss, 2018).

The last component of the ABCs of stuttering is the cognitive (C) component it is also known as attitudinal component, representing one's outlook or attitude towards speech. There has also been a great deal of study on the connection between cognition and stuttering (Lincoln et al., 1996). As the study is primarily focusing on the Communication Attitude of Preschool Children, this component will be reviewed in brief.

2.5 Attitude of Children's with Stuttering

Understanding the nature and purpose of attitudes, in general, will help one better comprehend PWS' speech-related attitudes (Watson, 1995). However, it should be emphasized that different researchers have diverse perspectives on attitude conceptualization, attitude activation, attitude formation, and attitude functions. According to Triandis (1970), attitude is defined as "A concept infused with feeling that inclines a set of behaviors toward specific types of circumstances". According to this perspective, attitude is observed as an object, and there are three groups of assistive responses to stimuli that aid in shaping the object including affect, behavior, and cognition (Breckler, 1984). In this attitude model, affect relates to the emotions or feelings linked with the attitude, behavior refers to the verbal assertions or actions one does in regard to the attitude, and *cognition* pertains to the way individuals perceive or verbally express the beliefs they associate with the attitude object. Although these components are closely

related, Rosenberg and Hovland (1960) describe them as intervening variables, with the potential for one to have a more significant impact on attitude formation than the others.

Attitudes can serve different functions in PWS and people who do not stutter (Watson, 1995). According to Watson, attitudes aid people in comprehending their environment by categorizing complex environmental cues, which enables the individual to fully understand the environment in which they live. In converse to individuals who speak fluently, People who stutter may utilize this function for purposes such as structuring intricate patterns of sounds, words, or situations that they fear and seek to avoid as a result of prior negative experiences with those speech-related factors. Watson claims that people who stutter may regularly exclaim "I hate to talk anyway!" despite the fact that they might genuinely derive pleasure from engaging in conversation but dislike the humiliation and embarrassment caused by stuttering. Therefore, this attitude function serves as a defense mechanism to protect individual's self-worth and rationalize heightened avoidance behaviors, including not communicating. These instances indicate the detrimental effects that a PWS's attitude can have on their behavior as these are based on bad experiences and negative affective responses. Watson emphasizes that this mutual influence demonstrates how attitudes and behaviors can have an impact on one another.

Moving back in time, Johnson (1934) was particularly interested in how stuttering affected a person's attitude. He found through a series of case studies that PWS indicated that more than half of their psychological issues, such as anxiety, shyness, moodiness, and despair, were caused by their speaking difficulty. These reported maladaptive attitudes and behaviors were brought on by

unsatisfactory and embarrassing speaking skills (Johnson, 1934). A recent study conducted by Bleek et al. (2012) examined the relationship between a five-factor personality model and an individual's overall experiences with stuttering. According to their research, those with higher level of neuroticism and lower level of extraversion are more susceptible to stuttering. This further reveal that personality features in PWS might also affect a person's attitude towards speech. The association between extraversion and communication attitude was the focus of another research investigation (Stipdonk et al., 2014). According to their research, PWS with greater extraversion scores exhibited positive attitude towards communication. The converse was true for those individuals who reported having a more negative attitude towards communication had lower extraversion scores Miller and Watson (1992) further emphasized that a PWS's anxiety is specific to their attitude towards a particular communication situation, and they argued that this anxiety is a reasonable reaction to the negative speaking experiences they frequently endure. These studies determined the link between speech-related attitude and several personalities, affective, and behavioral characteristics (Bleek et al., 2012; Miller & Watson, 1992; Stipdonk et al., 2014; Watson, 1995)

2.6 Assessment of Attitude

It has been researched and determined that the characteristics of speech-related attitude and how it has been evaluated and used in treating stuttering are highly essential. Investigations in this area also enlighten us on the influence of attitude on a PWS. It has been researched and determined that one’s attitude towards speech and it’s evaluation and application in the treatment of stuttering are highly essential. Study in this domain also enlightens us more on the influence of attitude on a PWS (Erickson, 1969; Andrews & Cutler, 1974; Vanryckeghem

& Brutten, 2011; Węsierska et al., 2018). In the past, there has been a debate regarding the significance of speech-related attitude in the management of stuttering. Guitar (1976) established that pre-treatment communicative attitude is a good indicator of stuttering therapy outcome. According to his research, PWS who had greater positive speech-related attitudes showed more favorable treatment outcomes whereas those who had greater negative speech-related attitudes showed a higher chance of relapsing. Additionally, Andrews and Cutler (1974) found a link between a negative speech-related attitude about speaking and a lower ability to maintain the continuous flow of speech. They concluded that for fluency to be generalized outside the therapy environment, speech-related attitudes must improve and mirror the communication attitudes of the people who do not stutter. These results reveal the importance of the initial attitude prior to the treatment as it relates to the treatment prognosis and suggest that the most important factor for therapy is the change in attitude. An interview or qualitative survey can used to ascertain how someone feels about their speech. Nonetheless, the use of self-report assessments that are standardized and norm-referenced, which has been the primary method for evaluating speech-related attitudes in individuals who stutter (PWS), proves to be even more effective.

2.6.1 Assessment of Attitude in Adults

Ammons and Johnson (1944) developed the “Iowa Scale of Attitude Towards stuttering”, It is one of the first of these tests, led researchers to believe that speech-associated attitude might contribute to the development and maintenance of stuttering after it had been administered. Several years later, in 1969, Erickson created the Erickson S-scale with the aim of designing an attitudinal assessment tool that could indicate the differentiation between the

speech-related attitudes of individuals who stutter and those who do not. The S-Scale was created by consolidating elements from existing tests measuring speech-related attitudes, resulting in a total of 441 items. It also included 13 additional items that were meant to identify respondents who were attempting to portray themselves negatively. The S-Scale has been decreased to 130 items, further to 39 items with a hope to highlight clear distinction between the PWS and PWNS. Erickson was ultimately able to distinguish between the communication attitudes of the PWS and PWNS groups during the third administration of the 39-item S Scale. Nonetheless, it was observed that there was a noticeable overlap in the score distributions, suggesting that the composition of the S-Scale may not be entirely valid. Following the removal of an additional 15 items that were unrelated to attitudes toward speech, Andrews and Cutler (1974) modified the original S-Scale, renaming it as the Erickson S-24 scale. This scale is proved to be a strongly reliable and valid tool for assessing speech-related attitudes, effectively distinguishing PWS from PWNS. Through the pre-and post-treatment data, the test was also used to show a correlation between improved fluency maintenance and a more amiable speech-related attitude.

Many self-report tests has been developed to evaluate particular components of speech-related attitudes, but most of the tests do so in a tangential manner. To gauge AWS' level of assurance regarding maintaining fluency in various speaking settings, the “Self-Efficacy Scale for Adults Who Stutter” (Ornstein & Manning, 1985) was established. SESAS asks respondents precisely about their level of comfort entering and remaining fluent in a hierarchy of speaking circumstances that vary from simple to complex. Although there is a positive correlation between this scale and Erickson Scale, demonstrating its

criterion validity to test fluency maintenance confidence, it measures fluency confidence rather than speech-related attitude. “Unhelpful Thoughts and Beliefs about Stuttering” (UTBAS) help detect speech-related anxiety and cognition (Chu et al., 2017; Iverach et al., 2016; St Clare et al., 2009). The Overall Assessment of the Speaker's Experience of Stuttering (OASES) (Yaruss & Quesal, 2006c), another self-report measure, evaluates the affective, behavioral, and cognitive experiences of stuttering as a whole, rather than as three distinct parts.

Brutten and Vanryckeghem (2003b) used the Erickson S-24 in a study in Belgium and discovered that some items such as 1, 6, 9, and 15 were not associated with the overall score of their respondents, and item 9 is grammatically outdated. Due to these components the Communication Attitude Test for Adults Who Stutter (BigCAT) (Vanryckeghem & Brutten, 2011) was developed as a response to the requirement for an objective measure of speech-related attitude that is based on cognitive factors. The scholars next set to collect comparative and normative data for the BigCAT, contrasting 216 AWNS with 96 AWS. The obtained data revealed that mean PWS score was 6 SD higher on average than the mean PWNS score, indicating highly significant group difference and demonstrating BigCAT's potent discriminative abilities. And the BigCAT is found to have high test-retest reliability. BigCAT-K (Veerabhadrappa, Krishnakumar, et al., 2021) is adapted and validated for kannada speaking individuals. This self-report assessment identified a notable statistical mean distinction between groups of AWNS and AWS, indicating that Kannada-speaking AWS may have a negative attitude towards communication. Additionally, compared to people with mild stuttering, those with severe degrees

of stuttering reported a considerably larger degree of speech-related negative attitude. The speech-related belief system of AWS does not appear to be affected by age. Both of these findings add to the sparse body of research on the relationship between severity of stuttering and age on the cognitive stuttering component. The results demonstrate that BigCAT-K is a useful instrument for stuttering assessment and management.

2.6.2 Assessment of Attitude in School Age Children

According to the extensive body of research on communication attitudes among the adults who stutter, they have significantly more negative speech-related attitudes than proficient speakers. As a result, new research on adolescents and school-age children was done to look into how negative communication attitudes emerge. Overall Assessment of the Speaker's Experience of Stuttering for School-Aged Children (OASES–S) for the age range of 7 to 12 years (Yaruss & Quesal, 2010) and Overall Assessment of the Speaker's Experience of Stuttering for Adolescents (OASES–T) for the age range of 13 to 17 years (Yaruss & Quesal, 2010) both provide evaluations of the effects of stuttering on an individual. The A-19 Scale and the Communication Attitude Test (Brutten & Vanryckeghem, 2007) have been utilized to gauge the speech-related attitudes of school-aged CWS. In the CAT, questions are answered with "true" or "false," but the A-19 only poses "yes" or "no" questions. The nature of these measures also varies. This Scale components relate to people's attitude and cognitive reaction to speaking in various communicative circumstances, whereas the CAT items describe various attitudes towards communication. Due to the existence of cultural differences, investigations utilizing CAT were carried out in many languages. To assess the

communication attitude of Kannada-speaking school-going children, CAT (Veerabhadrappa, Krishnakumar, et al., 2021) was developed. The data revealed that the mean CAT-K score of CWS was much higher than scores of CWNS and that stuttering severity and age had a significant impact on mean attitude scores. Results further demonstrated the validity and reliability of the CAT-K test.

2.6.3 Assessment of Attitude in Pre-school Age Children

By the age of three, children may compare their own communication skills to those of their peers, according to Zollinger (2008). By the age of four, Mathieu (2000) discovered that children with spoken language disorders (comprehension difficulties) had learned how to conceal their difficulties from peers. Hence, it is not unexpected that studies have revealed that preschoolers who stutter are aware of their stuttering. “Preschool Awareness of Stuttering Survey” (PASS) (Abbiati, Guitar, & Hutchins, 2012) and the “Communication Attitude Test for Preschool and Kindergarten Children Who Stutter” (KiddyCAT) (Vanryckeghem & Brutten, 2007) are the self-report questionnaires that have been utilized to evaluate the speech-related attitudes of preschool CWS. Both the KiddyCAT and the PASS ask the kid to affirm or deny certain assertions. Children must answer yes or no to a series of questions in the KiddyCAT that describe their communication.

As the study is on the adaptation and validation of KiddyCAT the research done using the KiddyCAT will be reviewed in detail. The KiddyCAT has been the subject of enormous research, it has been revealed to have a high level of test-retest reliability and internal consistency, criterion, content, and construct validity. Due to the existence of cultural differences, investigations

utilizing KiddyCAT were carried out in Swedish (Hartelius et al., 2010), Slovenian (Novsak Brce et al., 2016), Persian (Rafati et al., 2014), American (Clark et al., 2012), German (Neumann et al., 2019) and Polish (Węsierska et al., 2015) are reviewed here. The Swedish version is based on a group of CWNS, produced reliability of (α= 0.64)(Hartelius et al., 2010), the Slovenian version (α=0.73, n=123) (Novsak et al., 2016) as well as the Polish version (α=0.71, n=128) (Węsierska et al., 2015) both demonstrated internal consistency for CWNS and CWS groups. The American version's internal consistency was shown to be high for both CWS (α=0.75, n=45) and CWNS (α=0.72, n=63). The German version revealed good test-retest reliability with high correlation values ($r=0.983$, $p<0.001$) (Neumann et al., 2019). In cross-cultural studies utilizing the Communication attitude test on preschool who stutter (Kiddy CAT), these students reported speech-related attitudes that are significantly more unfavorable in comparison to their counterparts (CWNS) (Neumann et al., 2019; Novsak et al., 2016).

CHAPTER-III

METHOD

The aim of the present study was to adopt and validate the KiddyCAT for Kannada-speaking preschool children.

The objectives of the study are as follows:

1. To adopt and validate KiddyCAT for the Kannada.
2. To compare communication attitudes among preschool CWNS and CWS.
3. To study Internal consistency of KiddyCAT-K.
4. To Study KiddyCAT's test-retest reliability.
5. To investigate the impact of severity of stuttering on the KiddyCAT-K scores of CWS.
6. To explore the relationship between gender and KiddyCAT-K scores in CWNS.

3.1 Participants selection

- Preschool children aged between 3 to 6 years, male and female CWS, and CWNS were considered for the study. The participants were selected from in and around Mysuru city, Karnataka state. For the selection of participants, convenient and purposive sampling was employed.
- Group 1 is a control group which consisted of 300 CWNS (156 Males and 144 females) from the preschools in Mysuru. Group II consisted of 30 CWS and the details of the recruited participants considered for the study are described in Table 1. Stuttering Severity Instrument, (SSI-4) (Riley & Bakker, 2009) was used to determine whether stuttering is present in Group II. The administration of SSI-4 was done by the researcher herself who has an experience of 5 years in the area of assessment and management of

fluency disorders. Out of 30 CWS 3 were diagnosed as “Very mild stuttering”, 12 as “Mild stuttering”, 12 as “Moderate stuttering” 4 as “Severe stuttering” and 1 as severe stuttering. The data were then categorized into three categories for ease of data analysis: Mild stuttering included both very mild and mild levels of stuttering. Moderate stuttering is categorized separately. Severe stuttering comprised of both very severe and severe levels of stuttering.

Table 1

Age, SSI-Score, and stuttering severity of the CWS

Participants	Age	SSI-Score	Severity
P1	3-4years	12	Mild
P2	3-4years	25	Moderate
P3	3-4years	26	Moderate
P4	3-4years	14	Mild
P5	3-4years	11	Very Mild
P6	3-4years	14	Mild
P7	4-5years	22	Moderate
P8	4-5years	26	Moderate
P9	4-5years	24	Moderate
P10	4-5years	30	Severe
P11	4-5years	20	Moderate
P12	4-5years	15	Mild
P13	4-5years	12	Mild
P14	4-5years	12	Mild

P15	4-5years	10	Very Mild
P16	4-5years	33	Very Severe
P17	4-5years	23	Moderate
P18	4-5years	14	Mild
P19	4-5years	09	Very Mild
P20	4-5years	12	Mild
P21	5-6years	15	Mild
P22	5-6years	25	Moderate
P23	5-6years	25	Moderate
P24	5-6years	15	Mild
P25	5-6years	21	Moderate
P26	5-6years	12	Mild
P27	5-6years	25	Moderate
P28	5-6years	25	Moderate
P29	5-6years	27	Severe
P30	5-6years	11	Mild

Inclusion criteria

All participants considered for the study were native Kannada speakers. The age of the participants was between 3 to 6 years, but not younger than 3 years. The children diagnosed with stuttering and the children without stuttering were considered for the study.

Exclusion criteria

The participants who have co-morbid conditions such as communication disabilities, hearing impairment, Intellectual problems or a history of any neurological disorders were excluded from the study.

3.2 Procedure

Phase-1

Kiddy CAT is a standardized self-report test that examines young children feelings, attitudes, and reactions toward their stuttering (Cardell, 2010). The original test author provided written permission for the translation of the English version of KiddyCAT into Kannada. The initial KiddyCAT questionnaire was translated into Kannada, adhering to the established guidelines set by the World Health Organization (WHO). This process involved the following steps:

1. Forward translation of the questionnaire
2. Panel review of experts
3. Back-translation of the questionnaire
4. Pretesting and cognitive interviewing
5. The final version

1. ***Forward translation of the questionnaire:*** A proficient Kannada-English bilingual speaker translated the KiddyCAT from its English form into Kannada. The translator was directed to focus on achieving a conceptual equivalence for terms or phrases, rather than providing a literal, word-for-word translation.
2. ***Panel review of experts:*** The expert panel included 2 SLP's with atleast 3 years of clinical experience in the assessment and management of stuttering, and who are proficient in both Kannada and English. This stage

aimed to recognize vague statements/concepts in the translation and to sort out any disparities between the existing version of the questionnaire and the translated version.

3. ***Back-translation of the questionnaire****:* Two speech-language pathologists who are bilingual speakers were made blind to the original version of KiddyCAT, and were made to back-translate the Kannada to the English version.
4. ***Pretesting and cognitive interviewing:*** The pretest was conducted on five participants of the target population. The criteria for including and excluding participants in this step were the same as those for the validation stage. The questionnaire was read to the participants, and only two children among 5 found difficulty in understanding the questions 2 and 6. The second and the fifth questions were found difficult to understand by the preschool children. Few complex words which were found difficult to understand by children were replaced by the simpler words.
5. ***The final version:*** The result of all the previously mentioned iterations is the ultimate version of the questionnaire in the target language.

   The questions listed below were translated and validated:

   1. Do you talk right?
   2. Do words sometimes get stuck in your mouth?
   3. Do Mom and Dad think that you speak well?
   4. Do people try to help you talk?
   5. Is talking hard for you?
   6. Do your words come out of your mouth easily?
   7. Do you talk well with everybody?

8. Do you think that talking is difficult?
9. Do you like to talk?
10. Do people like how you talk?
11. Are words hard for you to say?
12. Is it hard for you to say your name?

Content Validation procedure

Content validation was done using the content validation index (Yusoff, 2019). This validation procedure includes five steps and which are described below:

Step 1: Preparing a form for content validation

This is the first step of content validation; in this step a content validation form was created and a description of the particular questionnaire was provided to ensure that the reviewers on the panel had a thorough understanding of the questionnaire's content. The relevance rating scale was used for the scoring of individual items. The rating of each item was done based on the rating scale mentioned below:

Degree of relevance:

1= The item has no relation to the domain being measured

2 = The item is marginally relevant to the domain being measured

3 = The item is closely relevant to the domain being measured

4 = The item is highly relevant to the domain being measured

Step 2: Selecting experts for review panel

The translated questionnaire from English to Kannada was given to five SLP for validation. They were instructed to rate the sentences for grammaticality and content. The validator needs to check whether the questions

framed in the Kannada version are appropriate with the English version of Kiddy CAT.

Step 3: Performing content validation

The validation process involved both in-person and remote methods. The form for the content validation was sent to two experts through online mode and the instructions were defined clearly in the form. The face-to-face content validation was done by three validators were the researcher provided a clear explanation about the questionnaire prior to the validation procedure.

Step 4: Domain and Items reviews

The validators were encouraged to review each questionnaire critically before providing the score. The validators were requested to provide written or verbal suggestions to improve the relevance of each question. The reviews and the recommendations of the experts were included in the questionnaire before the data collection.

Step 5: Providing Score for Each Item

After reviewing the questionnaire, validators were asked to offer individual ratings for each questionnaire as specified in the relevant scale.

Step 6: Calculation of CVI

Scale-based CVI (S-CVI) and the item-based CVI (I-CVI) are the different types of CVI. There are two methods for calculating the S-CVI: one is based on the percentage of items on the scale that receive a relevance score of 3, or higher from all validators (S-CVI/UA), and the other involves finding the average of the I-CVI scores for all items on the scale (S-CVI/Ave). When all the validators agree on an item, it receives a universal agreement (UA) score of 1. Otherwise, it receives a score of 0. Before computing the Content Validity

Index (CVI), a relevance rating was assigned, with a score of 1 for items rated 3 or 4 on the relevance scale and a score of 0 for items rated 1 or 2 on the relevance scale. The formula and definition for CVI calculation are provided in Table 2. For the KiddyCAT five validators were selected for the content validation. The number of Validators, relevance rating, I-CVI, S-CVI/Ave, and S-CVI/UA score are given in Table 3.

Table 2

The formula for the content validation at the item and the scale level

CVI Indices	Formula
I-CVI (CVI at an item level)	I-CVI = (Number of agreed -upon items)/ (Total number of validators)
S-CVI/Ave (CVI at scale-level based on the average method)	S-CVI/Ave = (sum of I-CVI scores)/ (Total number of items)
S-CVI/UA (CVI at the scale level based on the universal agreement method)	S-CVI/UA = (sum of UA scores)/ (Total number of item)

Note: CVI= Content Validation Index, UA= Universal Agreement: The formula is from(Polit & Beck, 2006; Lynn, 1986; Davis, 1992;)

Table 3

The relevance ratings on the kiddyCAT questionnaire by ten validators

Item	V1	V2	V3	V4	V5	EIA	I-CVI	UA
Q1	1	1	1	1	1	5	1	1
Q2	1	1	1	1	1	5	1	1
Q3	1	1	1	1	1	5	1	1
Q4	0	1	1	0	1	3	0.6	0
Q5	1	1	1	1	1	5	1	1
Q6	1	1	1	1	1	5	1	1
Q7	1	1	1	1	1	5	1	1
Q8	1	1	1	1	1	5	1	1
Q9	1	1	1	1	1	5	1	1
Q10	1	1	1	1	1	5	1	1
Q11	1	1	1	1	1	5	1	1
Q12	1	1	1	1	1	5	1	1
						S-CVI/Ave	0.96	
Proportion relevance	0.91	1	1	0.91	1	S-CVI/UA		0.91

Note: V= Validator, EIA= Experts In Agreement

According to the calculations in Table 3, the I-CVI, S-CVI/Ave, and S-CVI/UA, all reached satisfactory levels, and as a result, the scale of the questionnaire has acquired a satisfactory degree of content validity. After the content validation final version of the test material was developed [APPENDIX-I]

Phase-2

Pre-test administration procedure

Before conducting the test, written permission was obtained from the chairperson of the preschool. The researcher administered the questionnaire individually to both CWS and CWNS. The examination was carried out in a quiet room, and clear instructions were given before presenting the questionnaire.

Test Administration

Administration of the test began with the brief explanation to the child of what is required, and how he should respond to each question based on "what they think about their own speech" was trained, two practice items was provided along with the reinforcement. The test items were read aloud by the researcher and the child was instructed to say the appropriate response following the question. The administration of the actual test started from this phase where the 12 questions from the main test were introduced. The response options will be dichotomous, with the options being "Yes" or "No".Among the 12 questions, six questions were framed positively and six questions were framed negatively and the balance between the positive and the negative attitudes was maintained.

Scoring and Interpretation

Each child will receive a score on a scale ranging from 0 to 12, where a higher score reflected, a greater degree of negative attitudes towards their speech, while a lower score indicated a more positive attitude towards their speech. To ensure that the child remained engaged and interested during the test, play-like activities were incorporated into the assessment process. Different

forms of reinforcement were provided for the client at various points during the administration of the test to motivate the child.

Reliability

KiddyCAT was administered again to 10% of the primary sample from both groups that is 30 from the CWNS group and 6 from the CWS group were selected randomly after a gap of 8-10 days to evaluate test-retest reliability.

CHAPTER IV

RESULTS

4.1 Mean comparison of KiddyCAT-K scores between CWNS and CWS

The KiddyCAT scores were analyzed for two groups: CWNS and CWS. The outliers which had extreme values were removed and the number of individuals considered for the calculation of central tendencies was 293 in the control group. Further statistical analysis except central tendencies was carried out with 300 participants. Among the 293 CWNS participants the mean KiddyCAT-K score was 1.54 with a standard deviation of 1.58 and a mode of 0. The scores ranged between 0 to 6 with a median of 1.00 (figure 1). On the other hand, the 30 CWS participants had a mean KiddyCAT-K score of 5.56, with a standard deviation of 2.72 (Table 4) and a mode score was 5. Their scores ranged between 1 to 10 with a median of 5 (figure 2). To assess whether there is a significant statistical distinction in the mean scores between CWNS and CWS, an independent sample t-test was conducted. The results of the test revealed a statistically significant distinction between groups I and II, suggesting that CWS had much higher KiddyCAT-K scores than CWNS ($t(328) = 10.083$, $p = 0.000$). CWS reported notably more speech-related negative attitude in comparison to their peers who do not stutter (CWNS).

Table 4

Measures of Central Tendency and Variation for the CWNS and CWS on the KiddyCAT-K

	KiddyCAT-K	
	CWNS	CWS
Mean	1.54	5.56
Standard deviation	1.58	2.72
Median	1	5
Mode	0	5
Minimum	0	1
Maximum	6	10

Figure 1

Boxplot of the total score of CWNS

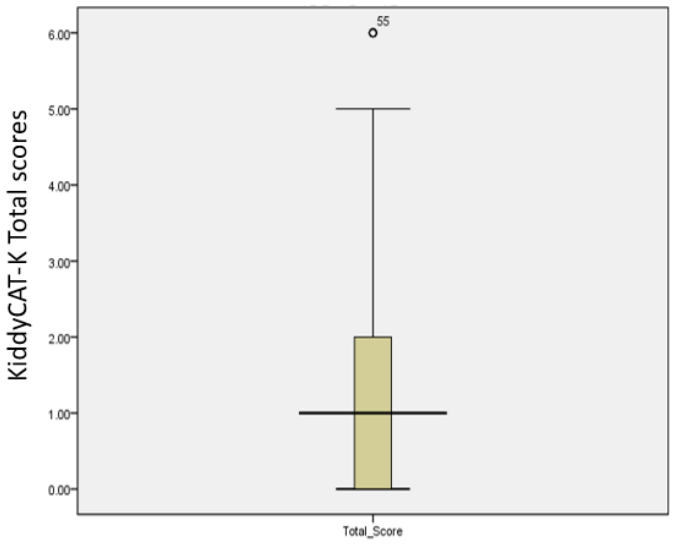


Figure 2

Boxplot of the total scores of CWS

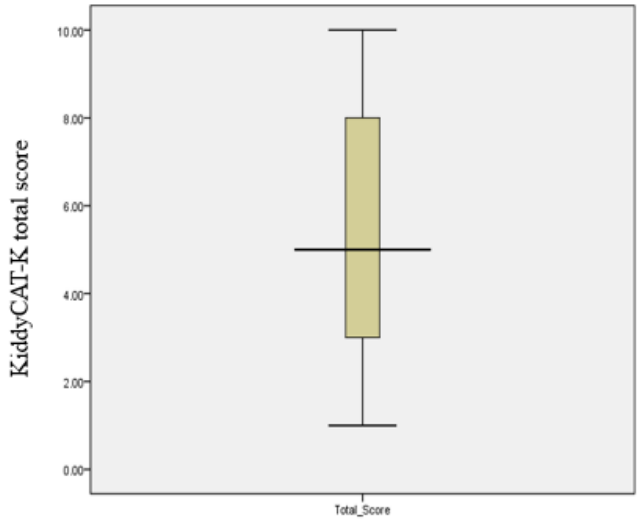
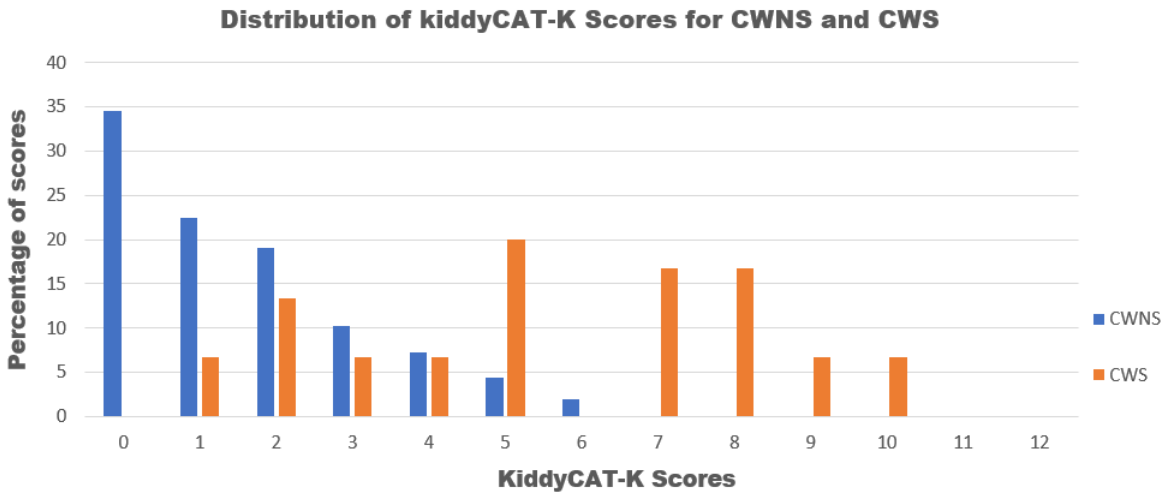


Figure 3

Distribution Of Percentage of scores of CWNS and CWS across the 12 item KiddyCAT



4.2 Reliability: Internal consistency

The inter-correlations for the KiddyCAT-K results indicate a group of CWNS had moderate internal consistency whereas CWS had a high internal

consistency. The internal reliability demonstrated a Cronbach's α correlation of 0.68 for the CWNS group and 0.73 for the CWS group.

4.3 Test-retest reliability

The KiddyCAT-K was once again administered to 10% of randomly chosen individuals from both the groups in order to establish test-retest reliability. For the CWNS and CWS groups, the intraclass correlation coefficient analysis (type-single measurement, two-way mixed-effects model and definition-absolute agreement) revealed r = 0.84 for CWNS and r = 0.981 for CWS, respectively.

4.4 The Relationship between Mean scores of KiddyCAT-K and Stuttering Severity

The participants were categorized into three groups depending on their severity of stuttering: mild, moderate, and severe. This was done to ascertain whether the CWS speech-related attitude was impacted by the severity of stuttering. Table 5 provides information on the total sample size, central tendency metrics, and measures of variability for children who stutter (CWS) across varying levels of stuttering severity. To establish whether there existed a statistically significant distinction in mean scores among the severity groups, a one-way analysis of variance (ANOVA) was conducted. The findings showed no statistical significant difference between the various stuttering degrees of severity ($F(2, 27) = 0.579$, $p = 0.568$).

4.5 Gender and Communication Attitude

Due to the limited number of participants in the CWS group, we could only assess the KiddyCAT-K scores of the boys and girls within the CWNS group. This was done to investigate whether gender variations had an impact on

children's communication attitudes. The mean score for males (M=1.89, SD=2.17) and females (M=1.52, SD=1.55) in the CWNS group did not show a significant difference, though marginally, t(298)=1.713, *p*=0.088, with a mean difference of 0.37, BCa 95% confidence interval, and a standard error difference of d=0.21. The mean and the standard deviation for the CWNS groups are presented in Table 6.

Table 5

Total number of participants and the Mean, Standard Deviation (SD), Range, and Median of kiddyCAT-K scores for CWS across various levels of stuttering severity.

Severity	n	Mean	SD	Range		Median
				Min	Max	
Mild	15	5.066	2.15	2	9	5
Moderate	12	5.91	3.11	1	10	7
Severe	03	6.66	4.16	2	10	8
Total	30	5.56	2.72	1	10	5

Note: “Severe”: severe and very severe CWS; “Moderate”: moderate CWS; “Mild”: very mild and mild CWS.

Table 6

No of individuals, Mean, and Standard Deviation of male and female children on the KiddyCAT-K

CWNS Age	n	M	SD
Male	156	1.89	2.17
Female	144	1.52	1.55

CHAPTER IV

DISCUSSION

The main aim of this study is to customize and confirm the reliability of a standardized clinical assessment tool for evaluating the attitudes of Kannada-speaking individuals who stutter (CWS). The KiddyCAT can serve as a model for evaluating cognitive-based speech-related attitudes in CWS, and the scores acquired were utilized to differentiate them from CWNS. Additionally, this study aimed to collect standardized data for the KiddyCAT adapted to the Kannada language to assess the psychometric properties of the self-report test and to investigate how the severity of stuttering and gender could influence the test results.

5.1 Mean comparison of KiddyCAT-K scores between CWNS and CWS

When examining the differences between CWS and CWNS in relation to their KiddyCAT-K scores, and comparing these scores to those of other cross-cultural samples as shown in Table. 5, we observe that mean score of Kannada-speaking CWNS is most similar to the scores reported in American (Vanryckeghem et al., 2005), Swedish (Hartelius et al., 2010), Polish (Węsierska & Vanryckeghem, 2015), and German (Neumann et al., 2019a) studies. As for the CWS group, the central tendency measurement in our study closely resembles those found in American (Vanryckeghem et al., 2005) and Slovenian (Novsak et al., 2016) data as shown in Table 7. However, it's worth noting that the majority of international results shows somewhat lower mean scores, typically below 5, when compared to our study. The data obtained from this study revealed a statistically significant trend, indicating that preschool aged CWS are more likely to exhibit negative speech-related attitude when

compared to their non-stuttering counterparts. The findings of this current study align with prior cross-cultural investigations, which suggest that Kannada-speaking children who stutter (CWS) share a similar pattern with their counterparts in different nations, where they tend to have more negative perceptions towards their speech compared to typically developing children. This result aligns with prior research, suggesting that the beliefs about speech in CWS and CWNS diverge notably by the age of six (Vanryckeghem & Brutten, 1997). Moreover, the latest statistical results corroborate the idea that children who stutter exhibit a noticeably more adverse outlook on their speech as early as the age of three or four. To put it differently, CWS' attitude towards speech differs at approximately the age when stuttering typically begins. These findings align with the studies carried out by Ambrose and Yairi (1994), which demonstrated that both typically developing children (CWNS) and children who stutter (CWS) aged between two and six were notably conscious of the fluency or dysfluency in their speech. Furthermore, preschool-age children who typically speak fluently, even as young as three or four years old, demonstrate an ability to perceive the distinction between dysfluent and fluent speech (Ezrati-Vinacour et al., 2001).

The basic connection between CWS's awareness of dysfluency and their speech-related attitude has been demonstrated. Awareness and attitude are intricately linked. This indicates that CWS's misperception of their speech is a result of a consciousness of how people will react to them when they speak. CWS develops a negative attitude towards speech at an earlier age than previously thought. The presence of negative attitudes towards speech that coincide with the onset of stuttering raises the possibility that these attitudes

may play a causative or contributory role in stuttering development. Children as young as three years old are able to differentiate between dysfluent and fluent speech (Ambrose & Yairi, 1994), the observation that the speech-related attitude differs significantly between CWS and CWNS by the age of three or four, and the data indicating that CWS' attitude towards speech becomes more negative as they grow older (Vanryckeghem & Brutten, 1997) all underscore the significance of attitude in relation to stuttering.

5.2 Reliability: Internal consistency

The internal consistency of KiddyCAT-K remained stable across all investigated groups, suggesting that Kannada KiddyCAT is a dependable tool for attitude assessment in preschool-age children. As depicted in Table 7, our findings align with those from the Dutch (Vanryckeghem & Brutten, 2015) and Swedish (Hartelius et al., 2010) KiddyCAT version when considering typically developing children (CWNS). Regarding children who stutter, inter-class correlations (Cronbach's α) in the present results closely resemble those obtained in Slovenian (Novsak et al., 2016) and Dutch (Vanryckeghem & Brutten, 2015), German (Neumann et al., 2019), and American (Vanryckeghem et al., 2005), Polish (Węsierska & Vanryckeghem, 2015) versions of the test.

5.3 Test-retest reliability

Furthermore, when the KiddyCAT-K was administered again to CWS and CWNS, it demonstrated impressive test-retest reliability, suggesting that the total scores remained consistent over time. These findings align with the reliability results obtained for the German version (Pearson correlation of 0.98) and the Polish version r= 0.90 for CWS and r= 0.67 for CWNS of the KiddyCAT.

Table 7

Comparing Kannada KiddyCAT data with the other investigations

	CWS			CWNS				Internal Consistency (T/CWS/ CWNS)	TRT (T/CW S/CWN S)
	n	M	SD	n	M	SD	*p*		
America	45	4.36	2.78	63	1.79	1.79	<0.001	NI/0.75/ 0.72	NI
Swedish	NI	NI	NI	119	1.26	1.63	NI	NI/NI/ 0.64	NI
Polish	58	4.6	2.46	70	1.47	1.05	<0.001	0.71/0.68 /0.55	NI/0.90 /0.67
Persian	30	4.23	3.15	NI	NI	NI	NI	NI/0.83/ NI	NI
Dutch	249	3.47	2.77	264	1.15	1.22	<0.001	NI/0.75/ 0.70	NI
German	30	3.73	2.92	150	1.47	1.65	0.003	NI/0.79/ 0.61	0.983/NI/ NI *P*<0.001
Slovenian	49	5.16	2.98	74	0.81	1.51	<0.001	0.73/NI /NI	NI
Kannada	30	5.56	2.72	300	1.54	1.58	0.000	NI/0.73/ 0.68	NI/0.981/0 .84

Note: NI= Not investigated; TRT=Test -retest reliability; America version of kiddyCAT: (Vanryckeghem et al., 2005; Vanryckeghem & Brutten, 2007); Swedish KiddyCAT: (Hartelius et al., 2010); Polish KiddyCAT (Węsierska & Vanryckeghem, 2015); Persian (Rafati et al., 2015); Dutch KiddyCAT(Vanryckeghem & Brutten, 2015); German KiddyCAT (Neumann et al., 2019); Slovenian KiddyCAT (Novsak et al., 2016).

5.4 The Relationship between Mean scores of KiddyCAT-K and Stuttering Severity

In this study, the KiddyCAT-K scores for CWS showed no significant distinction between those with mild stuttering compared to those with moderate or severe stuttering. This study offers no support for the idea that negative attitudes may vary depending on the severity of stuttering (Vanryckeghem et al., 2001). As in the Communication Attitude Test for Adults in Kannada (BigCAT)(Veerabhadrappa, Krishnakumar, et al., 2021) revealed that individuals with severe stuttering exhibited higher speech-related attitude compared to individuals with mild stuttering. In Communication Attitude Test for school going children (CAT-K)(Veerabhadrappa, Vanryckeghem, et al., 2021) they have observed a notable distinction in CAT-K scores among individuals with mild, moderate, and severe levels of stuttering. As only 30 CWS were recruited for this preliminary study, further study with a larger sample has to be done that estimate the relationship between kiddyCAT scores and stuttering severity.

5.5 Gender and Communication Attitude

The study focused solely on analyzing the KiddyCAT-K scores of boys and girls within the group of children who do not stutter (CWNS) to determine

if gender had any varying impacts on their attitudes towards their speech. This approach was taken because the sample size of CWS was small. The results indicated that there were no significant differences in the average scores between males and females in the control group. Consistent with previous research, it appears that gender doesn't significantly influence the outcomes of the KiddyCAT assessment. The present results align with the outcome of earlier research conducted by Clark et al. (2012), Węsierska & Vanryckeghem (2015), Vanryckeghem & Brutten, (2015), all of which similarly did not identify substantial differences in communication attitudes based on gender within the study groups.

CHAPTER VI

CONCLUSION

Children Who Stutter (CWS) experience a disorder that encompasses multi-dimension, characterized by speech fluency interruptions and negative speech-related attitudes. Negative speech-related attitudes in CWS can lead to unfavorable communication experiences. The KiddyCAT is a well-validated assessment tool for measuring communication attitudes in preschool children. It has been adapted and validated in various languages, including Swedish, Slovenian, Persian, American English, Dutch, and Polish. In this study, we have adapted and validated KiddyCAT to Kannada language. This study was carried out in two phases. In *phase 1* translation and content validation was done. In *phase 2* the administration of the translated questionnaire for both CWS and CWNS was carried out. The KiddyCAT-K demonstrated good internal consistency, indicating its reliability in assessing communication attitudes. Test-retest reliability was also established.

The research revealed that children who stutter (CWS) displayed notably higher scores on the KiddyCAT-K, signifying a greater presence of negative communication attitudes in comparison to children who do not stutter (CWNS). The tool effectively differentiated between the two groups. Gender did not significantly influence communication attitudes in either group (CWS or CWNS). No statistically significant distinction was observed in scores of kiddyCAT-K across degrees of severity of stuttering. The findings from this research confirm its ability to distinguish between CWS and CWNS on the basis of their communication attitudes, aligning with previous research. In addition to its diagnostic value, the KiddyCAT-K can also be utilized to measure changes

in communication attitudes over time. These results indicate that speech-language pathologists (SLPs) can effectively use the KiddyCAT-K with children in Kannada-speaking regions and beyond, providing culturally appropriate assessment and intervention for stuttering children.

Limitation of the study

While our study had a reasonably small sample size of CWS which consisted of 30 individuals. Maybe due to this reason significant difference was not observed in the measurement of the relationship between mean KiddyCAT-K scores and stuttering severity as well as gender difference in the children who do not stutter group. This is a convenience sample and may not fully represent the entire population.

Practical implication

The findings of this study have practical significance for identifying early stuttering in Kannada-speaking children. The test developed in this study has the potential for clinical use because there was no diagnostic instrument available in Kannada for assessing preschoolers' communicative attitudes. The study's findings suggest that the Kannada adaptation of the KiddyCAT test could be valuable for distinguishing early childhood stuttering. Our study outcomes can help clinicians identify negative communication attitudes in young children and integrate this information into the treatment of stuttering. In conclusion, the Kannada version of the KiddyCAT test can serve not only for research purposes but also for clinical applications.

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APPENDIX-I

KiddyCAT-K

Communication Attitude Test For Preschool children who Stutter

1	ನೀನು ಸರಿಯಾಗಿ ಮಾತನಾಡುತ್ತಿಯಾ?	ಹೌದು/ ಇಲ್ಲ
2	ಮಾತನಾಡುವಾಗ ಕೆಲವೊಮ್ಮೆ ನಿನಗೆ ಪದಗಳು ಬಾಯಿಯಲ್ಲಿ ಸಿಕ್ಕಿ ಹಾಕಿಕೊಳ್ಳುತದೆಯೇ?	ಹೌದು/ ಇಲ್ಲ
3	ನೀನು ಸರಿಯಾಗಿ ಮಾತನಾಡುತೀಯ ಎಂದು ನಿನ್ನ ತಂದೆ ತಾಯಿ ಭಾವಿಸುತ್ತಾರೆಯೇ?	ಹೌದು/ ಇಲ್ಲ
4	ಜನರು ನಿನಗೆ ಮಾತನಾಡುವಾಗ ಸಹಾಯ ಮಾಡಲು ಪ್ರಯತ್ನಿಸುತ್ತಾರೆಯೇ?	ಹೌದು/ ಇಲ್ಲ
5	ಮಾತನಾಡುವುದು ನಿನಗೆ ಕಷ್ಟವೇ?	ಹೌದು/ ಇಲ್ಲ
6	ಪದಗಳು ನಿನ್ನ ಬಾಯಿಂದ ಸುಲಭವಾಗಿ ಹೊರಳುತ್ತದೆಯೇ?	ಹೌದು/ ಇಲ್ಲ
7	ಎಲ್ಲರೊಂದಿಗೆ ನೀನು ಸುಲಭವಾಗಿ ಮಾತನಾಡುತ್ತಿಯಾ?	ಹೌದು/ ಇಲ್ಲ
8	ಮಾತನಾಡುವುದು ಕಷ್ಟವೆಂದು ನಿನಗೆ ಅನಿಸುತ್ತದೆಯೇ?	ಹೌದು/ ಇಲ್ಲ
9	ಮಾತನಾಡುವುದು ನಿನಗೆ ಇಷ್ಟವೇ?	ಹೌದು/ ಇಲ್ಲ
10	ಜನರಿಗೆ ನೀನು ಮಾತನಾಡುವ ರೀತಿ ಇಷ್ಟವಾಗುತ್ತದೆಯೇ?	ಹೌದು/ ಇಲ್ಲ
11	ಪದಗಳನ್ನು ಹೇಳಲು ನಿನಗೆ ಕಷ್ಟವೆನಿಸುತ್ತದೆಯೇ?	ಹೌದು/ ಇಲ್ಲ
12	ನಿನ್ನ ಹೆಸರನ್ನು ಹೇಳಲು ನಿನಗೆ ಕಷ್ಟವೇ?	ಹೌದು/ ಇಲ್ಲ