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Disfluent Speech and the Psychological Aspect among Bilingual People Who Stutter in Japanese

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Abstract: Introduction: Stuttering is a fluency disorder that involves problems with fluency and the flow of speech. In previous research, results have emerged where the types of disfluency in bilingual PWS and monolingual PWS were different. There has, however, been no research into the language characteristics and psychological characteristics of Japanese-speaking bilingual PWS. The purpose of this study was to investigate the characteristics of disfluency and psychology in Japanese-speaking bilingual PWS.Methods: Five bilingual PWS and have lived in Japan participated in this study. The tasks consisted of 50 phrases of oral reading tasks, 200 phrases of conversational speech samples, and an Overall Assessment of the Speaker's Experience of Stuttering (OASES) translated into Japanese.Results: All of the participants stuttered in every language they spoke, and most of them answered that their stutter varied from one language to another. The disfluency in conversational speech samples showed that there were high frequencies of interjection among the participants. The OASES result showed that most participants had high impact scores in Section 2 (Reactions to stuttering).Discussions: The fact that all participants had stuttering symptoms in all the languages they spoke was consistent with previous research. Interjection was the most frequent disfluency, differing from previous research on Japanese monolingual PWS. This may have some relationship with bilingual PWS having difficulty in the proficiency of the language and in finding the correct words. There were no significant differences in the OASES scores from previous research for monolingual PWS and as such, further research will be needed.

Keywords: bilingal; stuttering; disfluency; Japanese

INTRODUCTION

Stuttering is a fluency disorder that involves problems with fluency and the flow of speech. According to the WHO (ICD-10), stuttering is defined as "speech that is characterized by frequent repetition or prolongation of sounds or syllables or words, or by frequent hesitations or pauses that disrupt the rhythmic flow of speech." The general symptoms seen in stuttering are: (1) Repetition of a sound, part of a word, or one-syllable word (e.g., "c-c-crow"), (2) prolongation of the sound during flow of speech (e.g., ccccccrow"), and (3) blockage of the airflow or voicing in speech (e.g., "…..crow") (Guitar, 2006). These symptoms are also called "stuttering-like disfluencies." However, disfluency in speech occurs for people who do not necessary stutter as well. Disfluency, which can be seen in people who may not stutter, is called normal disfluency (Yairi, 1981). Normal disfluency includes symptoms such as, word and phrase repetition, interjections, incompleteness, revision, breaks, and pauses (Ozawa et al., 2016).

Linguistic and Psychological Characteristics of Bilingual People Who Stutter

No definitive findings regarding causes and treatments have been made for bilingual people who stutter (PWS). Shenker (2004) suggested that, due to the difficulty in untangling the many variables contributing to language use and stuttering, bilingualism and stuttering is possibly a neglected field of research. In the case of bilingual people, since there are many factors that should be taken into consideration (such as environment, culture, religion, and education), just because the treatment was effective in one country, this does not mean that the treatment will be effective for other countries as well.

There are three possibilities for stuttering patterns in bilinguals: (1) Stuttering occurs in one language but not the other; (2) stuttering occurs in both languages with similar speech behavior patterns in each (also known as the "Same Hypothesis"); and (3) stuttering occurs in both languages but varies from one language to the other (also known as the "Difference Hypothesis") (Nwokah, 1988). However, according to previous research, it is far more common that one stutters in both languages, and the possibility that stuttering occurs in one language and not in the other is unlikely (Nwokah, 1988; Van Borsel, Maes, & Foulon, 2001).

Previous studies have found evidence that bilingual PWS and monolingual PWS have different characteristics in disfluency (Lee, Sim & Shin, 2007). When LaSalle and Huffman (2015) analysed disfluency symptoms of Japanese monolingual PWS, relatively few interjections occurred in Japanese monolingual PWS, and the disfluency symptoms that occurred were mainly blocks. On the other hand, Lee, Sim, and Shin (2007) investigated the characteristics of disfluency between Korean-English bilingual and Korean monolingual children, and the result showed that the scores of total disfluency and normal disfluency of the bilinguals were significantly higher than those of the monolinguals, while the most frequent disfluencies were interjections. Lee et al. (2007) concluded that bilingual and monolingual children were quantitatively and qualitatively different in scores and types of disfluency.

Disfluencies in bilingual PWS are affected by not only linguistic factors, but psychological factors as well (Milloy, 1991; Nwokah, 1988; Takizawa, 1994). In Nwokah's study of bilingual PWS in Nigeria, the relationship between negative experiences (verbal and physical) with language and the amount of disfluency in that language was evident. Therefore, it can be stated that research on bilingual stuttering is not only important from a linguistic perspective, but also from a psychological perspective as well.

The Overall Assessment of the Speaker's Experience of Stuttering (OASES; Yaruss & Quesal, 2006) is a questionnaire based on the International Classification of Functioning, Disability, and Health (ICF) model developed by the WHO. It consists of four sections (Section 1: "General information," Section 2: "Reaction to stuttering," Section 3: "Communication in daily situations," and Section 4: "Quality of life"), and the "impact score" for each section as well as "total impact score" can together provide a comprehensive assessment of the overall stuttering experience from the perspectives of individuals who stutter. Sakai, Chu, Mori, and Yaruss (2017) administered the Japanese version of the OASES to monolingual adults who stutter in Japan, finding that Section 2 (Reaction to stuttering) had the highest score of the four sections. The same result was obtained by Yaruss and Quesal (2010), as well as Blumgart, Tran, Yaruss, and Craig (2012) in Australia. There have been studies of the OASES in monolingual PWS, but those in bilingual PWS are scarce. Since it can be assumed that disfluency symptoms in bilingual PWS are affected by not only linguistic factors but also psychological factor as well, it is necessary to evaluate the psychological effect of the stuttering experience and the overall impact it has on bilingual PWS.

Purpose of the Study

When one considers the fact that over 50% of the world's population is estimated to be bilingual (De Bot, 1992) and that about 1% of the world's population stutters (Bloodstein, 1995), there is a strong possibility that a therapist may one day encounter a bilingual PWS. This does not only apply to overseas, for if Japan becomes more globalized and diverse, the number of people from other countries and immigrants will likely increase, which could increase the bilingual population of Japan. Therefore, it can be inferred that research on bilingual PWS in Japan is valuable.

In this study, each participant performed experimental tasks consisting of 50 phrases in an oral reading task and 200 phrases in a conversational speech sample, and completed the Japanese version of the OASES (Sakai et al., 2017). This allowed us to analyse and investigate the disfluency symptoms and psychological aspects of bilingual PWS.

In this research, the first language is referred to as "L1," and the second language as "L2." For participants who speak a third language, it was described as "L3." Bilinguals in this research were defined as "individuals who spoke in two or more languages." They also have to meet one of these two criteria: "individuals that have experience in living abroad for a certain period" or "one of the parents is from an another country" (Miller, 1984: Schäfer, 2008).

METHOD

Participants and Recruitment

Four bilingual PWS (Participants 1, 2, 4, and 5) who have lived in Japan for over 2 years participated in this study. Participant 3 does not live in Japan, but has visited Japan numerous times with his Japanese mother.

Procedure

The tasks were consisted of the reading task, speech task, and questionnaire. The reading and speech tasks were done in Japanese.

Reading task

Each participant completed phrases of the oral reading task. The first author chose an appropriate subject for all participants.

Speech task

We collected 200-300 phrases of a conversational speech sample for 15-20 minutes. Topics for conversational speech were mainly centered upon questions regarding the participants.

Japanese version of the OASES (Sakai et al., 2017)

Different types of OASES, categorized by age, were administered to the participants (OASES-S is for ages 7-12, OASES-T is for ages 13-17, and OASES-A is for ages 18 and older). If the participant had difficulty with a question, the parent was allowed to give support. All versions of the questionnaire were scored on a five-point scale.

Data Analysis

The Standardized Test for Stuttering Second Edition (Ozawa et al., 2016) was used to examine disfluency in the oral reading task and conversational speech sample to determine stuttering-like disfluencies and normal disfluencies. Based on Ozawa et al. (2016), stuttering-like disfluencies were classified as "sound, mora, and syllable repetition" (SR), "part-word repetition" (PWR), "prolongation" (Pr), and "block" (Bl), while normal disfluencies were defined as "word and phrase repetition" (WR), "interjection" (Ij), "incomplete" (Ic), "revision" (Rv), "break" (Br), and "pause" (Pa).

The frequencies of the two types of disfluencies were calculated as follows:

1. Frequency of stuttering-like disfluencies (Occurrence of stuttering-like disfluencies per 100 phrases in speech):
   stuttering-like disfluencies / speech phrases × 100
2. Frequency of normal disfluencies (Occurrence of normal disfluencies per 100 phrases in speech):
   normal disfluencies / speech phrases × 100

Based on the Japanese OASES, by using the impact scores and impact ratings for each of the four categories, we analyzed the psychological effect of stuttering on the everyday lives of participants. Impact scores ranged from 1.0 to 5.0 with impact ratings ranging from "mild" (1.00-1.49), "mild-to-moderate" (1.50-2.24), "moderate" (2.25-2.99), "moderate-to-severe" (3.00-3.74), and "severe" (3.75-5.00).

RESULTS

Profile of Participants

The demographics of Participants 1-5 are shown in Table 1. All participants were male students. All participants have subjectively rated themselves as stuttering in every language they spoke. Apart from Participant 4, the participants answered that their stuttering severity varies from one language to another.

Table 1. Demographics of participants

	Age	Gender	L1	L2	L3	Speech skill in L1[a]	Speech skill in L2[a]	Speech skill in L3[a]	Onset of stuttering	Language with stuttering	Language difference in severity of stuttering
1	11	M	Swedish	Japanese	English	5	10	Below L1/L2	Around 8	L1, L2, L3	Yes L3>L1>L2
2	16	M	Japanese	English	None	10	10	None	Around 13	L1, L2	Yes L2>L1
3	7	M	Japanese	Chinese	English	9	3	9	5:5	L1, L2, L3	Yes L2>L1=L3
4	22	M	Chinese	Japanese	None	9	10	None	8	L1, L2	No
5	8	M	Japanese	English	None	8	9	None	6	L1, L2	Yes L1>L2

[a] Self-evaluation on a scale of 0-10, where higher scores mean better speech skills.

Disfluency Symptoms in the Oral Reading Task and Conversational Speech Sample

The results for disfluency symptoms in the oral reading task are presented in Fig. 1, those for disfluency symptoms in conversational speech samples is presented in Fig. 2, and each participant's results in Fig. 3. Most of the participants had block (Bl) as their most frequent stuttering-like disfluency. Among normal disfluencies, the most frequent was interjection (Ij).

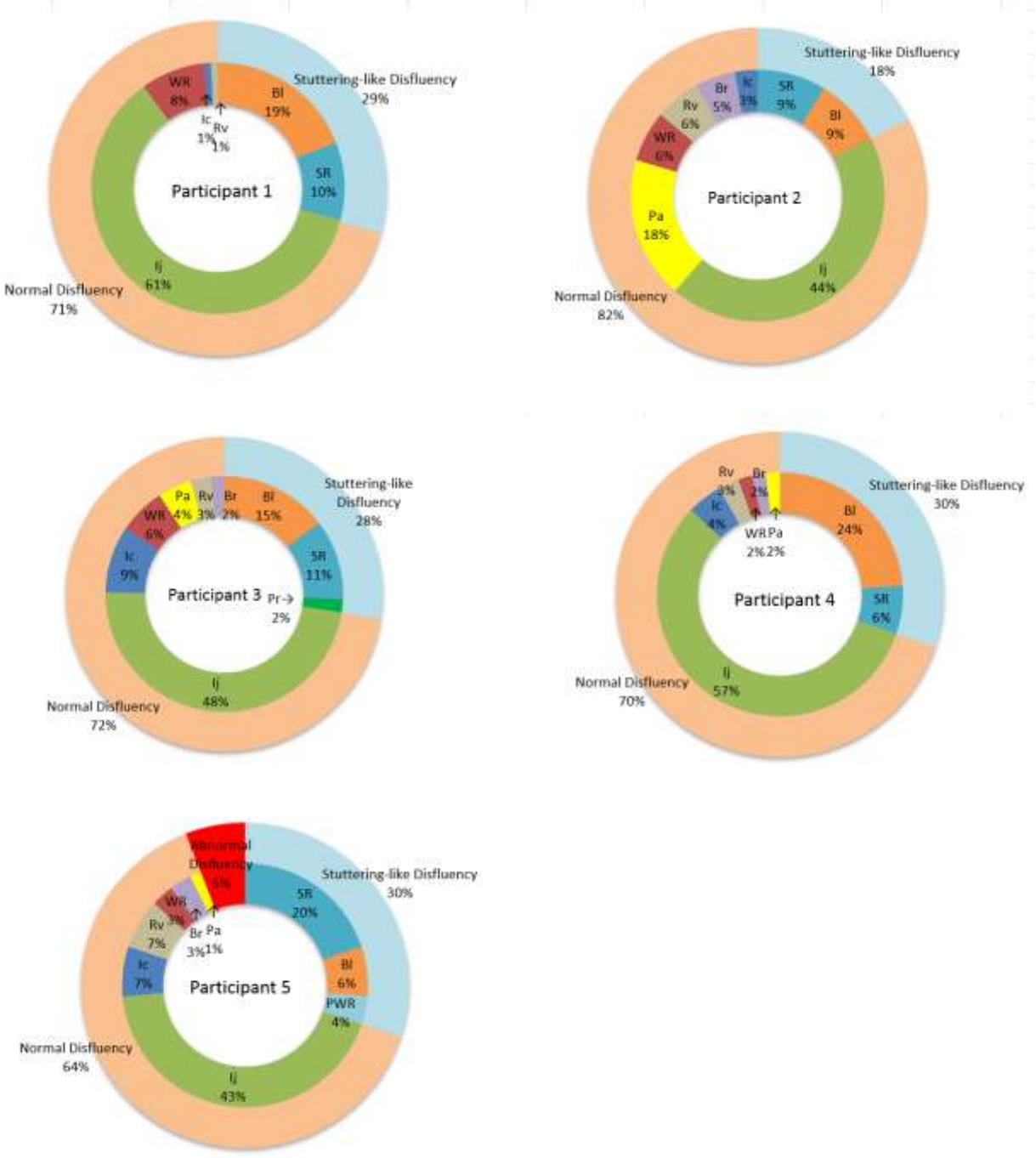

Figure 1. Disfluency symptoms in participants

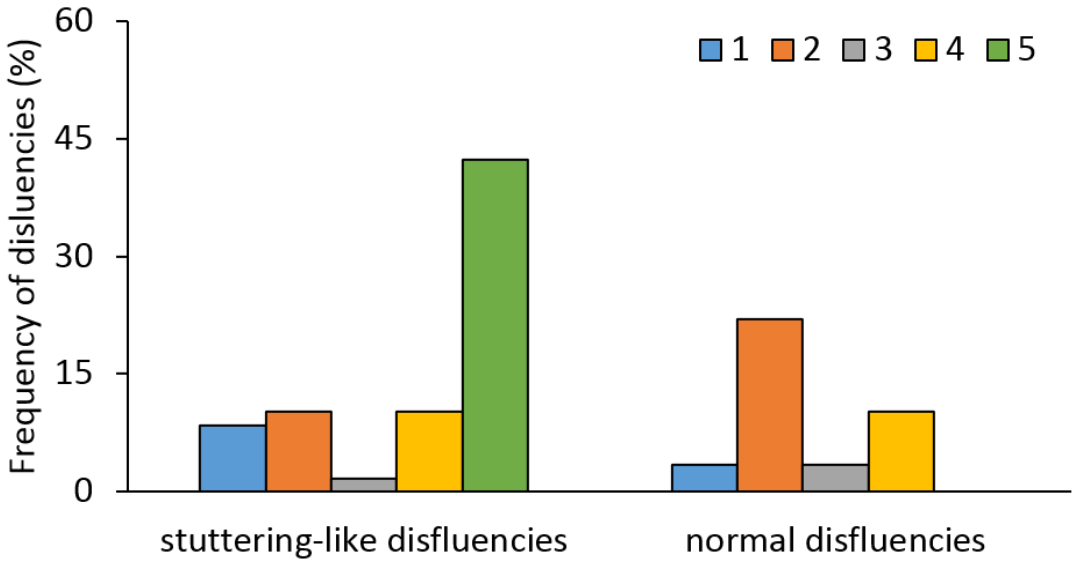

Figure 2. Comparison of stuttering-like disfluencies and normal disfluencies in the reading task

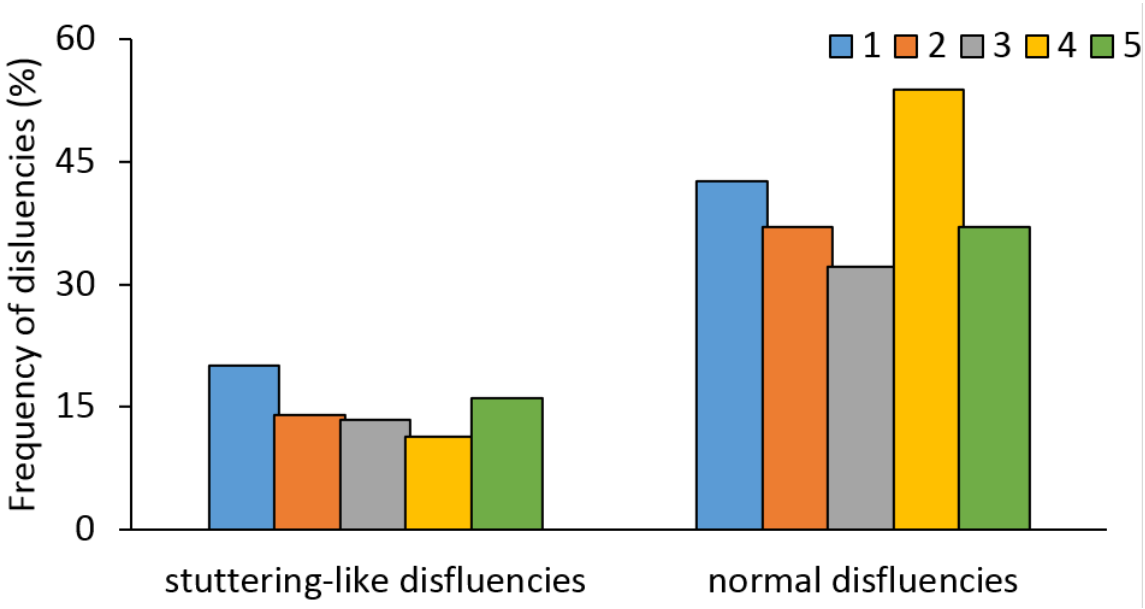

Figure 3. Comparison of stuttering-like disfluencies and normal disfluencies in the speech task

Impact Scores and Impact Ratings for the Japanese OASES by Age.

The results for the OASES are presented in Fig.4 and Table 2. Section 2 (Reaction to stuttering) tended to have the highest impact scores among participants. Apart from Participant 2, who was rated as "moderate to severe," the rest of the participants had the ratings of "moderate."

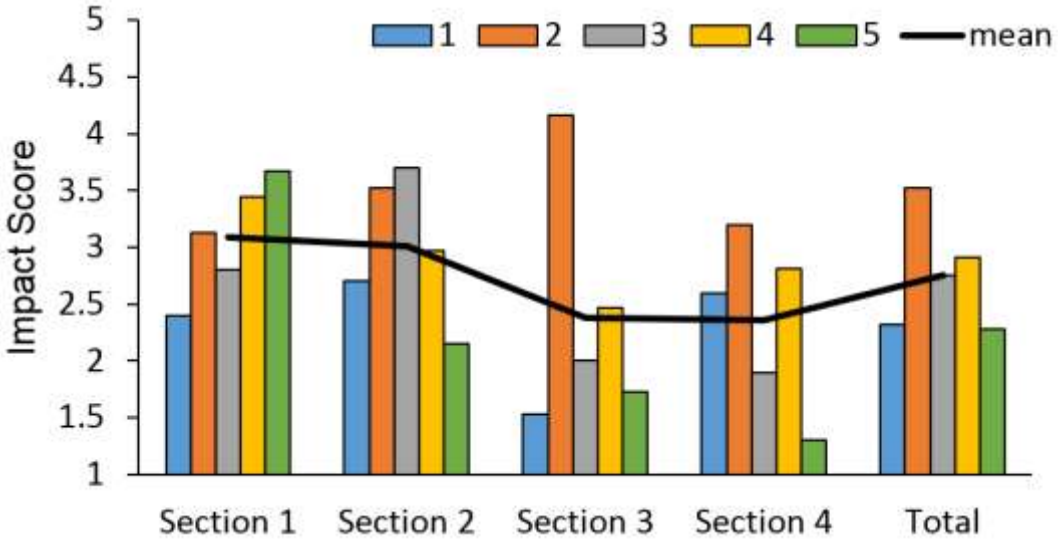

Figure 4. Scores on OASES and the mean

Table 2. Scores on OASES

	Section 1	Section 2	Section 3	Section 4	Total
1[a]	2.40	2.70	1.53	2.60	2.32 (moderate)
2[b]	3.13	3.52	4.16	3.2	3.52 (moderate to severe)
3[a]	2.80	3.70	2.00	1.90	2.75 (moderate)
4[c]	3.44	2.97	2.47	2.81	2.91 (moderate)
5[a]	3.67	2.15	1.73	1.3	2.28 (moderate)

[a] OASES-S-J,[b] OASES-T-J, [c] OASES-A-J

DISCUSSION

In this study,As shown in Table 1, all participants answered that they stutter in every language they spoke. Most previous research on bilingual stuttering shows that bilingual PWS have stuttering symptoms in both (or all) languages (Bernstein Ratner & Benitez, 1985; Bernstein Ratner, Rooney, & MacWhinney, 1996; Goldiamond, 1965; Jankelowitz & Bortz, 1996; Jayaram, 1977; Mysak, 1960; Nwokah, 1988; Scott Trautman & Keller, 2000; Shenker, Conte, Gingras, Courcey, & Polomeno, 1998). Nwokah (1988) concluded that it is unlikely for bilingual PWS to have stuttering symptoms in only one language. The results of this study indicate that Nwokah's (1988) hypothesis also applies for bilingual PWS in Japanese and a foreign language.

Aside from Participant 4, the participants answered that their stuttering severity varies from one language to another. This accords with Nwokah's (1988) "Different Hypothesis" (stuttering occurs in both languages but varies from one language to another). Therefore, it can be assumed that, like many of the previous studies on bilingual PWS, the "Difference Hypothesis" applies to PWS bilingual in Japanese and a foreign language. There have been few cases found in previous research (Lebrun, Bijleveld, & Rousseau, 1990; Nwokah, 1988; Van

Borsel, Maes, & Foulon, 2001; Van Riper, 1971) in which the "Same Hypothesis" (stuttering occurrs in both languages with similar speech behavior patterns in each) applies, and Participant 4 is likely to be one such case.

Of the disfluencies in the conversational speech sample, interjection (Ij) was the most frequent. This result was differs from LaSalle and Huffman's (2015) finding that monolingual PWS in Japan tended to have a low frequency of interjections. It can be assumed that the disfluency tendencies in Japanese-speaking monolingual PWS and Japanese-speaking bilingual PWS are different.

The result for the disfluency symptoms in the conversational speech sample was similar to the findings of Lee et al. (2007) regarding the characteristics of disfluency between Korean-English bilingual and Korean monolingual children. Lee et al. (2007) stated that more normal disfluencies occurred in bilinguals than monolinguals, and the most frequent disfluency type was interjections, which Lee et al. (2007) stated might be due to bilingual PWS having difficulty in searching for the appropriate word. In our study, bilinguals answered that they had more disfluencies in their non-dominant language, which matches Jankelowitz and Bortz's (1996) finding and supports Lee et al.'s (2007) result that there is a high possibility of a correlation between language proficiency and disfluency.

When comparing the disfluencies in the oral reading task and conversational speech sample, a high percentage of normal disfluencies (especially interjections) were found in the conversational speech sample. The characteristics of the disfluency symptoms in the oral reading task and conversational speech samples might be due to the effect of cognitive overload. Since the oral reading task requires the participant to read some sentences that have already been prepared, it can be assumed that there is little stress leading to cognitive overload. However, in the conversational speech sample, one is given a topic to organize their thoughts while having to communicate with others, which is likely to cause more cognitive stress than the oral reading task. We speculate that this is related to the frequency of interjection.

The tendency for a high score on Section 2 (Reaction to stuttering) ("General information" from Section 1 also showed a tendency for high scores in this study) among all sections of the OASES was similar to the results of Sakai et al. (2017), which administered the OASES to Japanese monolingual PWS. Since many previous studies also found Section 2 to have the highest score of all sections of the OASES, it can be assumed that psychological factors such as how one feels about one's own stuttering are common aspects of both bilingual and monolingual PWS.

Limitations and Further Implications

This study had only 5 participants. One of the main reasons that research on bilingual stuttering is difficult is the difficulty in gathering participants, which was also the case with this study. Since there are differences in environment, culture, religion, and education in the field of research in linguistics, it is difficult to generalize the result of this study with so few participants.

In addition, as this research did not specify the non-Japanese language, it is impossible to compare the disfluency symptoms in the non-Japanese languages. For example, the disfluencies in English, Chinese, and Swedish cannot be compared.

In this research, no monolingual PWS was recruited as a control. Therefore, in the future, it will be necessary to clarify the differences between the disfluencies in Japanese-speaking bilingual PWS and those in Japanese monolingual PWS by analyzing the characteristics of disfluency symptoms in both Japanese speaking bilingual PWS and Japanese monolingual PWS.

CONCLUSSION

In this study, we investigated the speech disfluencies and psychological aspects of Japanese-speaking bilingual PWS. Interjection was the most frequent disfluency in conversational speech sample. This was different from the disfluencies of Japanese monolingual PWS, but similar to those of bilingual PWS in other languages. Just as in previous studies, Section 2 of the OASES tended to have the highest scores among participants. On the other hand, no particular characteristic differentiating bilingual PWS from monolingual PWS was evident from the result of OASES: thus, further research is needed.

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