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The Stuttering Characteristics of Spanish-English Bilingual Adult Speakers

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An undergraduate honors thesis submitted in partial fulfillment of the

requirements for the degree of

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in

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1. Introduction: Background and Literature review

Stuttering is a speech fluency disorder in which “the flow of speech is broken by repetitions, prolongations, or abnormal stoppages (no sound) of sounds and syllables” (The Stuttering Foundation, 2019). The incidence of stuttering, or the percent of the population who have stuttered at any point during their life, is 5%. The prevalence of stuttering, or the percent of individuals who stutter at any given point in time is 1% (The Stuttering Foundation, 2019). Approximately three million Americans stutter and speech-language pathologists (SLPs) diagnose, treat, and help their clients cope with stuttering.

As the number of bilinguals and multilinguals continues to grow globally, researchers and clinicians in the field of speech-language pathology are faced with a unique challenge and opportunity. Over 50% of the world's population is bilingual (De Houwer, 1998) and in the United States (U.S.), there has been a steady increase in the percentage of bilinguals, doubling from 10.86% in 1980 to 20.14% in 2016 (U.S. Census Bureau, 2016). It has been reported that if the growth trends continue, one in three U.S. residents will be Hispanic by 2065, and more than 60% of the population will be bilingual in Spanish and English (Byrd et al., 2015). It is unknown how many people who stutter are bilingual, but it can be estimated that at least a half million bilingual speakers in the U.S also stutter (The Stuttering Foundation, 2019). Given the changing demographics across the nation, there is a critical need for speech-language pathologists to understand the experiences of bilingual and multilingual clients who stutter.

It has been established that the bilingual is not two monolinguals in one person and that given the high percentage of bilinguals in the world's population, “using the monolingual as a yardstick is questionable” (Grosjean, 1989). In fact, according to the American

Speech–Language–Hearing Association (ASHA), clinicians in the field must be prepared to address “the unique situation” of each bilingual and multilingual client. ASHA asserts that the complexities of bilingualism and the significant variability among the linguistic skills of multilingual individuals can lead to misdiagnosis, leading to “disproportionality concerns in schools and health care disparities in hospitals and long-term care facilities” (ASHA, 2019). To address this issue, speech-language pathologists must “consider how communication disorders or differences might be manifested, identified, or described in the client's/patient's cultural and linguistic community and integrate this knowledge into all areas of practice, including assessment, diagnosis, treatment, and treatment discharge” (ASHA, 2019). Anaya, Peña, and Bedore (2016) reported that incorporating language samples, parent and teacher reports, and standardized testing in both languages is effective when evaluating clients from culturally and linguistically diverse backgrounds and that clinical decision making should be informed by data obtained from each of the languages a client speaks (Anaya, Peña, & Bedore, 2016). Thus, it is crucial to understand the experiences of bilingual and multilingual clients who stutter in order to provide evidence-based assessment and treatment services.

Most speech-language pathologists can expect to encounter bilingual clients who stutter and should consider the complexities and variability of bilingualism when diagnosing and treating them. Data on how many speech-language pathologists work with bilingual clients is currently not available, but clinicians continue to pose questions about bilingualism and stuttering and the methodological issues when assessing and treating clients who stutter across a range of ages (Shenker & Lim, 2015). Yet, adequate knowledge and research about the

assessment and treatment of bilinguals who stutter has been scarce. There is a critical need for research on the stuttering produced by bilinguals in each of their two languages.

Investigation of stuttering behavior in bilinguals is of clinical importance as it will help to improve the accuracy of assessing and diagnosing the severity of the disorder in bilinguals who stutter. If factors such as language dominance and language proficiency are found to influence stuttering frequency and type, clinicians around the world who work with bilinguals who stutter will assess and treat the overall severity of the disorder with more accuracy and effectiveness. Further research in the area of stuttering and bilingualism is needed due to the disparity in the findings reported in previous research on the topic.

In a systematic literature review encompassing the years 1971-2000, 12 studies were found that reported on cases of stuttering in bilinguals. Van Borsel (2001) reported that half (6 of 12 studies) of published research exploring stuttering and bilingualism was focused on adults (Van Borsel, 2001). Van Borsel (2001) also reported that Nwokah (1988) described three theoretical possibilities about the manifestation of stuttering for bilinguals. The first theory is that stuttering occurs in one language but not the other. The second theory is that stuttering occurs in both languages with speech behavior patterns that are similar in each language, referred to as the same-hypothesis. The third theory is that stuttering could occur in both languages but vary from one language to another, this possibility is called the difference-hypothesis. Van Borsel's (2001) systematic review found that the most common distribution of stuttering across two languages was that one language was affected more than the other language (7 out of 12 studies). This review revealed a disparity in the findings reported in studies of bilingual stutterers, specifically

in the area of the prevalence of stuttering, its manifestations, and therapy outcomes. Van Borsel (2001) also called for further research in the area to inform clinical practice.

Despite the documented critical need for further research since the early 2000s, few empirically based reports of the stuttering produced by adult bilingual speakers. The past two decades of research with adults has shifted from investigating stuttering prevalence in bilinguals to examining whether the nature of stuttering varies between the two languages of bilinguals who stutter.

Research after 2000 shows patterns of stuttering manifestation in adult bilinguals who stutter corresponding to Nwokah's (1988) three hypotheses model. The first theory is that bilinguals who stutter stutter only in one language. Although there has been one research study claiming this to be true (Dale, 1977), no research studies after 2000 report data consistent with this hypothesis. The second theory is that adult bilinguals who stutter will stutter in both languages, and their stuttering frequency is not different between the two languages. According to Maruthy et al. (2015), three studies after 2000 have yielded results consistent with this theory (i.e. Maruthy et al., 2015, citing Howell et al., 2004, Howell et al., 2009, Lee et al., 2014). No other research articles reported this pattern of stuttering manifestation. For the last theory, two different findings are reported in the literature. Some studies have reported that bilinguals stutter more in their 'more proficient' or 'dominant' language. Maruthy et al. (2015) describes three studies that support this pattern. Additionally, three separate studies reported that stuttering type was not influenced by language dominance and did not vary between the two languages (Maruthy et al., 2015, Lim et al., 2008, and Hernández-Jaramillo & Velásquez Gómez, 2015). In addition, Lim et al. (2015) reported that balanced bilinguals who stutter, that is, speakers who do

not have a dominant language, presented with the same frequency and severity of disfluencies in both languages. On the other hand, other studies reported bilinguals stutter more in their ‘less proficient’ or ‘non-dominant’ language. Maruthy et al. (2015) describes three studies that were published after 2000 which show this pattern (Maruthy et al., 2015, citing Lim et al., 2008, Roberts, 2002, Schäfer and Robb, 2012). Maruthy et al. (2015) studied 25 Kannada–English adult bilinguals who stutter, and reported more disfluencies in the less dominant language (English) compared to Kannada (Maruthy et al., 2015). Additionally, Maruthy et al. (2015), Lim et al. (2008), Schaffer and Robb (2012), Hernández-Jaramillo and Velásquez Gómez (2015), and Ardilla, Ramos, and Barrocas (2011) reported more disfluencies or a higher frequency and severity of stuttering in the less dominant or less proficient language. These inconsistencies may be due to limitations of research design and methods, particularly in the areas of number of subjects, bilingualism classification, and measurement of language dominance and proficiency.

The two main limitations of current research on stuttering of adult bilinguals who stutter are case study designs and lack complete reporting of clients’ language dominance and proficiency. Although multiple-subject designs have been proven more useful, case studies continue to provide the bulk of clinicians’ knowledge on the subject. For an instance, out of the five research articles on stuttering of adult bilinguals published after 2000, three had between 15 and 30 participants (Maruthy et al., 2015, Lim et al., 2008, Schäfer and Robb, 2012). In addition, only three studies on stuttering and bilingualism (Lim et al., 2008, Schäfer & Robb, 2012, and Maruthy et al., 2015) have done a systematic and comprehensive evaluation that considered the characteristics and mastery of the two languages to check their effects on stuttering frequency. Research studies on adult Spanish-English bilinguals who stutter in particular exemplify these

limitations, as the only two studies are case studies and have not utilized systematic and comprehensive proficiency and language dominance evaluations.

The aim of this research study is to examine stuttering in English-Spanish bilinguals who stutter. Specifically, the primary goal is to compare and contrast the frequency of stuttering (% of words stuttered), the types of disfluencies, the number of iterations of a stuttering moment, and subjective physical concomitants scores (according to the Stuttering Severity Instrument-4th Edition; SSI-4). The secondary goal is to investigate the effect of language dominance and proficiency on stuttering patterns in each language and across individuals. The specific research question was: Do stuttering frequency, type, and severity differ across languages for Spanish-English bilingual adults who stutter?

2. Method

2.1 Participants

The participants were two adult participants who stutter and are Spanish-English sequential, balanced bilinguals who were taking part in therapy sessions as part of an ongoing telepractice clinical research program at the Portland State University (PSU) Stuttering Lab. Both participants were self-identified and referred to the PSU Stuttering Lab clinic. Both participants consented to participate in a study of bilingual stuttering but were unaware of the specific research aims. For confidentiality and privacy protection, they will be referred to as Participant 1 and Participant 2.

Participant 1 was a 22 year-old male. His L1 was Spanish and his L2 was English. He reported Spanish use at home and with family and English use at work and school. His therapy

started in the winter of 2018 and ended in spring 2019. He attended 20 telepractice therapy sessions, 10 in English and 10 in Spanish. Participant 2 had prior speech-language pathology treatment for stuttering when he was a child, but had not been enrolled in stuttering therapy for more than five years at the time of this study.

Participant 2 was a 21 year-old female. Her L1 was Spanish and her L2 was English. She was English dominant. Her therapy started in the spring of 2018 and ended in the spring of 2019. She attended 20 telepractice therapy sessions, 10 in English and 10 in Spanish. Participant 2 had prior speech-language pathology treatment for stuttering when she was a child, but had not been enrolled in stuttering therapy for more than two years at the time of this study.

2.2. Procedures

2.2.1 Speaking Samples

The speech samples used for data collection were recorded during therapy sessions as part of an ongoing telepractice clinical research program. The language in which each session was conducted alternated weekly between English and Spanish. Trained graduate student clinicians conducted the therapy sessions under the supervision of a certified and licensed bilingual speech-language pathologist who specialized in stuttering. Throughout the course of this study, Participant 1 had five different student clinicians, one for each academic term. Participant 2 was provided therapeutic services by four student clinicians. Disfluency counts were completed during approximately the first 5 minutes of the treatment session with the goal of establishing a 300 word disfluency count sample. After the session, a trained undergraduate or graduate research assistant coded these conversational speech samples from a video recording.

Video recording was required in order to identify blocks and silent moments of stuttering in addition to more audible stuttering moments.

2.2.2 Data Coding

The conversational speech data was coded for three things: disfluency counts, speech rate, and physical concomitants. To conduct the disfluency counts, the first 300 words of each therapy session (approximately the first 5 minutes) were coded. The data was coded for non-stuttered words and disfluent words. Disfluencies were classified in two categories: 1) stuttering-like disfluencies or STGs and 2) non-stuttering/typical disfluencies or NSTGs. Stuttering-like disfluencies include repetition of whole words (WWR), repetition of sounds and syllables (SSR), audible sound prolongations (ASP), and blocks/inaudible sound prolongations (ISP). Typical disfluencies include repetition of phrases (PR), interjections (INTJ), and revisions (REV). Once both stuttering-like and non-stuttering like disfluencies were coded, the frequency of disfluencies and percentages of occurrence within a given sample were calculated using a disfluency count sheet (see Appendix A). Then the overall percentage of stuttering-like disfluencies (STG/Wds), typical disfluencies (NSTG/Wds), total disfluencies (Total disfluencies/Wds), and stuttering-like disfluencies out of total disfluencies (STGs/total disfluencies) were calculated. Lastly, iterations (the number of times a stuttering moment is repeated) were coded.

Stuttering Severity Instrument - 4 (SSI-4) was used subjectively to assess physical concomitants. The evaluating scale ranges from 0 (no physical concomitants) to 5 (severe and painful looking physical concomitants). Four types of physical concomitants were assessed:

distracting noises, facial grimaces, head movements, and movements of the extremities. The scores for each type of physical concomitants were then added to a possible total score of 20. Each session was evaluated for physical concomitants. Eight of Participant 2's sessions were not evaluated due to technical issues.

2.2.3. Research Assistant Training

All research assistants who coded the participant data were trained by a graduate speech-language pathology student who was also the PSU Stuttering Lab Manager. After this initial training, research assistants compared their data coding and ratings with more experienced research assistants. Additionally, weekly lab meetings were held to answer coding questions and review assistants' coding.

2.2.4 Interrater Reliability

Interrater reliability was conducted by the author. Approximately 20% (5 sessions) of each participants' data were re-coded without the influence of previous data collection sheets or analyses. This second coding was compared to the initial coding of data to arrive at an interrater reliability score. The interrater reliability for coding was found to be equivalent to Cohen's Kappa = .75, which is substantial agreement.

2.2.5 Data Analysis and Variables

Once coded, the data was aggregated and analyzed to compare the two individuals and their stuttering patterns across the two languages. The variables for analysis were frequency of

stuttering (% of words stuttered), disfluency types, number of iterations of a stuttering moment, and physical concomitants. They were analyzed according to the factors set out, which are language dominance, language proficiency, when L2 was acquired (simultaneous, consecutive, late, middle, etc), education level, age, and sex. Both languages were compared for each participant, and both languages were compared across participants. Statistical analyses were conducted via Microsoft Excel, using t-tests.

3. Results

3.1 Overall Frequency and Disfluency Types Across Languages

There was no statistically significant difference in the overall frequency of stuttering (% of words stuttered) for either Participant 1 (Spanish $M = 4.01$; $SD = 2.62$; English $M = 3.60$; $SD = 1.81$; $p = 0.53$) or Participant 2 (Spanish $M = 8.75$; $SD = 3.35$; English $M = 6.86$; $SD = 2.13$; $p = 0.33$) when Spanish and English samples were compared using t-tests.

For Participant 1 there were no statistically significant differences for the number of audible sound prolongations (Spanish $M = 0.30$; $SD = 0.68$; English $M = 0.57$; $SD = 0.96$; $p = 0.51$), inaudible sound prolongations/blocks (Spanish $M = 0.80$; $SD = 0.63$; English $M = 0.70$; $SD = 0.51$; $p = 0.65$), sound or syllable repetitions (Spanish $M = 1.87$; $SD = 1.61$; English $M = 1.77$; $SD = 1.85$; $p = 0.87$), and whole word repetitions (Spanish $M = 0.83$; $SD = 0.63$; English $M = 0.57$; $SD = 0.50$; $p = 0.26$). In terms of typical disfluencies, Participant 1 demonstrated a statistically significant difference in the number of interjections produced in English as compared to Spanish (Spanish $M = 1.03$; $SD = 0.96$; English $M = 3.07$; $SD = 1.57$; $p = 0.005$). No other statistically significant differences were noted for phrase repetitions (Spanish $M = 0.27$; $SD =$

0.31; English $M = 0.80$; $SD = 0.71$; $p = 0.07$) or revisions (Spanish $M = 1.23$; $SD = 1.06$; English $M = 1.30$; $SD = 0.94$; $p = 0.88$). These results are presented in Table 1.

Table 1. Overall Frequency and Disfluency Types Across Languages for Participant 1

Parameter	English M (SD)	Spanish M (SD)	p
% of words stuttered	3.60 (1.81)	4.01 (2.62)	0.533
ASP%	0.57 (0.96)	0.30 (0.68)	0.512
ISP%	0.70 (0.51)	0.80 (0.63)	0.647
SSR%	1.77 (1.85)	1.87 (1.61)	0.868
WWR%	0.57 (0.50)	0.83 (0.63)	0.259
PR%	0.80 (0.71)	0.27 (0.31)	0.065
REV%	1.30 (0.94)	1.23 (1.06)	0.883
INT%	3.07 (1.57)	1.03 (0.96)	0.005

For Participant 2, there were no statistically significant differences for the number of audible sound prolongations (Spanish $M = 1.60$; $SD = 1.45$; English $M = 1.06$; $SD = 0.97$; $p = 0.31$), inaudible sound prolongations/blocks (Spanish $M = 4.83$; $SD = 3.14$; English $M = 3.80$; $SD = 2.15$; $p = 0.65$), sound or syllable repetitions (Spanish $M = 1.51$; $SD = 1.49$; English $M = 1.20$; $SD = 1.50$; $p = 0.84$), and whole word repetitions (Spanish $M = 0.79$; $SD = 0.60$; English

$M = 0.74$; $SD = 0.64$; $p = 0.43$). Unlike Participant 1, Participant 2 did not demonstrate any statistically significant differences in the frequency of interjections (Spanish $M = 4.83$; $SD = 2.11$; English $M = 4.56$; $SD = 2.01$; $p = 0.95$), phrase repetitions (Spanish $M = 0.52$; $SD = 0.66$; English $M = 0.40$; $SD = 0.47$; $p = 0.53$), or revisions (Spanish $M = 1.04$; $SD = 1.18$; English $M = 0.93$; $SD = 0.87$; $p = 0.62$). These results are presented in Table 2.

Table 2. Overall Frequency and Disfluency Types Across Languages for Participant 2

Parameter	English M (SD)	Spanish M (SD)	p
% of words stuttered	6.86 (2.13)	8.75 (3.35)	0.328
ASP%	1.06 (0.97)	1.60 (1.45)	0.307
ISP%	3.80 (2.15)	4.83 (3.14)	0.649
SSR%	1.20 (1.50)	1.51 (1.49)	0.836
WWR%	0.74 (0.64)	0.79 (0.60)	0.432
PR%	0.40 (0.47)	0.52 (0.66)	0.530
REV%	0.93 (0.87)	1.04 (1.18)	0.619
INT%	4.56 (2.01)	4.83 (2.11)	0.948

3.2 Iterations of Stuttering Across Languages

T-tests conducted to compare the maximum number of iterations of a stuttering moment across Spanish and English revealed no statistically significant differences for either participant. Participant 1 presented with slightly more iterations of stuttering in English as compared to Spanish; however, this difference was not statistically significant (Spanish $M = 1.33$; $SD = 0.71$; English $M = 1.50$; $SD = 0.71$; $p = 0.56$). There was also no statistically significant difference between iterations of stuttering in English as compared to Spanish for Participant 2 (Spanish $M = 3.60$; $SD = 2.22$; English $M = 3.30$; $SD = 1.77$; $p = 0.84$). These results are presented in Table 3.

Table 3. Iterations of Stuttering Across Languages

Participant	English M (SD)	Spanish M (SD)	p
Participant 1	1.50 (0.71)	1.33 (0.71)	0.559
Participant 2	3.30 (1.77)	3.60 (2.22)	0.844

3.3. Physical Concomitants Across Languages

T-tests conducted to compare the physical concomitant scores across Spanish and English within participants revealed no statistically significant differences for either participant. Participant 1's mean physical concomitant score in English was 0.20 and in Spanish was 2.33; however, these differences were not statistically significant (Spanish $SD = 0$; English $SD = 0.63$; $p = 0.34$). Participant 2's mean physical concomitant score in English was 7.71 and in Spanish was 3.21 (Spanish $SD = 1.70$; English $SD = 3.50$; $p = 0.75$). The results are presented in Table 4.

Table 4. Physical Concomitants Across Languages

Participant	English M (SD)	Spanish M (SD)	p
Participant 1	0.20 (0.63)	2.33 (0)	0.343
Participant 2	7.71 (3.50)	3.21 (1.70)	0.747

Taken together, these results indicate that both participants presented with stuttering frequency, iterations, and physical concomitants that were comparable in both languages.

4. Discussion

To review, the research question for the current study was: Do stuttering frequency, type, and severity differ across languages for Spanish-English bilingual adults who stutter? Results indicate that stuttering frequency, type, and severity are consistent across both languages for the two adult participants included in this study. These results are inconsistent with other literature exploring cross-language stuttering behaviors. Previous research exploring the types and frequency of stuttering in bilingual adults who stutter showed a discrepancy in results across languages.

Van Borsel (2001) reported that research with bilingual clients who stutter, which was conducted prior to 2000, provided evidence for all three of Nwokah's (1988) theories. To further explore the evidence for and against these theories, Van Borsel (2001) issued a call for additional research in the area to improve clinical practices. After 2000, the majority of studies exploring

cross-language stuttering provided evidence for Nwokah's (1988) difference-hypothesis. That is, results showed the bilingual adults who stutter exhibited different patterns of stuttering in each of their languages. For example, Schaffer and Robb (2012), who studied German-English bilingual adult speakers who stutter, reported a significantly higher percentage of stuttering for L2, the less dominant and less proficient language. Similarly, Ardilla, Ramos, and Barrocas (2011), presented a case study of a Spanish-English simultaneous bilingual, and reported a higher frequency of stuttering in Spanish, the less dominant language in which the client did not receive treatment. Hernández-Jaramillo and Velásquez Gómez (2015) also reported a case study of a Spanish-English bilingual who received therapy in Spanish and was English dominant. They reported a higher percentage of stuttering in the less dominant language, Spanish. Further, Maruthy et al. (2015) studied 25 Kannada-English bilinguals, whose dominant and more proficient language was Kannada. They reported a higher frequency of stuttering in English, the less dominant and less proficient language.

The results of the current study, however, differ from those reported by Schaffer and Robb (2012), Ardilla et al. (2011), Hernández-Jaramillo and Velásquez Gómez (2015), and Maruthy et al. (2015). Results of the current study support Nwokah's (1988) same-hypothesis, which states that stuttering occurs in similar patterns in both languages. There are several possible explanations for the observed differences in our study as compared to previous research. For example, previous research on bilinguals who stutter has reported that stuttering may be more severe in a bilingual speaker's less dominant language (e.g., Schaffer & Robb, 2012). Both participants self-reported as balanced, simultaneous Spanish-English bilinguals. Additionally, both participants also reported that Spanish was the language spoken at home and with family

while English was the language spoken in academic and occupational environments. Our results demonstrate that both participants exhibited stuttering patterns which were similar in both languages.

An additional explanation for the lack of consistency between the results of the current study and previous research is that the participants in our study received therapy in both English and in Spanish. The language used in therapy sessions alternated weekly, such that the data collected and analyzed in the current study reflected a balance of 10 therapy sessions in English and 10 therapy sessions in Spanish. Since both participants had experience and practice with use of stuttering modification techniques in English and Spanish, it is possible that their control of stuttering in each language was equal. Previous research which supported the difference-hypothesis may have, in part, been due to the participants' experiences with therapy in only one of their languages. Future research should consider comparing stuttering frequency and type with bilingual clients who stutter who are receiving monolingual speech-language pathology services to bilingual clients who stutter who are receiving bilingual/multilingual speech-language pathology services.

One final possible explanation for the differences observed in our study as compared to those noted in Ardilla et al. (2011) and Hernández-Jaramillo and Velásquez Gómez (2015), is linguistic diversity. Both Ardilla et al. (2011) and Hernández-Jaramillo and Velásquez Gómez (2015) reported that stuttering frequency and type differences in English and Spanish may have been due to differences in linguistic and syntactic patterns within each of those languages. The current study did not examine the possible impact of linguistic patterns on stuttering in each language, but future research should consider this type of analysis.

4.1 Clinical Implications

Although this study is preliminary in nature, there are some potential clinical implications of the current study related to the assessment and treatment of stuttering for bilingual adult clients. Given the results of the current study, it appears that for balanced Spanish-English bilingual adults who stutter, monolingual English-speaking SLPs may conduct a disfluency count in English as a representation of the client's overall overt stuttering characteristics in both languages. Additionally, the physical concomitants observed in one language are likely to be present in a consistent manner across the other language for bilingual adult clients who stutter. Thus, the current results provide support for utilizing one language in the evaluation of balanced bilingual adults who stutter.

It should also be noted that the two participants in the current study were receiving speech-language therapy services for stuttering in both English and Spanish during the time this data was collected. Previous research reports that many SLPs provide treatment to their bilingual clients who stutter in only one language, typically the more dominant and more proficient language. However, these studies have reported a higher frequency of stuttering in the less dominant, less proficient language. It is possible that the results of the current study may have been impacted by the participants' enrollment in a bilingual treatment program for stuttering. The results of the current study suggest that concurrent treatment in both languages, Spanish and English, correlates with the similar frequency, iterations, and physical concomitants of stuttering in both languages.

4.2 Limitations of the current study

The two main limitations of previous research on stuttering of adult bilinguals are case study designs and a lack of complete reporting of clients' language dominance and proficiency. This study attempted to address these limitations within the constraints of the context of an undergraduate honors thesis during the COVID-19 global pandemic. While this study did not have a case study design, the sample size of two participants is small. A larger sample size and more bilingual speakers with a range of dominance may have yielded different results that would have been more akin to previous research and more generalizable to a greater linguistic population. The current study addressed the lack of reporting of language dominance and proficiency by including participants who self-reported as balanced bilinguals, using Spanish at home and English at work and school. Self-reporting has its drawbacks and future research should include more standardized measures of assessing language dominance and proficiency. Given these limitations and considerations, the results of this study can only be applied to adults who stutter and are self-reported balanced Spanish-English bilinguals. Thus, the results of the study cannot be generalized to a larger and more linguistically diverse population. Lastly, it should be noted that data aggregation and reliability were interrupted due to the COVID-19 global pandemic which required all on-site research to transition to a remote/online format.

4.3 Future Directions

Future research should address the limitations of previous studies in the area of stuttering of bilingual adults and the limitations of this study. Specifically, future research should include larger sample sizes, rather than case studies or a sample size of two. In addition, future research

participants should be more linguistically diverse. Although the exploration of Spanish-English bilingualism is highly valuable, other common languages in the U.S. should be explored, such as Mandarin and Arabic. The current study's participants self-reported as balanced bilinguals and previous research often lacked standardized measures of assessing language dominance and proficiency. Future research should include more standardized measures of assessing language dominance and proficiency for more generalizable and reliable results. Lastly, other aspects of speech should be examined, such as number of within word clusters (the presence of adjacent disfluencies), the average duration of three longest stuttering moments, and speech rate in the two languages and across participants.

5. Conclusion

The aim of this research study was to examine stuttering in English-Spanish bilinguals who stutter by comparing stuttering frequency, type, and severity and to investigate the effect of language dominance and proficiency on stuttering patterns in each language and across individuals in order to address the disparity in the findings reported in previous research on the topic and improve current clinical practices. Speech samples that were recorded during therapy sessions as part of an ongoing telepractice clinical research program were coded for disfluency counts, iterations of stuttering, and physical concomitants. Results demonstrated no statistically significant differences in the overall frequency and disfluency types across languages, the iterations of stuttering across languages, or the physical concomitants across languages. Collectively, the results of this study provide evidence for correlation between concurrent

treatment in both languages and similar stuttering patterns in both languages. They also support the utilization of one language in the evaluation of balanced bilingual adults who stutter.

Additional research with a larger sample size encompassing more linguistic and stuttering diversity as well as more complete reporting of clients' language dominance and proficiency will provide more generalizable results that more clinicians will be able to use to diagnose and treat their bilingual adult clients who stutter.

Appendix A. An example of a completed disfluency count sheet.

Disfluency Count Sheet									
Client's Name: James		DOB: 1/12/2000		DOE: 1/17/2017					
Speech Sample Type: Conversation					Clinician: megann mcgill				
-	INT.	-	-	WWR	-	-	-	ASP	-
-	-	-	-	-	-	-	-	-	-
SSR	INT.	-	SSR ₃	-	WWR ₂	-	SSR ₂	-	-
-	-	SSR ₂	-	-	-	-	-	-	-
-	-	-	INT.	-	-	-	-	ISP	-
-	-	ASP	-	-	-	-	WWR	-	-
-	-	-	-	SSR	ASP	-	-	-	-
-	-	-	SSR	-	-	-	-	-	INT.
-	-	-	-	-	WWR	-	-	-	-
-	-	-	-	ISP	-	-	-	-	ASP
ASP	-	SSR ₃	-	-	-	-	-	-	-
-	REV	-	-	-	-	PR	-	-	-
INT.	-	-	-	-	-	-	-	-	WWR
-	-	-	SSR ₂	-	-	-	-	-	-
-	-	-	ASP	-	-	-	-	-	-
-	-	ISP	-	INT.	-	WWR	-	-	-
-	SSR ₃	-	-	ISP	-	-	-	-	-
SSR	-	-	-	WWR	-	SSR ₂	ASP	-	-
-	REV	-	-	-	-	INT.	-	SSR _{1/2}	-
-	-	-	-	-	-	-	-	-	-
-	-	SSR ₄	-	-	-	-	WWR	-	-
-	-	-	ISP	-	-	-	-	-	-
-	-	-	-	-	ASP	-	-	-	-
WWR	SSR	-	-	-	-	SSR	-	ISP	-
-	-	ASP	-	-	-	-	-	-	-
SSR	-	-	-	-	-	WWR	-	-	-
-	-	-	-	INT.	-	-	-	-	-
-	-	ISP	-	-	-	-	-	-	ASP
SSR	ISP	-	-	-	-	ASP	-	-	-

Disfluency Type	#	%
ASP	13	4.33%
ISP/Block	8	2.61%
SSR	10	3.33%
WWR	10	3.33%
PR	1	0.33%
INT	9	3%
REV	2	0.67%
Other	1	0.33%

Severity	#	%
STG/Wds	41/300	15.67%
NSTG/Wds	12/300	4%
Total disfluencies/Wds	59/300	19.67%
STGs/Total disfluencies	41/59	79.66%

Diagnostic Criteria	
> or = 3% STGs/Wds	
> or = 10% Total disfluencies/Wds	
> or = 72% STGs/Total disfluencies	

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