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2015

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Certifies that this is the approved version of the following thesis:**

**The Perceptions of Bilingualism as a Risk Factor for Stuttering**

**APPROVED BY  
SUPERVISING COMMITTEE:**

**Supervisor:**

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Courtney T. Byrd

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Elizabeth Hampton

**The Perceptions of Bilingualism as a Risk Factor for Stuttering**

**by**

**Ayesha Nasir Haque, B.S.C.S.D**

**Thesis**

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## **Dedication**

To caring friends, supportive family, and my love.

## **Acknowledgements**

Dr. Byrd, your effervescent love for fluency has been and will always be an inspiration for me. I consider myself truly privileged to have you as a supervisor, professor, and role model. The words, “Thank you” are not enough to express how grateful I am for your belief in me. Both you and Elizabeth have continually capitalized on my strengths and have provided reassurance when I needed it most.

Mommy and Daddy, thank you both for the sacrifices you made to ensure my happiness and success. Sanapi and Nabila, thank you for being compassionate and loving older sisters. I have learned incredibly valuable lessons from my time in Sister Club.

Abed, in our (almost) two years of marriage, you have always found a way to make me smile. Your continued love and encouragement is unrivaled, and I look forward to the rest of our lives together.

My dearest friends at UT, our journey has been filled with joy and I congratulate you all on your hard work and dedication to others.

## **Abstract**

### **The Perceptions of Bilingualism as a Risk Factor for Stuttering**

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The University of Texas at Austin, 2015

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The purpose of this study was to examine, based on survey results of a sample of speech-language pathologists (SLPs), the degree to which a bias exists for classifying bilingualism as a risk factor for the onset and persistence of stuttering. This study also aimed to determine what if any sources (i.e. years of experience, specialization in the field of fluency, and educational history on the topics of bilingualism and stuttering) uniquely influenced SLPs' understanding of risk factors. It is hypothesized that if SLPs perceive bilingualism as an inherent risk factor, they may be more likely to falsely identify typical bilingual clients who do not present with stuttering.

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## **Introduction**

Researchers have identified factors that may predispose children to be at risk for stuttering onset and persistence (Yairi & Ambrose, 1991; Ambrose & Yairi, 1992; Yairi & Ambrose, 2005). These risk factors include age of onset, gender and family history. According to Yairi (2005), age of onset is among the most prevalent risk factors for the persistence of stuttering. Further, Yairi and Ambrose (1992) conducted a longitudinal study examining the influence of gender on fluency versus disfluency disorders and recovery time in children who stutter. Findings indicated that females evidenced a higher recovery rate than males. There is also evidence to suggest a link between familial history and stuttering. A person is more likely to be at risk of stuttering if they have a family member that stutters. Historical studies (e.g., Travis, Johnson, & Shover, 1937) as well as a recent study (Howell, Davis, & Williams, 2009) have suggested a causal link between bilingualism and the onset and persistence of stuttering. However, these suggestions are compromised by significant limitations in the respective studies' design.

A misperception of bilingualism as a risk factor may increase the likelihood of speech-language pathologists (SLPs) inaccurately diagnosing a stutter when it is not present. The potential for misdiagnosis and over-identification of bilingual children can be attributed to the higher rate of maze usage as compared with monolingual peers (Bedore, Fiestas, Peña, & Nagy, 2006). There is evidence (Byrd, Bedore, & Ramos, 2015) that shows higher rates of disfluencies in Spanish-English (SE) bilinguals relative to their monolingual peers. Further, Byrd and colleagues (2015) suggest the need for

additional clinical considerations relative to the overlap between mazes and stuttering-like disfluencies, specifically for monosyllabic word repetitions. Mazes refer to the number of interjections, partial words, and repetitions contained in a communicative attempt (Solorio, Sherman, Liu, Bedore, Peña, & Iglesias, 2011). Mazes occur in the absence of other qualitative features of stuttering-like behaviors such as tension and duration. The potential for over-identification of stuttering in bilingual populations is further confounded by misguided suggestions that bilingualism is an inherent risk factor for the development of this complex disorder.

Research has indicated that a bias or lack of consideration for multicultural populations can lead to an increased potential for misdiagnosis of communication disorders (Shipley & McAfee, 2009). Biased perceptions of bilingualism as a risk factor may impede a SLP's ability to accurately make decisions regarding differential diagnosis of bilingual and multilingual children. Recommendations to clients that are not based on a thorough knowledge of the existing literature can undermine the ASHA code of ethics (Shipley & McAfee, 2009). It is imperative that as allied health professionals, SLPs continue to view literature with a critical lens. This ethical imperative warrants a larger research effort to correct inaccuracies that have made their way into the public domain.

Historically, there have been reports of bilingualism as a risk factor for stuttering. A study by Travis et.al (1937) concluded that there was an established link between bilingualism and the incidence of stuttering. Further, the study recommended that “the somewhat lower average I.Q of the bilinguals should be considered in evaluating the

significance of bilingualism as such in relation to stuttering.” There is little convincing evidence from the Travis study (1937) that supports any of these conclusions. A primary concern is of the classification method used in the study. The study employed individuals who were not SLPs (i.e. personnel directors from oil refineries, priests, merchants, etc.) to classify bilingual children as persons who did and did not stutter. A secondary concern was that this was the only method of determining the presence of stuttering, as it was not coupled with any other empirically sound method (Roberts, 2010). The methodological concerns of this study negate any potential interpretation; thus, this study cannot be used as an example of support for bilingualism as risk factor.

More recently, the potential negative association between bilingualism and stuttering has resurfaced (Howell, Davis, & Williams, 2009). The Howell study (2009) uses the Travis study (1937) as an example of concurrent validity to support delaying the acquisition of a second language in order to lower the child’s risk of developing stuttering. Packman, Onslow, and Reilly (2009) refuted the conclusions made in the Howell study by reporting that use of a fairly small clinical cohort (n=38) to make generalized conclusions about the nature of bilingualism and stuttering is problematic. A further criticism is the recovery criteria of using “4% stuttered syllables” as opposed to the established metric of “4% stutter-like dysfluencies” to consider people who stutter as having recovered from stuttering.

Findings from Byrd, Bedore, and Ramos (2015) provide data to support the notion that bilingualism does not contribute to an increased risk for stuttering. A study by Byrd,

Watson, Bedore, and Mullis (In Press) demonstrates that it is a challenge to accurately identify stuttering in bilingual SE children as many SLPs misidentify stuttering in children who do not in fact stutter. These data coupled with data by Artiles, Ruedo, Salazar, and Higareda (2005) that indicate bilingual children are at risk for over-representation in the identification of disorders, would suggest a need to promote awareness and understanding of bilingualism. The first step in this process would be to confirm the notion that SLPs are in fact more likely to perceive stuttering as a risk factor. If this misperception does exist, the second step is to identify the sources that may contribute to an SLP perceiving bilingualism as risk factor. Together, these steps represent the purpose of the present study.

Specifically, the primary purpose of this study is to assess the perceptions of SLPs in the United States regarding bilingualism as a risk factor for stuttering. The secondary purpose is to assess the factors that contribute to knowledge regarding the relationship between bilingualism and stuttering. Specific factors include: differences in educational experience, differences in clinical experience, differences in the amount of coursework specific to stuttering, and differences in the direct diagnostic and therapy contact hours for children and adults who stutter. The present study addressed the following questions:

1. Is bilingualism more commonly misidentified compared to other risk factors?
2. What demographic factors, if any, separate people who correctly identified risk factors from those who answered incorrectly?
3. With the exception of bilingualism, are participants well informed of the actual risk

factors of stuttering?

4. What factors influenced participant's opinion regarding bilingualism as a distinct risk for the development of stuttering?

## **Method**

*Initial development.* A survey was developed to assess whether SLPs perceive bilingualism as a risk factor for stuttering. To provide foils, the survey included the identification of other known risk factors to the onset and persistence of stuttering.

*Survey Pilot and Revision.* The survey was piloted on a graduate clinician at the University of Texas at Austin who had not participated in the initial development process. He provided feedback regarding the clarity and overall flow of the questions. As a result of this pilot, the following revisions were made: addition of Board Certification in Fluency and Fluency Disorders as an example of fluency specialization, revision of the order of course-work related questions, and provision of further clarification to unclear questions.

*Final survey.* The final survey was comprised of two parts. Participants were required to complete part I prior to answering questions in part II. Part I comprised of 28 questions used to assess participants' generalized knowledge of other well-known risk factors associated with stuttering (familial history, gender, and age of onset). Part II consisted of nine questions (multiple choice and open-ended) to assess the level of education and clinical experience participants had with regard to assessment and treatment of bilingual children who stutter. After completing the questions about the risk factors of stuttering, the participants responded to subsequent questions relating to their own personal demographic information; experience with bilingual clients, fluency clients, bilingual stuttering clients and any certification as an SLP. See Appendix B for survey questions.

## Participants

Participants were recruited nationwide using emails obtained from the publicly accessible American Speech-Language-Hearing Association (ASHA) directory. All of the included participants were SLPs (i.e., practicing or retired clinicians and professors). Participants were provided with a vague purpose of the study, with no information concerning bilingualism as a risk factor to avoid providing any source of bias prior to completing the questionnaire. Two phases of recruitment were employed in the present study.

*Phases of recruitment.* For the first phase of recruitment, the present author contacted SLPs listed on the ASHA directory via Google Mail. Each group email sent included the contacts in the “Blind Carbon Copy” section in order to protect dissemination of personal contact information. The electronic message contained an Informed Consent introduction approved by The University of Texas at Austin Institutional Review Board and a cover letter briefly describing the study (see Appendix A for a copy of the IRB approval). Google Mail, however, has email limits of up to 500 emails a day and is highly sensitive to blocking emails distributed to a large amount of people. Given these restrictions, it is uncertain how many emails were actually received through the Google Mail interface and how many were sent to spam filters or rejected entirely. These challenges coupled with low participant response during this initial phase were among the factors that motivated the present author to move to the second phase.

The second phase of the recruitment process was conducted entirely through the Qualtrics interface. The Qualtrics system identifies the number of participants that received an email, bypasses spam filters, and records the number of invalid emails. The present author contacted participants through the Qualtrics interface using the same paradigm listed above. It was clear based on the distribution data that participants were receiving the survey.

*Respondents.* Of the 11556 total emails sent through the Qualtrics interface, 1715 were invalid. Of the total emails sent, 2450 were opened. Of the opened emails, 259 were started and 207 were completed. Data obtained from a total of 207 participants were included in this study. The low retention rate could be attributed to several factors. Solutions to circumvent these issues are discussed in the recommendations for future research section of this thesis.

## **Data Collection**

*Storage.* Completed surveys were saved in a password-protected Qualtrics portal file. Survey results were anonymized to protect participant privacy.

## Results

The 207 participants were practicing in at least 30 different states across the United States at the time of their response. The majority of respondents held their master's degree (89%; n=185), with the remaining participants holding at least one doctorate. Of the 207 participants, 171 participants reported that they had provided treatment to a bilingual child. The majority of participants reported **not** having provided treatment to a bilingual child specific to stuttering (n=118). As expected, the number of respondents who classified themselves as bilingual SLPs was relatively low (n=27).

The majority of respondents (n=165) indicated that bilingualism was not a risk factor for stuttering. The remaining participants (n=42) reported that bilingualism was a risk factor for either the onset or persistence of stuttering, or both (See Figure 1).

The primary purpose of the present study was to determine if SLPs misperceive bilingualism as risk factor. These data indicate some do (n=42). Recall, the secondary purpose was to determine what influenced this misperception (See Figure 2). Thus, we examined this group of 42 participants in comparison to the group of 165 who did not misperceive bilingualism as a risk factor to uncover any unique characteristics among those 42 people that could account for their misidentification of bilingualism as a risk factor.

A cursory examination of the age and gender demographics of the participants who perceived bilingualism as a risk (n=42) revealed no significant differences from those

who did not; however, there was a striking similarity in the percentages of respondents from both groups that had taken a graduate course in stuttering (n=41) and (n=158). Participant opinion of bilingualism as a risk factor among participants who perceived bilingualism as a risk factor was primarily influenced by personal perspective (n=35) and secondarily influenced by Continuing Education Units (CEUs) (n=15). An overwhelming majority of participants who perceived bilingualism as a risk factor (n=39) reported that they have provided treatment to a bilingual child. Of these, 24 respondents noted that they have provided treatment to a bilingual child specific to stuttering.

Participants were asked to indicate if they possessed any specialization specific to stuttering. Among participants who perceived bilingualism as a risk, (n=42), 25 participants provided responses. Of these responses, 17 participants (68%) reported having no specialization specific to stuttering. Four participants in this group (16%) were Board Certified Specialists in Fluency and Fluency Disorders, and the remaining four participants had experience with clients who stutter, have completed management programs in stuttering, or have held direct leadership roles in their local National Stuttering Association chapters.

When we compare these responses to the participants who did not perceive bilingualism as a risk (n=165), we find the following similarities. Of the participants who did not perceive bilingualism as a risk (n=165), 95 participants provided responses regarding specialization specific to stuttering. Of these responses, 67 participants reported

having no specialization specific to stuttering (70%). There were 21 participants who reported being Board Certified Specialists in Fluency and Fluency Disorders (22%), while the remaining participants have completed the Lidcombe Program (3%) or are current faculty members in courses teaching fluency and fluency disorders (4%).

Participants who perceived bilingualism as a risk factor (n=42) were asked to specify how many years of clinical practice they have completed. For ease of understanding, these data were divided into representative groups by number of years. Five participants indicated that they had less than five years of experience, while 12 participants indicated that they have completed between five and 10 years of clinical practice. Participants with less than 10 years of experience comprised 40% of participants that perceived bilingualism as a risk factor. Thirteen participants completed 10 to 20 years of clinical practice (31%), while the most experienced participants among those that perceived bilingualism as a risk (n=11) completed 20 or more years of clinical practice (26%).

When we compare these responses to those that did not perceive bilingualism as a risk factor (n=165), 42 participants (33%) indicated that they had less than 10 years of experience. Fifty-six participants completed between 10 and 20 years of experience (34%). Sixty-seven participants (40%) reported completing over 20 years of experience.

Respondents who perceived bilingualism as a risk factor (n=42) were asked to indicate in a free response form how many courses they have taken specific to stuttering. Among the participants who perceived bilingualism as a risk (n=42), two participants did not

provide a response. Five participants out of 40 wrote that they have taken many courses and these answers were discarded. The following analysis has been done on the remaining 35 participant's responses. Twenty-seven participants indicated that they have completed less than five stuttering courses (79%). Six participants (18%) indicated that they have completed between five and 10 stuttering courses, while two (6%) completed over 10 courses on stuttering.

When we compare these responses to the participants who did not perceive bilingualism as a risk factor (n=165), we find the following information. Among the participants who did not perceive bilingualism as a risk factor (n=165), seven participants did not provide a response. Twenty-five participants reported unquantifiable responses, thus, the following analysis has been done on the remaining 141 participants. Ninety-nine participants (74%) had less than five courses specific to stuttering, while 12 (9%) had taken between five and ten courses. Seven participants reported taking more than 10 courses (5%).

Results indicated differences in the number of direct diagnostic contact hours for clients who stutter between participants who perceived bilingualism as a risk (n=42) and those that did not (n=165). Participants provided estimates that ranged from zero for the least experienced to more than 5,000 direct contact hours for the most experienced participants. For ease of understanding these values will be divided into numerical ranges for children and adults.

Among the participants who perceived bilingualism as a risk, 18 participants (42%) completed less than 10 direct assessment contact hours with children who stutter. Sixteen participants completed between 10-30 contact hours (38%), while 4 participants (9.5%) completed between 40-50 diagnostic contact hours. Of our most experienced participants (n=4), two completed 300 hours, one completed 800 hours and the last completed 5,000 hours.

When we compare these responses to participants who did not perceive bilingualism as a risk (n=165), we find that 10 participants reported unquantifiable responses such as, “many” and “do not remember,” as such, we will provide numerical data for the remaining 155 participants. Sixty-seven participants (43%) reported completing less than 10 direct assessment contact hours with children. Fifty-eight participants (37%) reported completing between 10 and 30 contact hours, while 31 participants (20%) reported completing over 30 direct diagnostic contact hours.

Of participants that perceived bilingualism as a risk, 30 participants (71.4%) completed less than ten direct diagnostic contact hours with adults who stutter, while eight participants (19%) completed between 10 and 30 contact hours. The remaining four participants (9.5%) completed 40, 75, 600, and 5,000 hours respectively.

When we compare these answers to participants that did not perceive bilingualism as a risk (n=165), we find the following results. Seven participants reported unquantifiable responses, thus, we will provide numerical data for the remaining 158 participants. One

hundred and thirteen participants (71.5%) completed less than 10 diagnostic contact hours with adults who stutter, while 25 participants (15.8%) completed between 10 and 30 contact hours. Twenty participants (12.6%) completed over 30 direct contact assessment hours with children who stutter.

Respondents were also asked about the number of clients who stutter they have had experience treating.

Among the participants that perceived bilingualism as a risk, 20 participants (48%) reported that they have treated less than 10 pediatric clients who stutter. Nine participants (21%) reported treated between 10 and 20 clients who stutter, while 13 participants (31%) reported treating more than 30 pediatric clients.

When we compare these answers to the participants that perceived bilingualism as a risk (n=165), we find that nine participants reported unquantifiable responses, and as such, we will provide numerical data for the remaining 156 participants. Sixty-seven participants (43%) reported providing treatment to less than 10 pediatric clients who stutter. Forty-seven participants (30%) reported having treated between 10 and 20 clients, while 41 participants (26%) reported completing having treated over 30 pediatric clients.

Of the participants that perceived bilingualism as a risk, 30 participants (75%) reported that they provided speech therapy to less than 10 adult clients who stutter. Seven participants (17.5%) reported providing therapy to between 10 and 20 adult clients, while three participants (7.5%) have provided therapy to over 30 clients. When we

compare these answers to the participants that perceived bilingualism as a risk (n=165), we find the following results. Seven participants reported unquantifiable responses, thus, we will provide numerical data for the remaining 158 participants. One hundred and thirteen participants (71.5%) provided therapy to less than 10 adults who stutter, while 25 participants (15.8%) reported providing therapy to between 10 and 30 adult clients. Twenty participants (12.6%) reported providing therapy to over 30 adults who stutter.

## Discussion

The purpose of the study is to evaluate how bilingualism is perceived as a risk factor in the context of other well-known risk factors.

*Is bilingualism more commonly misidentified compared to other risk factors?*

Our results indicate that bilingualism was the most commonly misidentified risk factor. Age of onset was the second most commonly misidentified risk factor, followed by gender and familial history (See Figures 3 through 8). The data suggest that there is in fact a misperception of risk factors, however, it does not appear to occur across all risk factors. On the contrary, our data indicate that bilingualism is unique in terms of the degree to which it was misperceived when compared to all other risk factors.

*What demographic factors, if any, separate people who correctly identified risk factors from those who answered incorrectly?*

Our results indicate that while there appeared to be consistent similarities across participants who did and did not perceive bilingualism as a risk in terms of age and education, there appeared to be differences in the years of overall clinical experience. Across groups, no significant differences are observed between participants who perceived bilingualism as a risk and those that did not as it relates to the number of stuttering courses taken. We found that participants who perceived bilingualism as a risk had less overall clinical experience when compared to participants who did not perceive bilingualism as a risk. Across groups it appears as though no significant differences are

present in the reported values for treatment of children who stutter. Across groups it appears as though no significant differences are present in the reported values for treatment of adults who stutter in the first two numerical ranges (i.e. treatment of less than 10 adults and between 10 and 20 adults who stutter). Participants who did not perceive bilingualism as a risk factor had significantly greater percentage of participants in the third numerical range (i.e. treatment of more than 30 adults who stutter), as compared to participants who perceived bilingualism as a risk factor.

One essential requirement of becoming a Board Certified Specialist – Fluency (BCS-F) is clinical experience. Our findings support the need for specialists to obtain additional clinical experience in the area of fluency and fluency disorders. There has been debate surrounding the eligibility criteria of board specialization, and the application criteria are currently under review; nevertheless, our data lend support to clinical experience being a key differentiating factor between those who perceived bilingualism as a risk factor and those that did not. The data further suggest that clinicians obtain a comprehensive knowledge regarding the underlying nature (i.e. the epidemiology and etiologies) of stuttering as a result of experience in the field.

*With the exception of bilingualism, are participants well informed of the risk factors of stuttering?*

We found that while participants who perceived bilingualism as a risk misidentified bilingualism as a risk factor, this did not affect their overall performance of correctly

identifying other, well-known risk factors of stuttering. Therefore, the data suggests that the possibility of an overall deficit in knowledge of risk factors is unlikely.

Our results suggest that factors exist that are uniquely challenging with respect to bilingualism. Given how valuable the learning of a second language is, this finding emphasizes the need to promote understanding regarding the insufficiency of data to support bilingualism as a causal contributor to stuttering. There exists a critical need to promote awareness in support of bilingualism as a positive contributor to speech acquisition. No reliable evidence is available to suggest that bilingualism causes stuttering, however, research suggests that bilingual speakers experience benefits in the cognitive science and communication science domains. Research suggests that the co-activation of language in bilingual speakers enhances the brain's ability to filter out irrelevant auditory stimuli, can influence enhanced context-specific memory retrieval, and a general bilingual advantage for novel word learning (Blumenfeld & Marian, 2011; Kaushanskaya & Marian, 2009; Marian & Kaushanskaya, 2007). The nature of bilingualism is complex and the negative association between bilingualism and stuttering is unfounded.

*What factors influenced participant's opinion regarding bilingualism as a distinct risk for the development of stuttering?*

The results indicate that personal perspective was the highest response, followed by graduate coursework and CEUs for our entire participant pool (n=207). However, it is imperative that we view what sources influenced the opinion of participants who

perceived bilingualism as a risk in order to inform future considerations. Thirty-three (79%) of participants who perceived bilingualism as a risk reported that personal perspective accounted for the primary source of information, followed by CEUs (33.3%) and graduate coursework (21%). Personal perspective can be influenced by a multitude of factors, including experienced based, often subjective analysis. Time dedicated to both the research and dissemination of factual information regarding bilingualism and stuttering is warranted in order to ensure that empirical sources become the primary reference for new and experienced clinicians alike.

Participants who perceived bilingualism as a risk were asked to explain why they believed bilingualism to be a risk factor for the onset and/or persistence of stuttering. Six participants provided no explanation or cited that they have not had bilingual clients who stutter on their caseload. Three responses included anecdotal examples that reported the presence of stuttering in one language but not the other. Ten respondents reported that the acquisition of two languages places increased demands on language development and as a result can increase risk of stuttering. Seven participants provided examples from personal experience, which indicate that they have seen a high number of bilingual clients present with concomitant fluency disorders.

While we can never be sure of the exact contributors to personal perspective in our participants, we can look more closely at the academic curriculum that may contributed to these perspectives over time. It is indeed possible that misinformation exists between

bilingualism and stuttering. Misinformation may have made the nature of our study more vulnerable to misperception and inaccurate responses. Our findings provide an impetus to educate clinicians in order to protect the children and families we assess and treat. By educating one SLP, we are effectively educating a network of the children and families they serve. Speech pathologists are in a unique position to make speech and language recommendations to children and their families. A recommendation to not teach children a second language may have lasting implications on the child and their family; however, by educating speech pathologists on the nature of stuttering, we can reduce the unsubstantiated bias targeted towards bilingualism.

## **Limitations**

The most obvious limitation of this study is the sample size. Given that there were a limited number of participants, these data should be interpreted with caution. Another limitation of the study was the way some questions were formatted. Allowing participants to write free response answers can be beneficial to understand how perspectives are formed, but should be used sparingly as it is difficult to quantify and make conclusions regarding groups of data that are not in the same units of measure (e.g. many vs. 5). Obtaining more information regarding participant demographics such as which settings participants primarily worked in could help us to develop a more thorough participant profile.

The nature of survey research is yet another limitation particularly with regard to the recruitment process. If a person's primary email address is not listed in ASHA's public directory it decreases the likelihood of participant retention. If emails were obtained through ASHA's paid mailing lists, the verified emails would have likely resulted in greater participant retention and feedback.

Due to financial constraints, the present author chose to obtain emails via the public directory. The presence of invalid emails in the ASHA public directory may be a contributing factor to low participant retention particularly in student-led research. The recruitment process for this study was compromised as a result of outdated emails. Recommendations for future research include using a survey system such as Qualtrics for

both the development and distribution of surveys and participation in the paid mailing program offered by ASHA to obtain reliable emails.

## **Conclusions and Future Research**

Results from present study indicate that there are SLPs who view bilingualism as a risk factor for stuttering. Results further demonstrate that no specific demographic factors lead to the misidentification of bilingualism as a risk factor for stuttering, but a majority of the participants who perceived bilingualism as a risk factor had less overall experience when compared to participants who did not perceive bilingualism as a risk. Another remarkable finding was that overall, participants used personal perspective as the primary means for reaching their conclusions. Future research efforts should investigate the contributing factors to personal perspective and how researchers can reduce the implications of the negative associations between bilingualism and stuttering. Future studies should also examine the diagnostic accuracy of clinicians who perceive bilingualism as a risk factor when classifying children who stutter as compared with clinicians that do not perceive bilingualism as a risk factor. A critical takeaway of this research is to promote awareness and understanding of bilingualism to support evidence-based practices for clinicians in the United States of America.

## Figures

Figure One: Participant report of bilingualism as a risk factor

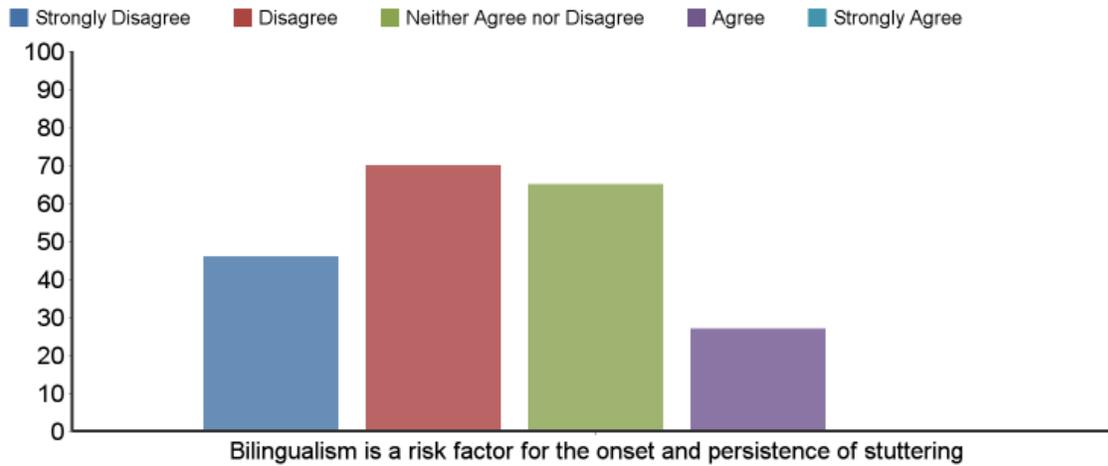


Figure Two: Participant report of factors that influenced their opinion of bilingualism as a risk factor for the onset and persistence of stuttering.

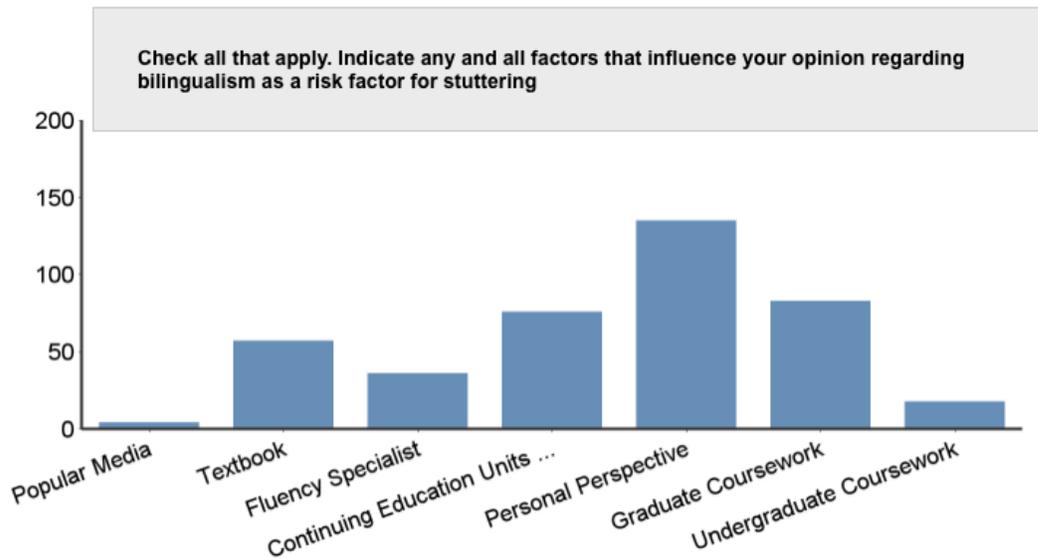


Figure Three: Participant report of gender as a risk factor

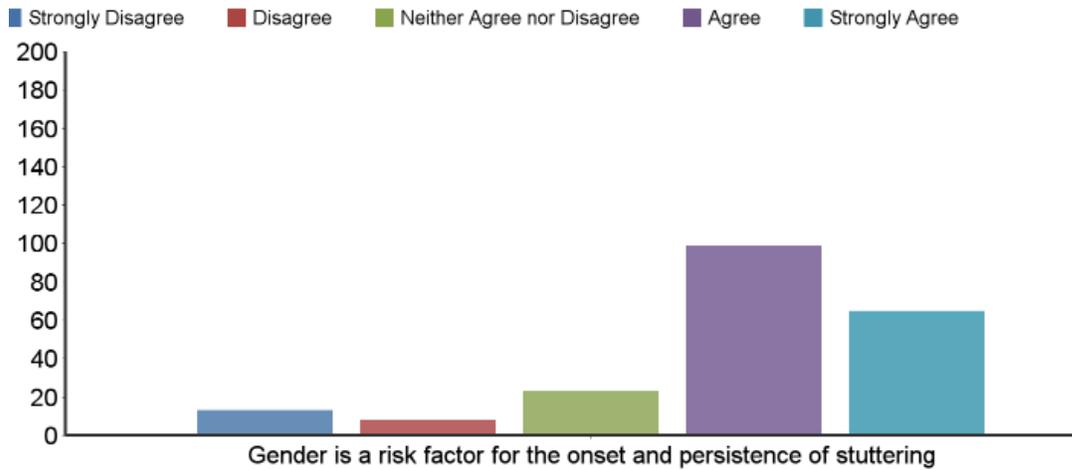


Figure Four: Participant report of factors that influenced their opinion of gender as a risk factor for the onset and persistence of stuttering.

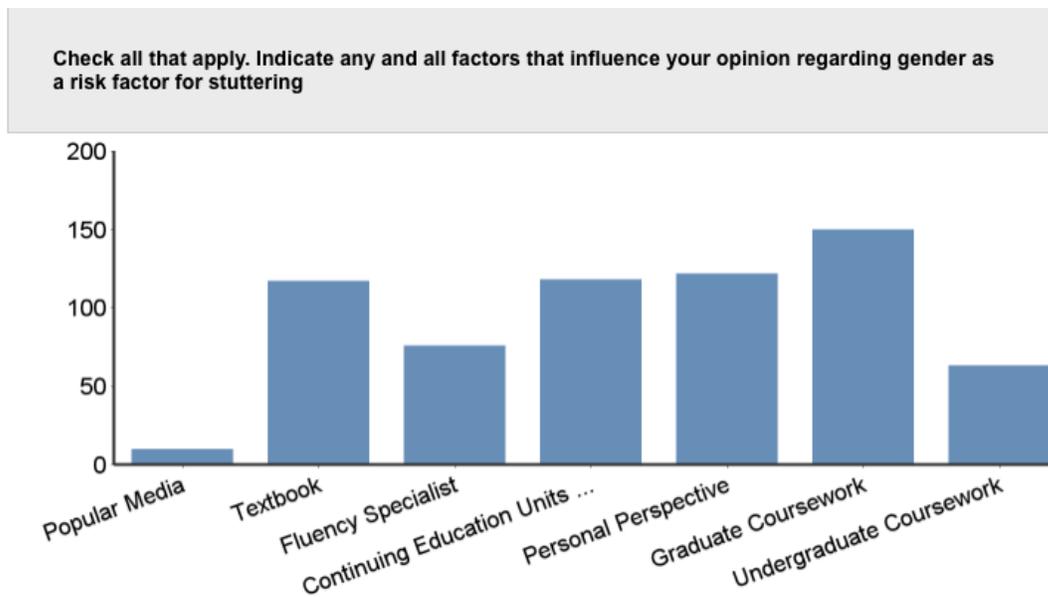


Figure Five: Participant report of age of onset as a risk factor

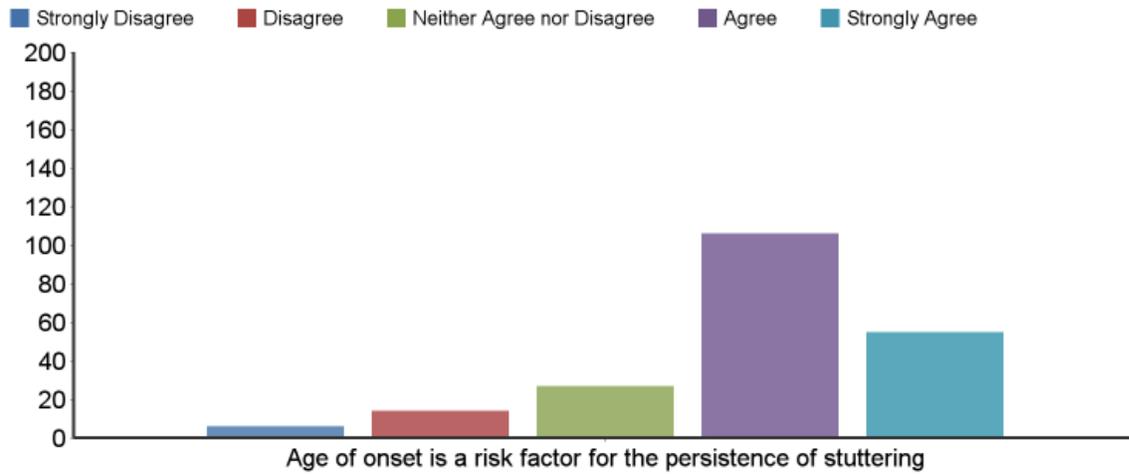


Figure Six: Participant report of factors that influenced their opinion of age of onset as a risk factor for the persistence of stuttering.

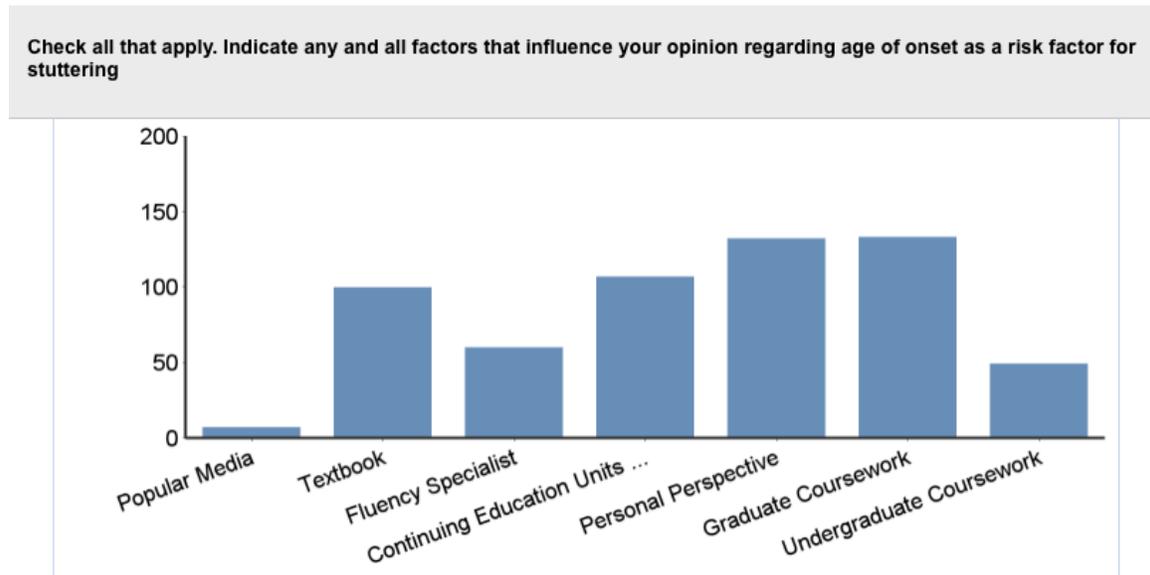


Figure Seven: Participant report of familial history as a risk factor

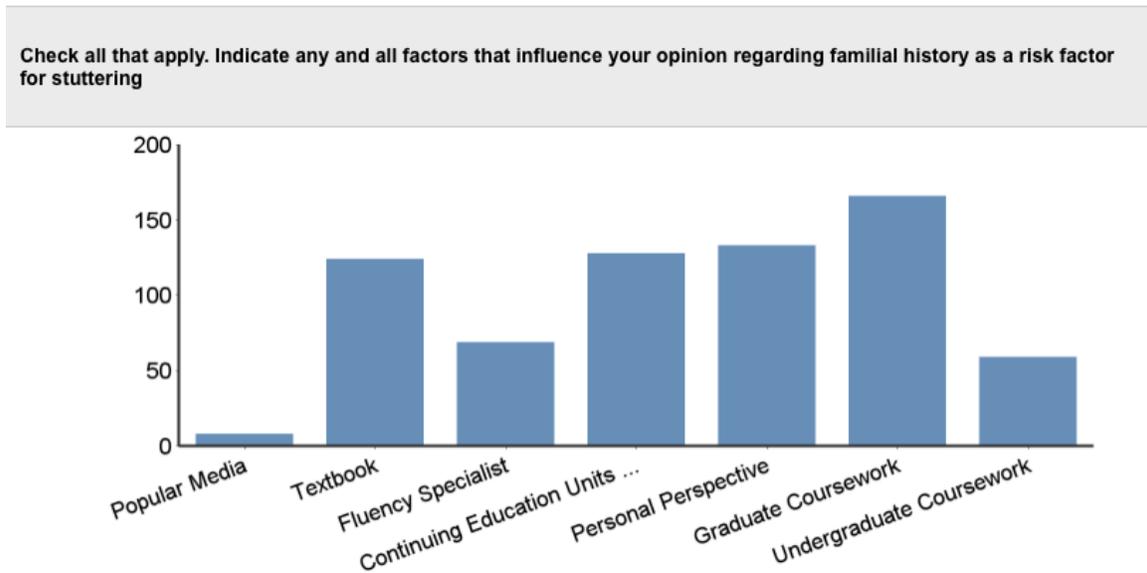
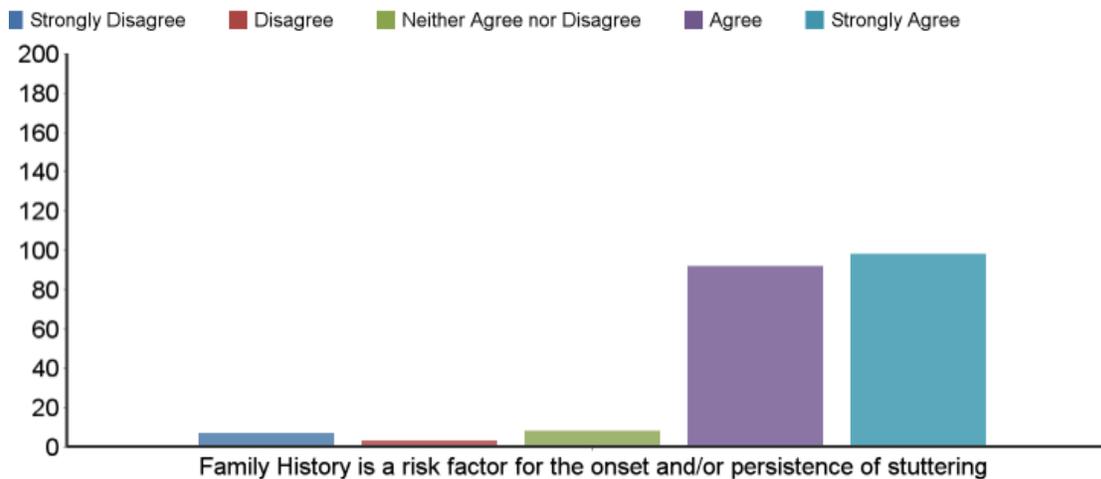


Figure Eight: Participant report of factors that influenced their opinion of familial as a risk factor for the onset and persistence of stuttering.



## Appendices

### Appendix A. IRB Approved Cover Letter

IRB APPROVED ON: 10/31/2014 EXPIRES ON: 10/30/2017 IRB # 2014-09-0014

#### Consent to Participate in Internet Research

##### Identification of Investigator and Purpose of Study

You are invited to participate in a research study, entitled “Risk Factors of Stuttering.” The study is being conducted by Ayesha Dadabhoy, B.S. under the faculty supervision of Dr. Courtney Byrd, PhD of The University of Texas at Austin, Department of Communication Sciences and Disorders.

Principle Investigator: Dr. Courtney Byrd, PhD

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Co-investigator: Ayesha Dadabhoy, B.S.

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The purpose of this research study is to examine the SLP’s knowledge of risk factors associated with stuttering. Your participation in the study will contribute to a better understanding the clinician’s awareness of risk factors for stuttering. You are free to contact the investigator at the above address and phone number to discuss the study. You must be at least 18 years old and a Speech-Language pathologist (i.e. currently practicing and/or retired clinician or professor) to participate.

If you agree to participate:

- The survey will take approximately 15-20 minutes of your time.
- You will complete a survey regarding the risk factors of stuttering.
- You will not be compensated.

##### Risks/Benefits/Confidentiality of Data

There are no possible risks. There will be no costs for participating, nor will you benefit from participating. Your name and email address will not be kept during the data collection phase. A limited number of research team members will have access to the data during data collection. Identifying information will be stripped from the final dataset.

##### Participation or Withdrawal

Your participation in this study is voluntary. You may decline to answer any question and you have the right to withdraw from participation at any time. Withdrawal will not affect your relationship with The

University of Texas in any way. If you do not want to participate either simply stop participating or close the browser window.

If you do not want to receive any more reminders, you may email us at [ayesha.dadabhoy@utexas.edu](mailto:ayesha.dadabhoy@utexas.edu).

## **Contacts**

If you have any questions about the study or need to update your email address contact the researcher Ayesha Dadabhoy by sending an email to [ayesha.dadabhoy@utexas.edu](mailto:ayesha.dadabhoy@utexas.edu). This study has been reviewed by The University of Texas at Austin Institutional Review Board and the study number is 2014-09-0014.

## **Questions about your rights as a research participant.**

If you have questions about your rights or are dissatisfied at any time with any part of this study, you can contact, anonymously if you wish, the Institutional Review Board by phone at (512) 471-8871 or email at [orsc@uts.cc.utexas.edu](mailto:orsc@uts.cc.utexas.edu).

If you agree to participate, click on the following link. Clicking on this link will serve as your consent to participate in this study. [Survey Link](#)

Thank you.

## Appendix B. Survey Questions

### Block One:

1. Please choose your occupation:

- Speech-Language Pathologist (i.e. practicing and/or retired clinicians and professors) (1)
- Other (i.e. not an SLP) (2)

2. Please indicate your gender below

- Male (1)
- Female (2)
- Other (3) \_\_\_\_\_

3. Please indicate the highest level of education you have received to date:

- Master's Degree (1)
- PhD (2)
- Other (3) \_\_\_\_\_

4. Please indicate any specialization you have specific to stuttering. For example indicate if you have received board certification in the field of fluency and fluency disorders.

5. If you are a speech-language pathologist: Please specify how many years of clinical practice you have had

6. Please select all that apply:

- I am a person who stutters (1)
- I know someone in my immediate family who stutters (2)
- I know someone in my extended family who stutters (3)
- I know someone personally (i.e. outside of the professional realm) that stutters (4)

7. Please indicate how many years it has been since you have received your terminal degree

8. Please check all that apply. Indicate the level/ type of courses taken in stuttering

- Undergraduate (1)
- Graduate (2)
- Continuing Education Units (CEUs) (3)

9. Please specify how many courses you have taken in stuttering (if any)

10. Please indicate how many clients who stutter you have assessed (direct contact hours)

○ Children (1)

○ Adults (2)

11. Please indicate how many clients who stutter you have assessed who presented with concomitant disorders

○ Children (1)

○ Adults (2)

12. Please indicate how many clients who stutter you have treated

○ Children (1)

○ Adults (2)

13. Please indicate the extent to which you strongly agree, agree, disagree, or strongly disagree with the statement: Gender is a risk factor for the onset and/or persistence of stuttering

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
Gender is a risk factor for the onset and/or persistence of stuttering (1)	○	○	○	○	○

14. Please explain your answer below:

15. Indicate if you think gender is a risk factor for

○ Onset of Stuttering (1)

○ Persistence of Stuttering (2)

○ Both (3)

○ Neither (4)

16. Check all that apply. Indicate any and all factors that influence your opinion regarding gender as a risk factor for stuttering

- Popular Media (1)
- Textbook (2)
- Fluency Specialist (3)
- Continuing Education Units (CEU) (4)
- Personal Perspective (5)
- Graduate Coursework (6)
- Undergraduate Coursework (7)

17. Please indicate the extent to which you strongly agree, agree, disagree, or strongly disagree with the statement: Bilingualism is a risk factor for the onset and/or persistence of stuttering

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
Bilingualism is a risk factor for the onset and/or persistence of stuttering (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Please explain your answer below:

19. Indicate if you think bilingualism is a risk factor for

- Onset of Stuttering (1)
- Persistence of Stuttering (2)
- Both (3)
- Neither (4)

20. Check all that apply. Indicate any and all factors that influence your opinion regarding bilingualism as a risk factor for stuttering

- Popular Media (1)
- Textbook (2)
- Fluency Specialist (3)
- Continuing Education Units (CEU) (4)
- Personal Perspective (5)
- Graduate Coursework (6)
- Undergraduate Coursework (7)

21. Please indicate the extent to which you strongly agree, agree, disagree, or strongly disagree with the statement: Age of Onset is a risk factor for the onset and/or persistence of stuttering

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
Age of onset is a risk factor for the onset and/or persistence of stuttering (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Please explain your answer below:

23. Indicate if you think age of onset is a risk factor for the persistence of stuttering

- Yes (1)
- No (2)

24. Check all that apply. Indicate any and all factors that influence your opinion regarding age of onset as a risk factor for stuttering

- Popular Media (1)
- Textbook (2)
- Fluency Specialist (3)
- Continuing Education Units (CEU) (4)
- Personal Perspective (5)
- Graduate Coursework (6)
- Undergraduate Coursework (7)

25. Please indicate the extent to which you strongly agree, agree, disagree, or strongly disagree with the statement: Family History is a risk factor for the onset and/or persistence of stuttering

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
Family History is a risk factor for the onset and/or persistence of stuttering (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. Please explain your answer below:

27. Indicate if you think family history is a risk factor for

- Onset of Stuttering (1)
- Persistence of Stuttering (2)
- Both (3)
- Neither (4)

28. Check all that apply. Indicate any and all factors that influence your opinion regarding familial history as a risk factor for stuttering

- Popular Media (1)
- Textbook (2)
- Fluency Specialist (3)
- Continuing Education Units (CEU) (4)
- Personal Perspective (5)
- Graduate Coursework (6)
- Undergraduate Coursework (7)

**Block Two:**

29. Have you ever diagnosed a child with stuttering that spoke more than one language?

- Yes (1)
- No (2)

30. If you answered yes to the above question, how many bilingual children have you diagnosed with stuttering?

31. Have you ever provided treatment to a bilingual child?

- Yes (1)
- No (2)

32. Have you ever provided treatment to a bilingual child specific to stuttering?

- Yes (1)
- No (2)

33. Please indicate the number of bilingual children you have diagnosed with stuttering within the below age-ranges. Check all that apply.

	Number of Children				
	1-5 (1)	5-10 (2)	10-20 (3)	20-30 (4)	30+ (5)
1-3 years of age (1)	<input type="radio"/>				
3-5 years of age (2)	<input type="radio"/>				
5-10 years of age (3)	<input type="radio"/>				
10-15 years of age (4)	<input type="radio"/>				
15-20 years of age (5)	<input type="radio"/>				

34. How many bilingualism courses have you taken (if any)?

35. If you have answered yes to the above question, Please indicate the level/type of courses. Check all that apply.

- Undergraduate (1)
- Graduate (2)
- Continuing Education Units (CEUs) (3)

36. Are you a bilingual speech-language pathologist?

- Yes (1)
- No (2)

37. Please indicate the number of years that you have been practicing as a bilingual speech-language pathologist.

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## **Vita**

Ayesha Nasir Haque was born in Houston, Texas and moved to Austin, Texas to begin her undergraduate and graduate studies at the University of Texas at Austin. Ayesha enjoys working with a wide variety of clients, is passionate about fluency and fluency disorders, and aspires to become a clinical supervisor at her own private practice.

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This thesis was typed by Ayesha Nasir Haque.