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Stuttering behavior in Kurdish-Persian bilingual speakers

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Abstract

The present study was conducted to investigate the dissociation between some linguistic variables including the Mean Length of Utterance (MLU) and Type Token Ratio (TTR) and stuttering severity in both languages of Kurdish-Persian bilingual people who stutter (PWS). The connected speech of 31 PWS (age ranges: 9 to 13 years old) speaking in their first (Kurdish) and second (Persian) languages were collected. The results indicate that there is a significant correlation between stuttering severities in both languages. Moreover, it seems that MLU in Kurdish could predict the stuttering occurrence in the Persian language.

Keywords: Stuttering; bilingualism; syntax complexity

1. Introduction

There are some controversies regarding the nature of stuttering behaviors in bilingual people who stutter (PWS). Many studies have been conducted to evaluate the effect of linguistic factors on manifestation and severity of stuttering in monolinguals. The relationship between syntactic complexity and severity of stuttering in monolinguals has been reported by many researchers (Bloodstein, 2006). Utterance length and grammatical complexity were shown to effect on disfluency in monolingual children who stutter (Zackheim & Conture, 2003). However, little is known about the effect of utterance length and grammatical complexity on stuttering occurrence in the first and second languages of bilinguals PWS.

One well-cited assertion in the literature is that disfluencies tend to increase with increased grammatical complexity and utterance length (Ratner & Sih, 1987; Gaines, Runyan, & Meyers, 1991; Logan & Conture, 1995; Yaruss, 1997; Melnick & Conture, 2000; Sawyer, Chon, & Ambrose, 2008; Richels, Buhr, Conture & Ntourou, 2010). Robb, Sargent, and O'Beirne (2009) in a study conducted on 10 adults who stutter, found out that the utterances containing disfluency clusters were significantly longer than fluent utterances. In an investigation of the effect of talking above or below their mean length of utterance on disfluencies, Zackheim and Conture (2003) revealed that for children who stutter, higher percentages of Stuttering-Like Disfluencies occurred on utterances that were both longer and more grammatically complex. These findings were refuted in a study conducted by

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Lattermann, Shenker, & Thordardottir (2005). They reported that their participant showed an increase in MLU and linguistic complexity simultaneous to a reduction in severity of stuttering during the Lidcombe Program.

The aforementioned investigations did not recruit the bilingual PWS, and to the best of our knowledge little is known about the effect of linguistic variables on manifestation and severity of disfluencies in bilingual PWS. It seems that the influence of language proficiency on severity of stuttering was investigated in different studies. Several studies indicated that bilingual PWS are more disfluent in non-dominant language compared to dominant one (Lim, Lincoln, Chan & Onslow, 2008; Scott Trautman & Killer, 2000; Jankelowitz & Bortz, 1996) while some other studies reported conflicting results and showed that their participants were more stuttered on dominant language (Nwokah, 1988). Moreover, this is not well revealed whether the severity of stuttering is influenced equally by MLU and syntactic complexity in the first and/or second languages of bilingual PWS.

Iran is a linguistically and culturally diverse country. Persian (Farsi) is the dominant language and most Iranians speak and understand Persian well. The other languages spoken include Luri, Gilaki, Mazandarani, Azeri (Turkic), Kurdish, Balochi (Baluchi), Arabic, Armenian and Assyrian (Bakhtiar & Packman, 2009). To the best of our knowledge there is not any reported study investigating the relation of language variables and stuttering severity in bilingual people. Therefore, the present study was conducted to examine the correlation between linguistic variables (i.e., mean length of utterance (MLU) and lexical diversity) and stuttering severity in native and second languages of bilingual Kurdish-Persian PWS. Also in this study, we sought to evaluate variables that probably predict the severity of stuttering in each language.

2. Method

The participants were 31 Kurdish-Persian PWS including 15 females and 16 males ranging in age from 9 to 13 years old (*M*: 10.74, *SD*: 0.965). Kurdish was the native language of participants and they learn Persian (second language) from 6 years old at school as a consecutive bilingual. They were recruited from the wait list of Kermanshah speech therapy clinics. The stuttering was determined by the teacher and parental reports and analysing the connected speech samples in both languages of participants using Stuttering Like Disfluencies (SLD) (Ambrose & Yairi, 1999) by an experienced speech and language pathologist. Then, 10 minute spontaneous speech samples in each language were recorded during an informal interaction between PWS and their parents or clinician. The speech samples were transcribed in both languages and the severity of stuttering was determined by a Kurdish-Persian speech-language pathologist using SLD scale. Following this Mean Length Utterance (MLU) and Tape Token Ratio (TTR) in both language calculated in spontaneous speech samples. MLU was calculated by dividing the number of morphemes by the number of utterances in both languages. TTR which is a criterion for lexical diversity was calculated by dividing the number of unrepeated content words by total number of words (both content and function). The informed consent was obtained from all participants and their parents.

For data analysis the correlation between stuttering severity and language variables including MLU and lexical diversity were calculated in both Kurdish and Persian speech samples, using Pearson correlation coefficient. In addition, stepwise multiple regression was taken to reveal factors that predict severity of stuttering in each language.

3. Results

According to the initial evaluation, all of the participants stuttered in both languages. Table 1 shows that MLU in Persian was higher than Kurdish for 23 participants, while one individual showed a longer MLU in Kurdish and 7 participants did not show a noticeable difference between their MLU on both languages.

Table 1. Distribution of qualitative variables

Variables		Frequency	Percent
Gender	Male	16	51.6
	Female	15	48.4
MLU	Kurdish	1	3.2
dominance	Persian	23	74.2
	Equal	7	22.6
Hand	Right	30	96.8
dominance	Left	1	3.2
Total		31	100

We compared MLU, TTR and severity of stuttering between two languages and found that Persian MLU was higher than Kurdish significantly. The results showed that two languages were not influenced equally by the stuttering and it was found that severity of stuttering in Kurdish was significantly lower than Persian language. However, TTR did not show any noticeable lexical difference between the first and second language languages (Table 2).

Table 2. Statistical comparison of severity of stuttering, MLU and TTR between Kurdish and Persian

Variables	*Mean*	*SD*	*p* value
Severity of stuttering in Kurdish	21.19	21.236	0.000
Severity of stuttering in Persian	25.90	21.671	
Kurdish MLU	4.0407	0.53439	0.000
Persian MLU	5.1449	1.06656	
Kurdish TTR	0.6491	0.05855	0.773
Persian TTR	0.4732	0.07828	

According to the present data, the severity of stuttering in Persian predicts the severity of stuttering in Kurdish with R^2 = 0.914 (table 3). When the severity of stuttering in Persian omitted, the MLU of Kurdish predicts the severity of stuttering in Kurdish with R^2 = 0.428 (table 3). This result was not seen between the Persian MLU and stuttering severity.

Table 3. Results of multiple regression by stepwise method for factors predict Kurdish severity of stuttering

Model		Unstandardized Coefficients (β)	Standardized Coefficient	*p* value
In presence of Persian	Constant	-3.071		0.097
severity of stuttering	Persian Severity of stuttering	0.937	0.956	0.000
In absence of Persian	Constant	-47.507		0.091
severity of stuttering	Kurdish MLU	17.002	0.428	0.016

Other analyses indicate that the severity of stuttering in Kurdish predicts the severity of stuttering in Persian with R^2 = 0.956 (table 4). After omission of stuttering severity in Kurdish, the only predictor of stuttering severity in Persian is Kurdish MLU with R^2 = 0.436 (table 4). The Persian MLU has no predictive role for stuttering severity in Persian and Kurdish. Also TTR has no predictive role for severity of stuttering in Kurdish and Persian.

Table 4. Results of multiple regression by stepwise method for factors predict Persian severity of stuttering

Model		Unstandardized Coefficients (β)	Standardized Coefficient	*p* value
In presence of Kurdish severity of stuttering	Constant	5.229		0.004
	Kurdish Severity of stuttering	0.976	0.956	0.000
In absence of Kurdish severity of stuttering	Constant	-50.005		0.076
	Kurdish MLU	18.786	0.463	0.009

Pearson correlation showed a positive correlation between stuttering severity in both languages. The Kurdish MLU has direct correlation with severity of stuttering in two languages. Other variables have no direct correlation with stuttering severity in both languages (table 5).

Table 5. Results of correlation between variables

Variables		stuttering severity in Kurdish	stuttering severity in Persian
stuttering severity in Kurdish	Pearson Correlation	1	.956(**)
	Sig. (2-tailed)	.	.000
stuttering severity in Persian	Pearson Correlation	.956(**)	1
	Sig. (2-tailed)	.000	.
Kurdish MLU	Pearson Correlation	.428(*)	.463(**)
	Sig. (2-tailed)	.016	.009
Persian MLU	Pearson Correlation	.321	.243
	Sig. (2-tailed)	.078	.188
Kurdish TTR	Pearson Correlation	-.032	.023
	Sig. (2-tailed)	.863	.904
Persian TTR	Pearson Correlation	-.187	-.113
	Sig. (2-tailed)	.314	.545

Comparison of severity of stuttering in both languages according to sex indicates that severity of stuttering in male was higher than female in both languages (figure 1).

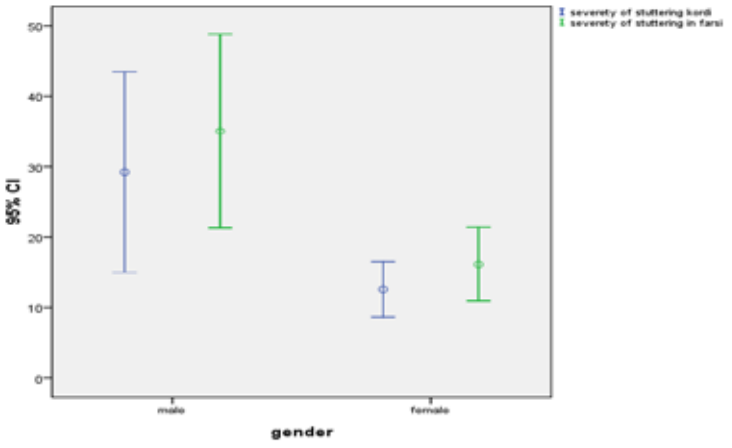

Figure 1. Comparison of stuttering severity in both languages according to gender

4. Discussion

The purpose of the study was to examine the correlation between linguistic variables (MLU & TTR) and stuttering severity in Kurdish–Persian bilinguals who stutter, and reveal predictor variables on stuttering severity in each language.

According to the result of the study, both languages were influenced by stuttering non-equivalently with more severe stuttering on second language (Persian). It shall be noted here that all of the participants were able to read and write in Persian without any orthographic knowledge in Kurdish language. Perhaps, this ability could have an important role on increasing language complexities (including MLU and TTR) in Persian and subsequently more stuttering severity in this language (second language) compared to Kurdish as the first language. This result was inconsistent with previous investigations (Melnick & Conture, 2000; Robb et al., 2009) that reported their participants were more likely to stutter on longer or more complex sentences.

Another finding of the study indicated that the severity of stuttering in one language is a good predictor of stuttering severity in another language. In other words, when disfluencies increase in one language of bilingual PWS, disruptions in another language are expected to be increased equally. When the role of severity of stuttering in one language was omitted, the Kurdish MLU predicts the severity of stuttering in this language. This findings are in agreement with Zackheim and Conture (2003), Ratner and Sih (1987), Gaines et al., (1991), Logan and Conture (1995), Yaruss (1997), Sawyer et al., (2008), Melnick and Conture, (2000), Robb et al., (2009) and Richels et al., (2010). All of those studies were conducted on monolingual PWS, and the results of the present study in the native language (Kurdish) confirm their findings. But, our findings in the second language (Persian) were not consistent with theirs. However, we proposed that it might be partially related to the linguistic features of the Farsi language compared to Kurdish when calculating MLU on the basis of the number of morphemes.

We suggest that further studies are needed to investigate other linguistic factors, including syntactic complexity on stuttering occurrence in bilingual Kurdish-Persian PWS.

References

Ambrose, N. G., & Yairi, E. (1999). Normative disfluency data for early childhood stuttering. *Journal of Speech, Language and Hearing Research, 42,* 895-909.

Bakhtiar, M., & Packman, A. (2009). Intervention with the Lidcombe program for a bilingual school age child who stutters in Iran. *Folia Phoniatrica et Logopaedica, 61,* 300-304.

Bloodstein, O. (2006). Some empirical observations about early stuttering: A possible link to language development. *Journal of Communication Disorders, 39,* 185-191.

Gaines, N. D., Runyan, C. M., & Meyers, S. C. (1991). A comparison of young stutterers' fluent versus stuttered utterances on measures of length and complexity. *Journal of Speech, Language, and Hearing Research, 34,* 37-42.

Jankelowitz, D. L., & Bortz, M. A. (1996). The interaction of bilingualism and stuttering in an adult. *Journal of Communication Disorders, 29,* 223-234.

Lattermann, C., Shenker, R. C., & Thordardottir, E. (2005). Progression of language complexity during treatment with the Lidcombe program for early stuttering intervention. *American Journal of Speech-Language Pathology, 14,* 242-253.

Lim, V. P., Lincoln, M., Chan, Y. H., & Onslow, M. (2008). Stuttering in English-Mandarin bilingual speakers: The influence of language dominance on stuttering severity. *Journal of Speech, Language and Hearing Research, 51,* 1522-1537.

Logan, K., & Conture, E. (1995). Length, grammatical complexity, and rate differences in stuttered and fluent conversational utterances of children who stutter. *Journal of Fluency Disorders, 20,* 35-61.

Melnick, K. S., & Conture, E. G. (2000). Relationship of length and grammatical complexity and non-systematic speech errors and stuttering or children who stutter. *Journal of Fluency Disorders, 25,* 21-45.

Nwokah, E. E. (1988). The imbalance of stuttering behaviors in bilingual speakers. *Journal of Fluency Disorders, 13,* 357-373.

Ratner, N. B., & Sih, C. C. (1978). Effects of gradual increases in sentence length and complexity on children's dysfluency. *Journal of Speech Hearing Disorders, 52,* 278-287.

Richels, C., Buhr, A., Conture, E., & Ntourou, K. (2010). Utterance complexity and stuttering on function words in preschool-age children who stutter. *Journal of Fluency Disorders, 35,* 314-331.

Robb, M. P., Sargent, A., & O'Beirne, G. A. (2009). Characteristics of disfluency clusters in adults who stutter. *Logoped Phoniatr Vocol, 34,* 36-42.

Sawyer, J., Chon, H., & Ambrose, N. G. (2008). Influences of rate, length, and complexity on speech disfluency in a single-speech sample in preschool children who stutter. *Journal of Fluency Disorders, 33,* 220-240.

Scott Trautman, L., & Keller, K. (2000). *Bilingual intervention for stuttering: A case in point*. Paper presented at the ASHA annual convention, Washington, DC, November, 16-19.

Yaruss, J. S. (1997). Utterance timing and childhood stuttering. *Journal of Fluency Disorders, 22,* 263-286

Zackheim, C. T., & Conture, E. G. (2003). Childhood stuttering and speech disfluencies in relation to children's mean length of utterance: A preliminary study. *Journal of Fluency Disorders, 28,* 115-141.