

**Pre-Service Teachers' Perceptions and Knowledge about Students Who Stutter**

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## ABSTRACT

The purpose of this study was to investigate if adding a “personal stories” based component to a knowledge-based teacher training leads to improved pre-service teacher’s attitudes about stuttering and knowledge about stuttering. The participants consisted of 18 pre-service teachers. The *Teachers Attitudes Towards Stuttering* survey (TATS) and the *Alabama Stuttering Knowledge* (ASK) survey were used to measure the outcomes before and after a pre-service teacher training on stuttering and students who stutter (SWS). Pre-service teachers’ knowledge about stuttering was measured using the ASK and their perceptions about stuttering were measured using the TATS. Analysis of the study’s results suggested that adding a “personal stories” component to a knowledge-based training did not significantly improve teachers’ perceptions and their knowledge about stuttering and SWS compared to knowledge-based only training. However, it was found that the use of a short video presentation training is sufficient to improved pre-service teacher’s perceptions of students who stutter.

## **Dedication**

This thesis is dedicated to my parents, Chip and April Ferguson, for their constant encouragement and support for me throughout my educational endeavors. It is also dedicated to my thesis chair, Dr. Thales De Nardo, for his continual support and teaching me that even the largest task can be mastered if it is done one step at a time.

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## Introduction

The American Speech-Language Hearing Association (ASHA) describes fluency as the continuity, smoothness, rate, and effort in speech production. According to ASHA, a fluency disorder is an interruption in this flow of speaking characterized by atypical rate, rhythm, and interruption at the phoneme, syllable, and/or word level. This can occur with excessive tension, speaking avoidance, struggle behaviors, and secondary mannerisms (e.g., eye blinking, jaw jerking, or involuntary head movement). Fluency disorders can be characterized as stuttering or cluttering. Stuttering is the interruption in the fluency of speaking through repetitions, prolongations, and blocks. On the other hand, cluttering is defined as rapid and/or irregular speech rate, atypical pauses, maze behaviors (i.e., there are disruptions in speech flow characterized as pauses, repetitions, revisions, and orphans), and other disfluencies (ASHA, n.d.). According to Guitar (2019), stuttering is known as the most common fluency disorder with a prevalence of 1-2.4% of children. According to ASHA, estimates have reported the male-to-female ratio of individuals who stutter is around 4:1; however, more current studies in preschool children suggest that a younger age of onset has smaller ratios in gender differences (Yairi & Ambrose, 2013). Males were reported to be 1.48 times more likely to persist in stuttering than females (Singer et al., 2020).

Through the study reported by Smith and colleagues (2014) states there is an 8–13% prevalence of social anxiety disorder (Iverach & Rapee, 2014; Kessler et al., 2005), research suggests greatly inflated rates in clinical samples of stuttering adults with findings ranging from 21 to 60% (Blumgart et al., 2010; Iverach, et al., 2009; Menzies et al., 2008; Stein, Baird, & Walker, 1996). Social Anxiety Disorder is defined by the DSM-5 as “a type of anxiety disorder characterized by a significant and persistent fear of humiliation and negative evaluation in social

or performance-based situations” (*Diagnostic and statistical manual of mental disorders: DSM-5*, 2017 p. 23). In a review of the literature, Smith and colleagues (2014) suggested that children and adolescents who stutter are at risk of developing anxiety because of negative social experiences and negative attitudes towards communication, the authors concluded that anxiety in this population is likely to increase overtime as the child grows or approaches adolescents and enters adulthood. It stands to reason that these negative consequences can manifest in work and in school.

### **Challenges Associated with Stuttering**

The Classification of Functioning, Disability, and Health, known as the ICF, created by the World Health Organization and adopted by ASHA, provides healthcare professionals with a framework upon which intervention is applied to mediate the negative impact of an impairment on everyday life. For example, stuttering can have an impact on employment (Klein & Hood, 2004). Klein and Hood investigated the impact of stuttering on job opportunity and performance using a survey completed by adults who stutter. The data revealed that nearly three quarters of the people in the study indicated that stuttering reduced their chances of being hired or selected for promotion. The data further suggested that approximately one-third of participants believed that stuttering negatively affected their job performance. The authors suggest that people who stutter believe stuttering can negatively impact employability. Similarly, Plexico and colleague (2019) investigated the relationship between actual discrimination, anticipated discrimination, and satisfaction in the workplace for people who stutter compared to those who do not. In a survey of 72 people who stutter and of 92 people who do not, the results indicated that persons who stutter reported higher discrimination and higher expectations of discrimination, and these two variables were associated with lower job satisfaction.

Of more significance to the present study, it has been suggested that stuttering can have negative consequences on children in schools. McAllister and colleagues (2012) analyzed data from a birth cohort data set of nearly 16,000 people. In the sample, 217 members were reported to have stuttered at age 16. The results also suggested that these individuals were more likely to have been bullied and to have poor cognitive test scores. Although this study did not find stuttering to impact academics, it did find that stuttering leads to negative psychosocial outcomes in children who stutter (McAllister et al., 2012). Klompas and Ross (2004) conducted a study to explore the impact of stuttering on quality of life in 16 adults who stutter. They explored domains of education, social life, employment, speech therapy, family life, identity/beliefs/emotional issues. Among other results the findings suggest that as students who stuttered, they experienced difficulty making friends and reported negative self-image as challenges (Klompas & Ross, 2004).

### **Equity in Education**

According to the United States Department of Education, “The Individuals with Disabilities Education Act (IDEA) is a law that makes available a free appropriate public education to eligible children with disabilities throughout the nation and ensures special education and related services to those children.” Because stuttering is considered a communication disorder, children diagnosed with a fluency disorder are protected by IDEA and are deserving of an equitable learning environment. Equity is known as freedom from bias or favoritism. Anecdotally, this could mean that a teacher may not call on a student who stutters to answer a question or a teacher may put a student who stutters in a lower-level reading group. Creating an equitable classroom requires educators to differentiate their lessons for each student, based on their unique strengths and needs.



## **Teacher Training About Stuttering**

Burroughs et al. (2019) suggested that teachers have a significant impact on the educational experiences of their students. Healthy teacher perceptions of students who stutter (SWS) is essential to creating a healthy and supportive classroom (Cooper & Cooper, 1996; Dorsey & Guenther, 2000; Lass et al., 1994). Research indicates that several variables could affect teacher's perception of SWS, including educational level, knowledge of stuttering, age, number of years of teaching experience, and personal experience with a stutterer in their classroom (Hobbs, 2012). Additionally, previous literature suggests that teacher training on stuttering and methods to support SWS may influence teacher's attitudes and perceptions in a positive way (Abdalla & St. Louis, 2012). Further, Crowe & Walton (1981) found there is a significant relationship between knowledge of stuttering and attitudes toward stuttering. Taken together, the literature suggests that professional development opportunities that focus specifically on stuttering and methods to support SWS can create a more positive and equitable learning environment for SWS.

A study conducted by Hobbs (2012) set out to determine if in-service teacher-training focused on stuttering increases teachers' knowledge of stuttering and does increased knowledge about stuttering promote positive attitudes toward children who stutter in their classrooms. Hobbs conducted a study with 23 teachers participating in an in-service training on stuttering. The participants were given pre and posttests, Teacher Attitudes Toward Stuttering (TATS) Inventory and the Alabama Stuttering Knowledge (ASK) test to determine if there was a significant difference in the knowledge and attitudes toward SWS after the in-service training. There was a significant difference between pre and post test scores of the TATS, indicating a positive change in teacher perceptions after the in-service training. These findings emphasized

the benefits of in-service training and professional development for teachers focusing on stuttering and techniques to better support SWS in the classroom.

Crowe and Walton (1981), looked to answer a similar question: What are elementary school teachers' attitudes towards stuttering, and how does knowledge of stuttering, educational level, teaching experience, age, and personal experience relate? A sample of 100 schoolteachers and 33 SLPs were administered the TATS and ASK, and mean clinician rankings were then used to score teacher responses. The study found significant positive correlations between the amount of knowledge teachers had about stuttering and teacher attitudes toward stuttering. Findings suggested that teacher-training focused on helping teachers understand the many aspects about stuttering will help teachers to have a more positive attitude toward SWS. A positive teacher attitude toward stuttering should lead to a more positive classroom environment for SWS, which will lead to positive educational outcomes for SWS.

Grigoropoulos (2020) found that pre-service teachers do not demonstrate high knowledge or positive attitude towards students who stutter and emphasized the need for educational opportunities to prevent negative perceptions towards SWS. Yeakle and Cooper (1986) stated that teachers play an important role in creating a positive environment for SWS in the classroom. These studies support the importance of in-service training on stuttering for both teachers and pre-service teachers. St. Louis and colleagues (2018) conducted a research study in which they assessed the effects of a course on stuttering for university students and the effects of an educational workshop for public school teachers; both interventions were designed to improve attitudes toward stuttering. Their study supports the idea that focused professional development about stuttering can positively modify attitudes of teachers regarding SWS and improve the general public's attitudes toward stuttering as a spillover from the classroom environment.

Teachers need professional development opportunities to gain knowledge about stuttering and the methods to support SWS so they can create an equitable learning environment for SWS. Creating an equitable classroom can be a challenge for teachers when they cannot understand the daily challenges facing SWS. Teachers need to be exposed to the challenges facing SWS, their families, and support systems. Pianta et al. (2012) found that “empathy allows teachers to understand students’ perspectives, read their nonverbal signals, and react with concern to students needing help.” According to Aldrup et al. (2021), teachers’ social-emotional competence has been suggested to be an important prerequisite for the quality of teacher-student interactions and student outcomes. Additionally, Aldrup et al. emphasized that empathic teachers understand how students are feeling and seem to sense when the students are nervous or anxious while in class. Teachers who have an empathetic mindset seem to understand how to meet the needs of their students in a way in which the student is happy and successful in the classroom. Professional development opportunities, which help teachers and pre-service teachers better understand the personal challenges of their students, could be the catalyst for creating inviting and equitable learning environments for SWS. Yeakle and Cooper (1986) confirmed the need for teachers to have experience with stutterers or should have specialized professional development opportunities focused on speech disorders; their findings indicated that teachers who had training on stuttering had more realistic attitudes toward SWS and they held higher expectations for SWS in their classrooms. Milsom (2006) found that educators who have negative attitudes toward students with disabilities tend to have low expectations for those students and they expect unacceptable behavior from those students.

Pre-service and in-service training that focuses on stuttering and the techniques to support SWS can inspire and empower teachers to create a caring, positive, and equitable classroom for

SWS. It is hypothesized that the addition of personal stories to the knowledge-only professional development training will awaken empathy in the participants as empathy has been found to be a motivator for altruistic behavior (Xiao, 2021). If adding personal stories to professional development initiatives brings about greater change in the teachers and the classrooms of SWS, then school administrators and university teacher training programs will need to consider adding personal stories to future training on stuttering in order to gain greater “returns” on their professional development activities.

### **Purpose Statement**

Teachers must work to understand and empathize with their students; this understanding is important for successful teacher-student interactions (Aldrup et al., 2022). Training pre-service teachers on “how to” successfully create an equitable classroom depends on effective professional development focused on how to design an equitable classroom for all students. This study will investigate whether professional development for pre-service teachers, focused on providing information on how to support students who stutter (SWS), is more effective with the addition of personal stories of SWS.

The purpose of this study is to determine if adding a personal stories component to a knowledge-based teacher training leads to improved (a) pre-service teacher’s attitudes about stuttering and (b) knowledge about stuttering. The information gathered in this study will inform schools, universities, and other professional development firms about the benefits of including personal stories to professional development activities.

**Hypothesis**

Pre-service teachers completing the personal stories component with the knowledge component will demonstrate greater gains in knowledge and perception post-training compared to those completing the knowledge component alone.

## Methodology

### Participants

A convenience sample of participants was obtained from Western Carolina University (WCU) located in North Carolina. The participants consisted of pre-service teachers in the last year of their teaching preparation program. A pre-service teacher is also known as a “student teacher” and is a student who is enrolled in a teacher preparation program. These participants were selected because this will be their final year of pre-service teacher training at WCU. The selected participants consisted of two sections of the Senior I Level Seminar for Elementary Education majors. There were 44 possible candidates between the two sections. A recruitment email found in ((Appendix D)) was sent out two weeks prior to the training. The criteria that the participants were required to meet in order to participate in this survey were: the participants could not be people who stutter, could not have taken previous coursework on stuttering or communication disorders, and they had to be 18 or older. At the time of the research study, 18 participants agreed to participate. Section 1 was the experimental group in the study and consisted of 9 participants. Section 2 was the control group and consisted of 9 participants. Participation in this study was completely voluntary; the participants were informed that there would be no penalty for choosing not to participate in the study. The pre-service teacher training on stuttering was presented during the participant’s normal class time and the training was facilitated by the Primary Investigator (PI). Surveys were sent by email. The researchers corresponded via email only, but the surveys were entered into Qualtrics, and all responses were saved into Qualtrics which is password protected. For the purpose of data analysis, exported data was de-identified to the fullest extent for participant group.

## **Instrumentation**

Data were collected using three instruments: demographic questionnaire, TATS, ASK.

### **Demographic Questionnaire**

The demographic questionnaire consisted of questions to indicate number of years while in school, their gender, previous training on stuttering, general coursework on stuttering or other speech disorders, and their overall experience with stuttering and SWS.

### **Teachers Attitudes Toward Stuttering**

The *Teacher Attitudes Toward Stuttering Survey* (TATS) was used to analyze during pre, post, and training maintenance data collection points. The TATS survey consisted of 27 questions. The highest score a participant could achieve is 108, which indicates they answered each question with the most desired answer. The lowest a participant could achieve is the score of 0. The TATS survey was used to assess teacher attitudes towards stuttering and the strategies they would use to support SWS. The TATS survey utilized a 5-point Likert scale where “5” indicates strongly agree, “4” somewhat agree, “3” undecided, “2” somewhat disagree and “1” strongly disagree. Each answer was analyzed on a 0 to 4-point scale; 4 being the most desirable answer while 0 was the most undesirable answer. Crowe and Walton (1981) created this scoring rubric based on a group of 50 professionals who chose the most appropriate answers for given questions. The current study utilized the TATS survey from Hobbs (2012). Hobbs modified the original TATS, which contained 36 questions to 30 questions consisting of an additional three questions that were created and added to the survey. These questions by Hobbs were removed

from the survey for this study in order to stay consistent with the Crowe and Walton (1981) original TATS survey.

### **Alabama Stuttering Knowledge**

The Alabama Stuttering Knowledge (ASK) is a 26 true or false questions survey used to determine teacher-knowledge about stuttering. The ASK assesses knowledge of stuttering in the areas of etiologies, statistics, characteristics, and interventions (Crowe & Cooper, 1977). Each answer was analyzed using 0- or 1-point scale; 1 meaning correct and 0 meaning incorrect. The highest score that a participant could achieve was a 26, which indicates each question was answered correctly. The lowest score a participant could achieve is a 0, which means each question was answered incorrectly. The ASK and the TATS have been used in previous studies on similar topics (Crowe & Cooper, 1977; Grigoropoulos, 2020). There were no modifications made to the ASK.

### **Training**

The knowledge-based training was created and conducted by the PI. The training was a recorded video of a PowerPoint presentation based on information from *Stuttering: Straight Talk for Teachers* handbook (*Stuttering Foundation of America*, n.d.). The recording was created with the software Panopto and only included the speaker's voice and PowerPoint presentation. The video lasted approximately 14 minutes and was shown to the control and experimental groups.

The personal stories presentation was the video "Stuttering: For Kids by Kids" created by the Stuttering Foundation of America (*Stuttering: For kids, by kids*, 2011). This video lasted approximately 12 minutes. It consisted of interviews with children in grades K-12 in a question-



and-answer format. The children provided answers on how they felt about stuttering, experiences with stuttering, and what others could do better to help support them. This video was only shown to the experimental group prior to the knowledge-based training.

## **Procedures**

The research was approved by the Institutional Review Board (IRB) at Western Carolina University. A professor in the School of Education at Western Carolina University agreed to allow two sections of the Senior Level Elementary Education classes to participate in the research. A recruitment email was sent to potential participants, that is, all 44 students registered for the classes. The email described the purpose of the current investigation and emphasized that participation in this study would be completely voluntary, and they had the right to withdraw their consent or discontinue participation at any time without penalty. To increase participation, participants were able to opt into a raffle for two \$25 Amazon.com gift cards. A link was included in the email that contained a consent form (Appendix E) followed by emails reminding participants to complete the survey in order to participate in the study. The reminder emails consisted of the time it will take to participate in the study, link to the surveys, and what the study will consist of from start to finish. Participants answers were anonymous, but emails were used connect the pre, post, and maintenance surveys.

## **Pre-Survey**

Those who agreed to participate in the study completed the demographic survey and pre-assessment instrument. Participants completed these surveys in their preferred environment on their device. It took approximately 25 to 30 minutes to complete the entire pre-survey. Reminder emails were sent until the day of the training.

### **Training and post-survey**

The presentations for Group 1, the experimental group, and Group 2, the control group, were conducted by the PI in the classrooms that each section would normally participate in for class. This training occurred approximately a week after the completion of the pre-survey that was sent via email. Both groups were provided with the presentation on the same day, but at different times and locations. The experimental group was provided the training at 9:30am. The control group was provided the training at 3:30 pm. Instructions were repeated in the same manner for both groups during each presentation. The PI informed the participants of what to expect during the time permitted for the training. This consisted of a time frame of when the training was completed, what the participants would be watching, and what needs to be completed before they are dismissed. They were asked to clear their desks of any items except their computer, which would remain closed during the training video(s). All participants were present for the entire duration of the presentation in both groups. The post-test surveys consisted of the ASK and TATS surveys. These surveys were provided at the end of the presentations to both groups and took approximately 15 minutes to complete.

The training for the experimental group consisted of a knowledge-based PowerPoint presentation video with an additional empathy-based video component titled, *Stuttering: For Kids, By Kids* (Stuttering Foundation, 2011) The PI provided instructions and the participants watched the knowledge-based presentation and the personal stories documentary. The empathy-based video was presented prior to the knowledge-based video. As for the control group, this set of nine participants only watched the knowledge-based presentation.

### **Maintenance Survey**

Maintenance data was collected approximately one month after the post-survey data collection. Participants who completed the pre and post surveys received an email with a link to the maintenance survey which included the TATS and ASK. Reminder emails were sent to these participants, and they had one week to complete the maintenance survey.

### **Data Analysis**

The data was analyzed quantitatively with IBM's statistical software SPSS version 23. The raw data from each participant was downloaded from Qualtrics into an Excel file. The surveys were screened for the participant criteria and completion. All pre and post surveys met the participant criteria, but three participants in the experimental group provided incomplete surveys in the maintenance stage. These surveys were discarded and not used in the data analysis. The remaining surveys were transferred to SPSS for data analysis.

Pairwise t-tests were conducted to analyze if there were significant differences in the pre and post scores of both groups. A one-way ANOVA was performed to analyze the mean scores differences of the ASK in the pre, post, and maintenance surveys between the control and experimental group at an alpha level of .05. The dependent variable was the mean scale score of each participant and the independent variable was the experimental condition. Following the same procedure, a one-way ANOVA was conducted to analyze the data from the TATS.

## Results

The current study was designed to analyze teacher knowledge and perceptions of SWS after a training on stuttering with and without the use of personal stories. The purpose of this study was to determine if adding a personal stories component to a knowledge-based teacher training leads to improved pre-service teachers' perceptions and knowledge about stuttering.

### Participants

The total number of participants in this study was 18 out of a pool of 44 possible participants. This is a participation rate of 41%. There were no participants that had taken courses in communication sciences and disorders (i.e., courses in which fluency disorders would typically be taught). There were also no participants who had completed previous courses/training on stuttering. Seventeen participants reported to have never been diagnosed with a speech impairment; however, one participant had been diagnosed with an articulation disorder and had received speech therapy. The researcher investigated if any participants had any close relationships/acquaintances with any individual who has a speech impairment. Thirteen participants selected that they had no relationship with anyone with a speech impairment, but five participants reported they did have a relationship with someone who had a speech impairment (e.g., stutter, lisp, other speech impairment).

**Table 1***Demographic Characteristics of Participants*

Baseline Characteristics		
	<i>n</i>	%
Gender		
Female	17	94.4
Non-Binary	1	5.6
Race/Ethnicity		
Caucasian	16	88.9
Asian	1	5.6
Two or more n=1	1	5.6
Age		
20-30	18	100
Acquainted with individual who stutters		
Yes	5	27.8
No	13	72.2
Years of completed course work in CSD		
0-1	18	100

*Note.* *N* = 18 Participants were, on average, 23 years old.

**Improvements in Pre and Post-Test scores of ASK and TATS**

Pairwise t-tests were conducted to analyze if there were significant differences in the pre and post scores of both groups. This provided an independent measure of treatment effect of both training approaches. For the control group, the mean pre-score of the TATS was 79.0 and the mean post score was 85.5. A significant difference was found  $t(8) = -2.424, p < 0.05$ . In the experimental group, the mean pre-score of the TAST was 74.5 and the mean post score was 85.5. A significant difference was found  $t(8) = -3.027, p < 0.05$ . There were no significant differences in pre and post mean scores for the ASK in either group.

### Alabama Stuttering Knowledge Test

The results of the pre-survey revealed similar scores between the groups, with a mean score of 16.44 for the control and 17.44 for the experimental group. There were minimal changes in the mean scores in the post and maintenance data collection surveys (see Table 1 for ASK results). A one-way ANOVA was used to calculate the mean differences in the ASK survey between both groups in the pre, post, and maintenance data collection points. No statistically significant differences were found between the groups ( $p > .05$ ) in all three intervals.

**Table 2**  
*Results from the ASK Survey*

		<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Range</b>
<b>PRE_ASK</b>	control	9	16.44	2.877	9
	experimental	9	17.44	1.944	6
	Total	18	16.94	2.437	10
<b>POST_ASK</b>	control	9	15.89	2.088	6
	experimental	9	17.33	1.732	5
	Total	18	16.61	2.004	7
<b>Maint_ASK</b>	control	9	16	3.08221	9
	experimental	6	17.3333	2.16025	6

### Teacher Perceptions of Stuttering Survey

The mean pre-score on the TATS for the control group was 79.00, and the mean score on the TATS for the experimental group was 74.50. Both groups demonstrated an improvement in the scores in the post-survey and maintenance survey compared to the pre-survey (see Table 2 for TATS results). To analyze if their differences were statistically significant, a one-way

ANOVA was used to calculate the mean differences in the TATS survey between the two groups in the pre, post, and maintenance data collection points. There were no statistically significant differences found between the groups ( $p > .05$ ).

**Table 3**

*Results of the TATS for both groups*

Descriptives		N	Mean	Range
PRE_TATS	control	9	79	13
	experiment	9	74.5	16
	Total	18	76.75	16
POST_TATS	control	9	85.5	11
	experiment	9	82.61	9
	Total	18	84.06	9
Main_TATS	control	9	81.5556	11
	experiment	6	80.0833	8
	Total	15	80.9667	9

In summary, the findings suggest that pre-service teacher training on stuttering did positively influence the perceptions pre-service teachers' have towards SWS. However, the results suggest that pre-service teachers' knowledge did not improve from pre to post data with or without the personal stories component during a pre-service teacher training on stuttering.

## Discussion

The purpose of this study was to determine if adding a personal stories component to a knowledge-based teacher training leads to improved (a) pre-service teacher's attitudes about stuttering and (b) knowledge about stuttering. This chapter provides a discussion of the findings, implications, limitations, and conclusions.

The findings of this study found that personal stories did not significantly increase pre-service teachers' perceptions and knowledge about stuttering and SWS. The results of the pre and post TATS survey revealed growth for both groups, with a mean score of 16.44 for the control and 17.44 for the experimental group. The results from this study did not support the findings from previous research regarding teacher training about stuttering and the effect on teacher knowledge and attitudes about SWS. Furthermore, the additional component of personal stories to the training did not produce a significant positive outcome in the results of the ASK. The results also suggested that the addition of the "personal stories" component to the training did not significantly increase pre-service teacher perceptions on stuttering because both the control and experimental groups demonstrated similar results. The pre and post data for the ASK survey resulted in a nonsignificant finding. This means the addition of a personal stories' component did not improve pre-service teacher knowledge.

Based on the findings from the current study, the inclusion of personal stories to a pre-service teacher training on stuttering did not significantly improve the results of the post surveys after the training. This suggests that teacher training on stuttering does not require the component of personal stories to improve teacher perceptions and knowledge about stuttering and SWS. This result was unexpected and may be explain if the pre-service teachers who participated in



this study may already possess the emotional intelligence required, prior to the training, without the added personal stories component. Pinata, et al. (2012), emphasized that caring for students and having a positive relationship with students is an integral part of a teachers' professional role so it is guessed these pre-service teachers already possessed much emotional intelligence before the training.

Alternatively, the form of presentation may have influenced the outcome. Flynn & St. Louis (2011) found perceptions about stuttering and people who stutter can be improved "by a presentation on stuttering but more via a live presentation than a professionally prepared video" (p. 115). In a follow-up study, St. Louis and Flynn (2018) found that this same group "maintained many of the positive changes in their beliefs and self- reactions regarding stuttering that were induced 7 years earlier after witnessing personal stories and facts about stuttering". It seems because participants who were presented live presentations of personal stories from people who stutter, were better able to retain the knowledge and understanding from the presentation years later.

The findings of the current study will help guide future researchers as they look at additional components to add to teacher trainings in order to determine if there are other components that can be added which might help the training on stuttering to be more productive. As mentioned previously, Hobbs (2012) conducted a study that utilized in-service teachers to determine an increase in teacher perception and knowledge of stuttering. Hobbs' presentation on stuttering included a variety of teaching methods: handouts, role-playing, and lecture. Hobbs found significant improvements in teacher perceptions and knowledge towards stuttering and SWS after a workshop on stuttering. Hobbs utilized a live in-depth teacher training that was 2.5 hours in length which was much longer than the current study. The format and additional

resources in Hobbs (2012) may explain the difference in findings to the current study. However, the current study was able to achieve significant improvements in the perception of SWS with only a 14 minute pre-recorded presentation. Another objective of this study was to determine pre-service teachers' overall knowledge of stuttering before and after participating in a training on stuttering. The results indicated that pre-service teachers demonstrated a lack of knowledge in the area of stuttering, which is the norm for educators, according to Crowe and Walton (1981). The experimental group scores on the ASK scale ranged from 17.44 (pre) to 17.33 (post). The lack of increase in ASK was unexpected, especially since Hobbs (2012) found significant improvements in the TATS and ASK. This difference may be attributed to the differences in the training Hobbs delivered and the current study. Hobbs' training included a live presentation, longer training format, and participants were provided handouts/resources. Previous investigations have found live presentations lead to more positive attitudes towards people who stutter compared to video presentations (St. Louis & Flynn, 2011). The information Hobbs provided in her training may have been more in-depth or it may indicate that in-service teachers are open to gaining new information to help their students. Grigoropoulos (2020) found the participants' ASK scores ranged from 7 - 21 points, with a mean score of 15.13. Grigoropoulos (2020) noted that the "participants had a good knowledge of stuttering... as the mean score was above the average compared to the original scale's scores mean=16". In the current study, the pre-service teachers had an above average baseline knowledge on stuttering. However, the decrease in the ASK pre to post data scores could be due to the pre-service teachers' initially higher than normal ASK scores when compared to the original ASK's scale score mean.

The overall findings from this study suggest that pre-service teachers' perceptions and knowledge of stuttering and SWS from a knowledge-based training with an additional personal

stories component did not result in a significant difference as compared to a knowledge-based only training.

### **Clinical Implications**

Based on this study, we found that pre-service teachers' knowledge about stuttering is a little higher than average educators, but teachers must gain more information to be able to successfully support SWS. Teachers have a higher-than-average chance of working with SWS, plus, a teacher has a chance to make a large impact in the life and schooling of SWS. Though we did not see a significant improvement in knowledge of stuttering based on the ASK survey, it was important to know that pre-service teachers did not have a vast amount of knowledge in the topic of stuttering from the presurvey. The data suggested that both the control and experimental group demonstrated a little above average score on the pre, and post surveys provided, as well as on the maintenance data. In-service and pre-service teachers need to be provided with in-depth and authentic training on stuttering to be better able to support their SWS.

An additional finding that was discovered in this research study was that a pre-service teacher training on stuttering was useful in improving perceptions of SWS. However, it was found that personal stories are not needed for improvements for perceptions of children who stutter. This suggests that additional personal stories are not needed to reach the same level of improved perceptions. Based on this study, this can inform professionals that an overall training on stuttering can help pre-service teachers better understand and support SWS.

Finally, an additional finding was that pre-service teachers' perception of SWS can be improved using a short presentation on stuttering versus an all-day presentation. The current study used a pre-recorded presentation whereas Hobbs (2012) presented an in-person interactive presentation with activities and hand-outs for her training. The results in the current study

demonstrated improvement in pre-service teachers' perceptions about stuttering with a short informative session.

### **Limitations**

Several limitations may have influenced the results of this study. A limitation of this study was its sample size. This study was conducted with a limited number of participants; the ability to generalize the results among a larger population is limited. The total of 18 participants in this research study could have affected the statistical analysis.

It is possible that formatting changes from previous investigations may have influenced the outcome of the study. Both the TATS and ASK surveys were modified from the paper format to an online survey in order to save paper and to provide an opportunity for easier completion. It is possible that these changes in format may have influenced the results. For example, the paper version of TATS is four pages long whereas the digital version is one continual webpage. The ASK survey was also transferred from a paper format to an online format. Additionally, the current study utilized the TATS survey from Hobbs (2012). An alternative change that may have influenced the data would be regarding the organization in the question for the TATS survey. Hobbs modified the original TATS, which contained 36 questions to 30 questions consisting of an additional three questions that were created and added to the survey. The additional questions inserted by Hobbs were removed from the survey for this study in order to stay consistent with the Crowe and Walton (1981) original TATS survey. This may be a limitation as the reliability of this modified scale is not known.

When conducting a study of this nature, there is no guarantee that participants will be transparent. Despite the fact that their identity was kept completely anonymous, it is impossible to prove whether or not a participant has answered questions honestly or conveyed their true

perceptions on a specific topic. The TATS portion of the study required participants to rate their perceptions about stuttering and SWS based on a 5-point Likert scale. Participants could have rated questions higher than they truly felt because they did not want to be perceived negatively themselves. Grigoropoulos (2020) reported that teachers might be afraid to score the TATS honestly because negative attitudes towards children who stutter may be viewed as unacceptable to their profession, which may have impacted the validity of this study.

There were 10 days in between pre-test and post-test, allowing time for participants to absorb and/or gain information from questions prompted from pre-surveys sent prior to the training on stuttering. Through a disclosure statement from the PI, participants were encouraged not to review or research any information regarding stuttering until all testing was complete. However, there is no guarantee that the participants did not research stuttering on their own prior to completing post testing and maintenance if participants researched the topic between pre-post testing, our assessment may not have determined the true cause of change in participants' perceptions and knowledge of stuttering, therefore impacting the results of the study.

Additionally, the video format of the knowledge-based presentation and personal stories component may have negatively influenced the results. A live presentation may have resulted in significantly more positive results from a personal stories component addition (Flynn & St. Louis, 2011). This limitation may have singly or in combination have resulted in the differences may have influenced the results. Future investigations should address these limitations. A failure to replicate Hobbs' study results could be due to any number of factors, on the one hand, it could be argued the findings of the current study could be an important precursor to further research and new discoveries.

### **Implications for Future Research**

It would be a valuable undertaking to replicate this study using a personal stories component with in-service teachers to discover if the personal stories component would have a significant positive effect on in-service teachers after participating in a training on stuttering. The information provided should be presented in different approaches, such as: group discussions, video presentations, access to online resources to review, and mentoring after the initial training to analyzed if the form of presentation has an impact Adding different modes of presentation might allow for teachers to connect with the information on a deeper level resulting in better recall and implementation of the information in their classrooms.

It would be important to replicate this study with a larger sample size in order to increase the confidence of the statistical analysis. This may be achieved by expanding the research study across multiple universities to investigate the results of a pre and post-test following a teacher training on stuttering with a personal stories component added.

### **Conclusion**

In conclusion, the purpose of this study was to determine if adding a personal stories component to a knowledge-based teacher training leads to improved (a) pre-service teacher's attitudes about stuttering and (b) knowledge about stuttering. The data suggests that adding a personal stories component did not significantly improve pre-service teachers' knowledge or perceptions of SWS.

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APPENDIX A:  
Demographic Survey

### Demographics Survey

1. What is the highest degree or level of education you have completed? \_\_\_\_\_
2. Please select your gender:   Female           Male           Non-binary/Third Gender
3. What is your age? \_\_\_\_\_
4. What is your race/ethnicity? \_\_\_\_\_
5. What is your major? \_\_\_\_\_
6. Have you taken any courses on Communication Sciences and Disorders?
  - i. ● If yes, which one(s)?  
\_\_\_\_\_
7. Have you attended any education courses on stuttering?
  - i. ● If yes, describe it.  
\_\_\_\_\_
8. Have you ever been diagnosed with a speech impairment by a speech therapist or a healthcare professional? \_\_\_\_\_
  - i. ● If yes, describe the impairment.
9. Do you have any close acquaintances with speech impairments/impediments?
  - i. ● If yes, specify/describe the impairment and your relationship?
10. Have you participated in professional development focused on stuttering?
  - i. ● If yes, please describe.  
\_\_\_\_\_

APPENDIX B:

Teacher Attitudes Toward Stuttering Survey (TATS)

### **Teacher Attitudes Toward Stuttering Survey (TATS)**

Select one response following each statement which best indicates your reaction to the statement.

**1. A teacher should exempt a stutterer from oral or group discussions.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**2. Teachers would do best to ignore the stuttering of their disfluent students.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**3. Teachers should encourage stutterers to pursue careers that demand little  
speaking.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**4. It is helpful to the stutterer for his/her teacher to complete words on which he  
experiences pronounced disfluency.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly Disagree

**5. Stuttering can never be completely cured.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree



**6. It is a good policy for teachers to make children repeat stuttered words until they can speak them fluently.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly Disagree

**7. Stutterers should be made aware that they are different from other children.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly Disagree

**8. Consistently applied, interruptions and commands —not to stutter—are useful techniques in increasing fluency.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly Disagree

**9. Children are more fluent when teachers insist on relaxation in the child's behavior.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly Disagree

**10. Teachers need to exercise extra patience in disciplining children who stutter.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly Disagree

**11. It is important for teachers to be good listeners in dealing with stutterers.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**12. Ridicule is a common human reaction to stuttering and may not significantly affect the stutterer's speech. Therefore, the stuttering child should learn to accept and expect it.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**13. Teachers have relatively little influence on the stutterer's attitudes toward stuttering; the child develops most of his own attitudes independently.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**14. Children who stutter will probably make a better adjustment to their problem if they are encouraged to discuss openly their feelings about stuttering.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**15. It is natural for teachers to feel embarrassment when speaking to a stuttering child.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**16. It is advisable for teachers to suggest that stutterers avoid certain difficult speaking situations.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**17. It is helpful to encourage the stutterer to speak rapidly so that people will notice the stuttering less.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**18. Punishing stuttering behavior will increase fluent speech.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**19. Teachers should avoid eye contact when a stutterer is speaking to them.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**20. Stutterers cannot be expected to perform as well academically as non-stutterers.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**21. There are various degrees of stuttering severity.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**22. There is no relationship between fear and stuttering.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**23. Stutterers can in general be considered as being psychologically different from  
normal speaking students.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**24. Many children stutter as an attention getting device.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**25. Punishment of the stuttering child could create a worsening of the speech  
problem.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**26. Teachers should caution the stutterer to think before he/she speaks.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**27. Teachers should avoid calling on their students who stutter in class.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**28. Teachers should advise the stutterer to take a deep breath before speaking.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**29. Teachers are important influences in the overall process of helping the child  
adjust to his/her speech problem.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

**30. Typically, stutterers are below average academically compared to the nonstutterer.**

Strongly Agree      Somewhat Agree      Undecided      Somewhat Disagree      Strongly  
Disagree

APPENDIX C:

Alabama Stuttering Knowledge Test (ASK)

**Alabama Stuttering Knowledge Test (ASK)**

Instructions: Circle the letter —T if you believe the statement to be True and circle the letter —F if you believe the statement to be False.

1. More girls than boys stutter. **True or False**
2. Most stutterers find that they are totally fluent in a few situations. **True or False**
3. In many cases, the cause of stuttering can be traced to a specific event in the child's life. **True or False**
4. The onset of stuttering is usually sudden in nature. **True or False**
5. The average stutterer stutters on approximately one-third of the words spoken. **True or False**
6. Most moments of stuttering (the time it takes to complete the word) are less than two seconds in duration. **True or False**
7. Approximately 5 percent of the population will stutter at some time in their lives. **True or False**
8. In general, stutterers have about the same amount of difficulty with all the speech sounds. **True or False**
9. A stutterer tends to stutter on the same words. **True or False**
10. Stuttering and intelligence are not related. **True or False**
11. Stutterers frequently are able to predict the words on which they will stutter. **True or False**
12. If stutterers read aloud the same passage several times in a row, their stuttering decreases with each reading. **True or False**
13. Stuttering generally is thought to be the result of a physical problem. **True or False**

14. Because most stutterers begin stuttering in early childhood and stop stuttering before adulthood, most authorities consider stuttering primarily to be a disorder of childhood. **True or False**
15. Most specialists think that there are different kinds of stuttering. **True or False**
16. Stutterers have been found to talk less than non-stutterers. **True or False**
17. At any given time, slightly less than one percent of the population stutters. **True or False**
18. Stuttering occurs most frequently on the middle or second syllable of words with more than one syllable. **True or False**
19. Speaking in singsong rhythm will usually help the stutterer be more fluent. **True or False**
20. The louder a stutterer speaks, the more he/she stutters. **True or False**
21. The majority of stutterers begin stuttering before the age of three. **True or False**
22. It appears that as many as four out of five stutterers recover from stuttering without help.  
**True or False**
23. Stuttering seems to —run in families. **True or False**
24. Stuttering is more commonly found among families of the highest social and economic levels. **True or False**
25. Stutterers may recover from stuttering at any age. **True or False**
26. Stutterers have been found to exhibit certain identifiable personality traits. **True or False**



APPENDIX D:  
Recruitment Email

Dear Student Volunteer:

I am writing to request your participation in a study because of your current enrollment in EDEL 339 Elementary Intern 1 Seminar class. We value your participation and find the information you can provide to be VERY important. Your participation in this study will assist us in developing support for students at Western Carolina as well as learning about students' needs when learning about new subjects.

In order to investigate these issues, you are invited to participate in watching a video and taking pre, post and maintenance surveys. The surveys should take you less than 25 minutes to complete.

We will only use the data in a combined (aggregate) format, and only the researchers will be able to identify you or your information. There are no foreseeable risks for your participation.

If you are willing to participate in this study, please follow this link:

LINK HERE

Your participation in this study is voluntary and you may conclude your participation at any time. If you wish to conclude your participation at any time during the administration, you are welcome to do so. Only data entered and submitted will be processed. Data will be kept confidential.

For questions about this study, please contact Linda Hopson at [lahopson1@catamount.wcu.edu](mailto:lahopson1@catamount.wcu.edu). You may also contact Dr. Thales De Nardo, the principal investigator and faculty advisor for this project, at [tdenardo@email.wcu.edu](mailto:tdenardo@email.wcu.edu).

If you have concerns about your treatment as a participant in this study, contact the chair of WCU's Institutional Review Board through the office of Research Administration at WCU (828-227-7212).

Thank you.

Linda Hopson  
Graduate Student  
Communication Sciences and Disorders

APPENDIX E:  
CONSENT FORM

**Western Carolina University**  
**Consent Form to Participate in a Research Study**

**Project Title:** Pre-Service Teacher's Perceptions and Knowledge About Stuttering and Students Who Stutter

**This study is being conducted by:**

**Dr. Thales De Nardo, Principal Investigator and Linda Avery Hopson, Graduate Student**

**Description and Purpose of the Research:** You are invited to participate in a research study about the knowledge of children who have communication disorders. By doing this study we hope to learn how pre-service teachers may gain a better knowledge and perception towards children with specific communication disorders.

**What you will be asked to do:** You will be asked to complete a demographic survey, watch a video presentation, and complete pre, post, and maintenance surveys. The demographic survey will consist of questions that are related to your personal experiences (5-6 minutes). Surveys will be completed during pre, post, and maintenance data collection points (20-25 minutes each time). The video presentation will be shown during class time and take 30-45 minutes. Pre-data will be collected electronically by November 28<sup>th</sup>, 2022 and post-data will be collected in person in EDEL 339 seminar on December 1<sup>st</sup>, 2022. Maintenance data will be collected electronically in January 2023. The total expected time commitment (class time included) is approximately 2 hours.

**Risks and Discomforts:**

The videos displayed during the study include children with communication disorders. If this makes you uncomfortable you may take a break or stop your participation in this study at any time.

If there is any worry of psychological issues or emotional concerns while participating in this study, Western Carolina University provides counseling to all WCU students through the Counseling and Psychological Services (CAPS). The phone number for CAPS is (828.227.7469).

**Benefits:** The study may help us better understand what type of training would benefit pre-service teachers prior to starting their career.

**Privacy/Confidentiality/Data Security:** The data collected in this research study will be kept confidential. The researchers will collect the data and replace identifiable information with a code. Only the researchers will have access to the key to the code. The information gathered will be kept on a password-secured computer. Identifiable information will not be shared with members of WCU's School of Teaching and Learning, including those in the Elementary Education department. Participation in research may involve some loss of privacy. We will do our best to make sure that the information about you is kept confidential, but we cannot guarantee total confidentiality. Your personal information may be viewed by individuals involved in the research and may be seen by people including those collaborating, funding, and

regulating the study. We will share only the minimum necessary information in order to conduct the research. Your personal information may also be given out if required by law, such as pursuant to a court order. While the information and data resulting from this study may be presented at scientific meetings or published in a scientific journal, your name or other personal information will not be revealed. We will collect your information through Qualtrics surveys. This information will be stored on a password secured computer only monitored by researchers. The research team will work to protect your data to the extent permitted by technology. It is possible, although unlikely, that an unauthorized individual could gain access to your responses because you are responding online. This risk is like your everyday use of the internet. If you give the research team permission to quote you directly, the researchers will give you a pseudonym and will generalize your quote to remove any information that could be personally identifying. Identifiers might be removed from your information and the de-identified information might be used or distributed to other researchers for future research without your additional consent.

**Voluntary Participation:** Participation is voluntary, and you have the right to withdraw your consent or discontinue participation at any time without penalty. If you choose not to participate or decide to withdraw, there will be no impact on your grade or academic standing.

**Compensation for Participation:** Individuals who participate in this study will receive the opportunity to opt into a raffle for two participants to win \$25 gift cards from Amazon.

**Contact Information:** For questions about this study, please contact Linda Hopson at [lahopson1@catamount.wcu.edu](mailto:lahopson1@catamount.wcu.edu). You may also contact Dr. Thales De Nardo, the principal investigator and faculty advisor for this project, at [tdenardo@email.wcu.edu](mailto:tdenardo@email.wcu.edu).

If you have questions or concerns about your treatment as a participant in this study, you may contact the Western Carolina University Institutional Review Board through the Office of Research Administration by calling 828-227-7212 or emailing [irb@wcu.edu](mailto:irb@wcu.edu). All reports or correspondence will be kept confidential to the extent possible.

**You may print/save this consent form for your records.**

**I understand what is expected of me if I participate in this research study. I have been given the opportunity to ask questions and understand that participation is voluntary. By clicking the links below, it implies my agreement to participate in the research study and that I am at least 18 years old.**

**Demographic Survey:** [https://wcu.az1.qualtrics.com/jfe/form/SV\\_6lrnjNg2c3tFZS6](https://wcu.az1.qualtrics.com/jfe/form/SV_6lrnjNg2c3tFZS6)

**Pre-survey:** [https://wcu.az1.qualtrics.com/jfe/form/SV\\_6Exm7fjoGaIxZIQ](https://wcu.az1.qualtrics.com/jfe/form/SV_6Exm7fjoGaIxZIQ)

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