JSLHD 2021. Vol. 30, No. 1. 021-029
ISSN 1226-587X / eISSN 2671-7158
Journal of Speech-Language & Hearing Disorders 언어치료연구

ORIGINAL ARTICLE
http://dx.doi.org/10.15724/jslhd.2021.30.1.021
http://jslhd.org/

Effects of Disfluency Monitoring Conditions in Adults Who Stutter

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Purpose: Monitoring is an essential factor in improving the accuracy of spoken language output. Monitoring disfluency can be done by others or by oneself. The purpose of this study was to investigate whether there is a difference in the frequency of disfluency according to the monitoring conditions mentioned.
Methods: The subjects of this study were 21 stuttering adults who speak under neutral (non-monitoring), self-monitoring, and second-party monitoring conditions. The differences were compared by measuring the syllable rate and speech rate as normal disfluency (ND), abnormal disfluency (AD), and total disfluency (TD). This study verified whether there was a correlation between frequency or speech rate under non-monitoring conditions and other monitoring conditions.
Results: In the self-monitoring condition, the disfluency decreased overall, but was not statistically significant. ND and TD were found to decrease in self-monitoring conditions. Second, in the second-party monitoring condition, disfluency decreased, while TD decreased statistically. It was found that ND, TD, and speech rate decreased in the other monitoring conditions. Third, AD was statistically significantly more decreased in second-party monitoring conditions than in self-monitoring conditions. Fourth, there was a significant negative correlation between the change in TD and speech rate in the second-party monitoring condition.
Discussion: In the stuttering monitoring condition, disfluency was decreased, but it was difficult to find the same tendency in the whole stuttering group. Since the effect of oral monitoring may vary from subject to subject, it can be used as a basis for establishing an appropriate intervention method for the subject according to the subject's monitoring response characteristics.

Keywords: Self-monitoring stuttering, monitoring stuttering with others, attention effect, contingent stimulation effect

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Received : December 31, 2020
Revision revised : January 19, 2021
Accepted : January 29, 2021

This work was supported by research funds from Kosin University (2019).

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Ⅰ. Introduction

Persons who stutter speak very fluently in some situations, and in some situations, their stuttering becomes very severe. In general, stuttering tends to increase when communication pressure is felt or in situations where stuttering is expected (Bloodstein, 1995). Conversely, stuttering tends to decrease when a person speaks slowly or softly, speaks with others simultaneously, speaks to the beat, or speaks while whispering. Furthermore, stuttering may increase or decrease depending on the contingent stimulation given after the stuttering event. There are reinforcement factors that increase stuttering, and there are punishment factors that reduce stuttering. Stuttering treatments are sometimes performed using stuttering reduction upon presenting a contingent stimulus.

When punishments such as loud noise, electric shock, blame, time-out, and response cost were presented as stuttering consequences, stuttering was reduced. Stuttering decreased even when verbal punishment, such as verbal "stop," was provided whenever stuttering appeared. It was found that stuttering was reduced even when a neutral or compensatory stimulus was presented instead of a stuttering punishment (Cooper & Cooper, 1993; Prins & Hubbard, 1988).

In addition to feedback from others concerning stuttering, stuttering decreased even when the people who stutter (PWS) were asked to count, record, or use the time-out by themselves whenever they stuttered (James, 1981, 1983). Prins and Hubbard (1988) reported that the stuttering decreased significantly at the time-out, and that this reduction was transferred to an unmediated speech situation, and that the effect persisted.

As a preliminary study on self-monitoring conditions, La Croix (1973) made the stutterer count with his fingers whenever he stuttered, Mowrer (1978) gave himself the colloquial punishment of "stop" whenever he stuttered, Hanson (1978) and James (1981b) recorded stuttering by themselves, and Martin and Haroldson (1982) and James (1983) reported that stuttering was reduced when a time-out was carried out by themselves. James (1981b) reported that 25 subjects experienced reduced levels of disfluency when self-monitoring, whereas eight subjects showed an increase in disfluency. It appears, then, that stuttering may represent a special case and that caution must be exercised when generalizing about the effects of self-monitoring of stuttering.

More studies have been conducted on the reduction of disfluency due to second-party monitoring, and these were the types of studies on response contingent stimuli or response contingent time-out (Bloodstein, 1995; Ingham, 1984; Onslow et al., 1997; Prins & Hubbard, 1988). These studies showed that stuttering was significantly reduced or eliminated by presenting a contingent stimulus for stuttering. However, James (1981a) suggested that the responsiveness to time-out varies from person to person. In particular, time-out was said to have little effect on severe stuttering. Therefore, James et al. (1989) divided the group with a high response to time-out due to stuttering and inadequate response among PWS. It was concluded that it was not universally useful for all PWS. In addition, a minority of adults and adolescents who stutter showed a less or inconsistent reduction in stuttering under response consequence (Ingham, 1984; Onslow et al., 1997; Onslow et al., 2001).

The effect of the contingent stimuli given to a stuttering event was to be explained through operational conditioning. However, it is challenging to explain the stuttering reduction in the aversive stimulus and the 'neutral' or 'compensatory' stimulus. Other researchers have tried to explain this phenomenon through the speaker's awareness. There have been many studies on the effect of self-awareness in verbal learning. It was explained that when monitoring for disfluency is performed, awareness is increased, and, as a result, the verbal output is improved.

There is monitoring by others, which is performed by others' contingent stimuli, and there is also self-monitoring that monitors one's own disfluency.

Another explanation is that when the consequence is presented, it is attributed to the change in the speech production (Ingham, 1990; Martin & Ingham, 1973; Onslow, 1992). Martin and Ingham (1973) also suggested that specific speech production changes would accompany the effect of response-consequence to stuttering. In other words, during the timeout, the speaker uses some unusual spoken patterns and, as a result, stuttering is reduced. In the case of one PWS speaking under the time-out condition, it was confirmed that the speech rate and sentence length were slightly reduced. In a study by Onslow et al. (1997), the vowel duration variability during a child's time-out was reduced.

The following research questions were set up to determine the effect of the monitoring conditions for a speech on the disfluency of PWS.

First, are there any differences in the frequency of disfluency and speech rate under self-monitoring?

Second, are there any differences in the frequency of disfluency and speech rate under second-party monitoring?

Third, are there any differences in the frequency of disfluency and speech rate according to the group's monitoring conditions based on the severity of stuttering?

Fourth, is there a correlation between the change in the frequency of disfluency and the change in the speech rate under the monitoring conditions?

II. Methods

1. Subjects

This study was conducted on 21 adults who stutter in Seoul/Gyeonggi, Busan/Gyeongnam, and Daegu/Gyeongbuk. The mean age and gender distribution of the subjects are presented in Table 1. Re-analysis was conducted using the research data of Kim (2008).

Table 1. Characteristics of the research subject

Category		*n* (%)	Age *M* (*SD*)
Gender	Male	17 (80.95)	31.41 (8.12)
	Female	4 (19.05)	28.75 (4.11)
Severity of stuttering	Mild	5 (23.81)	-
	Moderate	9 (42.86)	-
	Severe	7 (33.33)	-
Total		21 (100)	30.90 (7.51)

Subjects were adults who began stuttering in childhood and were selected as those diagnosed with mild to severe stuttering through the Paradise-Fluency Assessment (P-FA, Shim et al., 2004). As a result of the Frankfurt Attention Inventory (FAIR, Oh, 2002), those with integrated attention less than a Stenaine score of 2 or less (percentile score of 11 percentile or less) were excluded from the study.

2. Research Procedures

1) Topic selection

To select the speaking topic to be used in the baseline speaking and experimental conditions, 20 speaking topics prepared are presented. In addition to the 20 suggested topics, subjects were allowed to add the topic they wanted. They were likewise asked to rate the difficulty of content composition and familiarity on the subject using a 5-point scale for each subject. Based on the subject's evaluation results, six topics, each with easy difficulty and high familiarity, were selected.

2) Baseline setting (non-monitoring condition)

The baseline setting is a procedure to determine the criteria for comparison with each experimental condition in this study. Each subject was asked to speak for at least 2 minutes on the selected speech topic. A timer set to 2 minutes was placed where the subject could see it. If the subject's speech ended before 2 minutes, the researcher pointed to the timer and urged him to speak more. All speeches of the subject were recorded. This baseline procedure was conducted twice.

3) Monitoring experiment procedure

Under the monitoring conditions, the experiment was carried out under the self-monitoring condition once and the other person monitoring condition once, respectively.

(1) Self-monitoring condition

Using a computer, run the stutter monitoring-visual feedback program. When a subject press the space bar, the screen turns red for 0.1 seconds and then disappears. Moreover, the number in the middle of the screen is counted. In this way, subjects were instructed to speak while monitoring stuttering. All samples of the subjects' speech were recorded, and a simple questionnaire was conducted after speaking to see if there were any difficulties compared to the baseline.

(2) Second-party monitoring condition

The same program as the self-monitoring condition was applied in the second-party monitoring conditions. When subjects stuttered, the researcher clicked the wireless mouse. A red color appears and disappears on the subject's computer screen, and a number is counted. Subjects spoke alone under the condition that the researcher monitored the stuttering and gave visual feedback. While speaking, simple questions after speaking were asked and recorded.

3. Analysis

1) Speech disfluency analysis

A sample of the subject's speech sample (two in the baseline and two in the monitoring speech, or all four speech samples) were played to dictate the PWS's utterances, and normal and abnormal disfluency were analyzed.

The number of normal disfluency syllables per 100 syllables was calculated. The classification of normal disfluency (ND) followed the Paradise Fluency Assessment criteria (Sim et al., 2004). The number of abnormal disfluency (AD) syllables per 100 syllables was calculated (Sim et al., 2004). Meanwhile, the total disfluency (TD) rate is the sum of the number of syllables with normal and abnormal disfluency per 100 syllables.

2) Statistics processing

A paired *t*-test was performed to determine whether there is a difference among ND, AD, TD and speech rate in non-monitoring, self-monitoring, and second-party monitoring conditions. Correlation analysis was conducted to ascertain whether there is any relationship between the baseline level and the amount of change caused by self-monitoring and second-party monitoring.

Furthermore, a paired *t*-test was conducted to establish whether there is a difference in the amount of change in self-monitoring and second-party monitoring, while a correlation analysis was performed to find out whether there is a relationship between the change in disfluency and the change in speech rate.

4. Reliability

To determine the reliability between testers, the reliability of the analysis of stuttering and speech rate between one person with a certificate of the first class of speech therapist and the present researcher was obtained. Each speech sample corresponding to 10% of the total speech data was analyzed. In terms of inter-tester reliability, the frequency of normal disfluency was 96%, the frequency of abnormal disfluency was 94%, and the number of syllables spoken was 97%.

Ⅲ. Results

1. Changes in Disfluency in Self-Monitoring Conditions

The incidence of disfluency in PWSs under self-monitoring condition was compared with the frequency of disfluency in the conditions without monitoring. In the non-monitoring and self-monitoring conditions, the mean and standard deviations of ND, AD, TD, and speech rate, as well as the results of the *t*-test were presented (Table 2). The mean frequency of ND, AD, TD, and speech rate decreased under self-monitoring conditions, but was not statistically significant.

Table 2. The paired *t*-test between non-monitoring and self-monitoring conditions

	Non-monitoring	Self-monitoring	*t*
ND	3.40 (2.00)	3.05 (1.74)	.727
AD	3.68 (2.87)	3.00 (2.72)	1.918
TD	6.83 (3.81)	5.85 (3.49)	1.400
Speech rate	204.07 (46.23)	202.19 (47.64)	.249

Note. The values means *M* (*SD*). ND=normal disfluency; AD=abnormal disfluency; TD=total disfluency.

As a result of the correlation analysis between the disfluency frequency and speech rate in the non-monitoring condition and the amount of change in the self-monitoring condition, the frequency of ND and TD in the non-monitoring condition, and the amount of change of ND and TD in the self-monitoring condition were statistically significant negative correlation. In other words, the higher the frequency of ND and TD was in the non-monitoring condition, the lower the frequency was in the self-monitoring condition. The higher the AD frequency was in the non-monitoring condition, the higher the frequency was in the self-monitoring condition, but it was not statistically significant. In the case of speech rate, the faster the speech rate under the non-monitoring condition, the slower the speech rate under the self-monitoring condition, but it was not statistically significant (Table 3, Figure 1).

Table 3. Correlation between the value under non-monitoring conditions and the amount of change under self-monitoring conditions

Correlation analysis	Amount of change in the self-monitoring condition			
	ND	AD	TD	Speech rate
Level of non-monitoring condition	-.675** (.001)	0.143 (.537)	-.518* (.016)	-0.333 (.140)

Note. The values are Pearson correlation coefficient *r* (*p*). ND=normal disfluency; AD=abnormal disfluency; TD=total disfluency.
*$p<.05$, **$p<.01$

2. Changes in Disfluency in Second-Party Monitoring Conditions

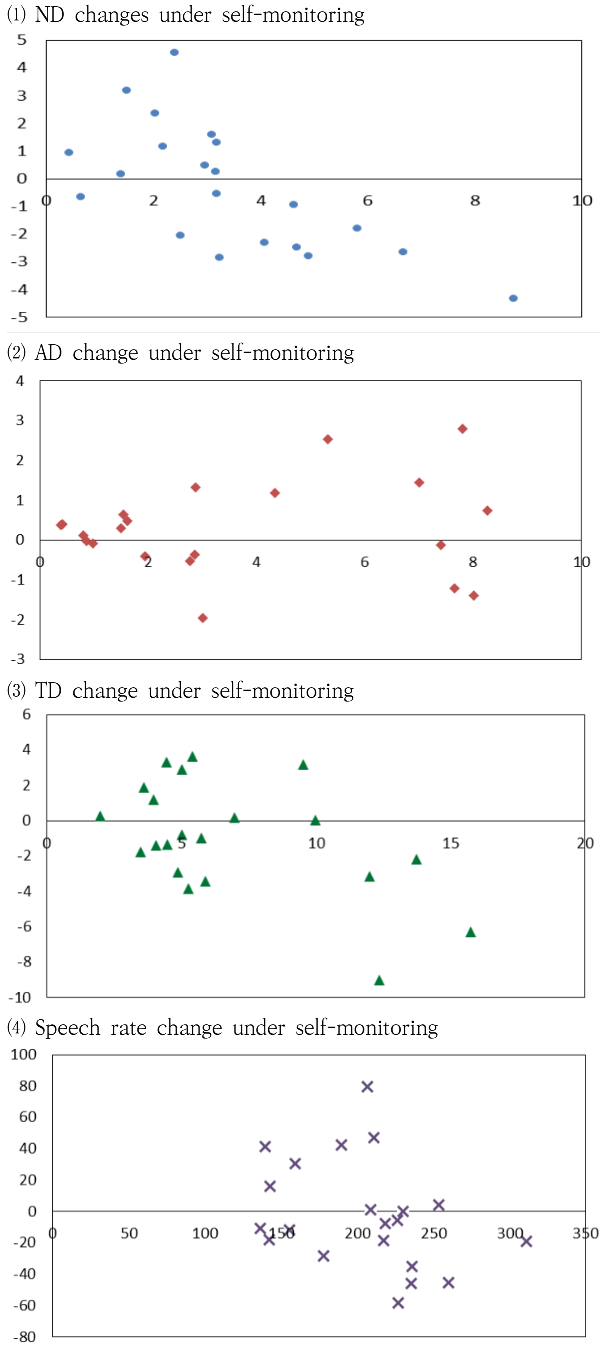
The incidence of disfluency in PWSs under second-party monitoring conditions was compared with the frequency of disfluency in the conditions without monitoring. In the non-monitoring and second-party monitoring conditions, the mean and standard deviations of ND, AD, TD, and speech rate, as well as the results of the *t*-test, were presented (Table 4). The mean frequency of ND, AD, and TD decreased under second-party monitoring conditions; on the other hand, the speech rate increased. Among them, only the frequency of TD decreased statistically significantly in the second-party monitoring condition.

Table 4. The paired *t*-test between nonf-monitoring and second-party monitoring conditions

	Non-monitoring	Second-party monitoring	*t*
ND	3.40 (2.00)	2.98 (1.75)	1.146
AD	3.68 (2.87)	2.90 (2.43)	1.631
TD	6.83 (3.81)	5.50 (2.61)	2.194*
Speech rate	204.07 (46.23)	213.57 (40.30)	-1.134

Note. ND=normal disfluency; AD=abnormal disfluency; TD=total disfluency.
*$p<.05$

As a result of the correlation analysis between the disfluency frequency and speech rate in the non-monitoring condition and the amount of change in the self-monitoring condition, the frequency of ND and TD in the non-monitoring condition and the amount of change of ND and TD in the second-party monitoring condition were statistically significant negative correlation. In other words, the higher the frequency of ND and TD was in the non-monitoring condition, the lower the frequency was in the second-party monitoring condition. The higher the AD frequency was in the non-monitoring



Note. ND=normal disfluency; AD=abnormal disfluency; TD=total disfluency.

Figure 1. The amount of change in self-monitoring condition according to the value in the non-monitoring condition

condition, the higher the frequency was in the second-party monitoring condition, but, it was not statistically significant. In the case of speech rate, the faster the speech rate under the non-monitoring condition, the slower the speech rate under the self-monitoring condition, but it was not statistically significant (Table 5, Figure 2).

Table 5. Correlation between the value under non-monitoring conditions and the amount of change under second-party monitoring conditions

Correlation analysis	Amount of change in the second-party monitoring condition			
	ND	AD	TD	Speech rate
Level of non-monitoring condition	-.563** (.008)	0.143 (.537)	-.729** (.000)	-.560** (.008)

Note. The values are Pearson correlation coefficient *r* (*p*). ND=normal disfluency; AD=abnormal disfluency; TD=total disfluency.
$^{**}p<.01$

Table 6. Comparison of changes in monitoring conditions

	Monitoring conditions	*n*	*M*	(*SD*)	*t*
ND	Self-monitoring	21	-0.36	2.26	0.172
	second-party monitoring		-0.42	1.68	
AD	Self-monitoring	21	0.30	1.17	2.109*
	second-party monitoring		-0.78	2.19	
TD	Self-monitoring	21	-0.98	3.21	0.635
	second-party monitoring		-1.33	2.78	
Speech rate	Self-monitoring	21	-1.88	34.65	-1.545
	second-party monitoring		9.50	38.38	

Note. ND=normal disfluency; AD=abnormal disfluency; TD=total disfluency.
$^{*}p<.05$

Table 7. Correlation between the amount of change of ND, AD, TD, and speech rate under self-monitoring and second-party monitoring conditions

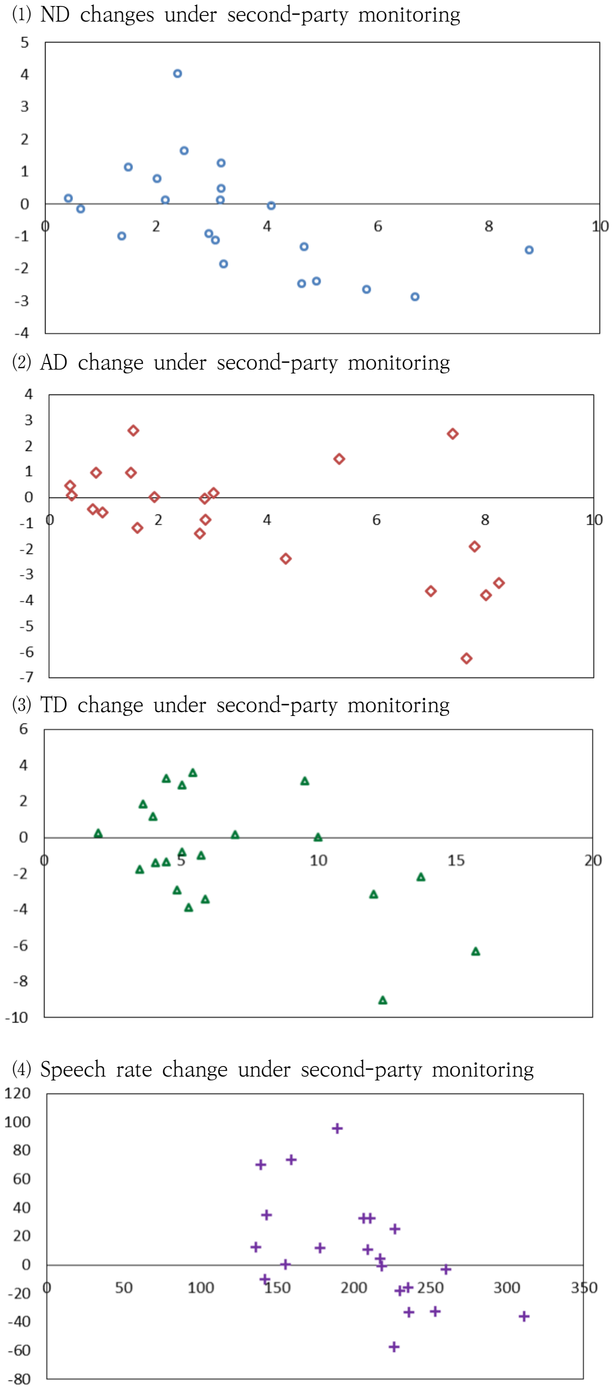
(1) Self-monitoring condition	Amount of change in the self-monitoring condition		
	ND	AD	TD
Amount of change in speech rate	-.292 (.200)	.037 (.873)	-.383 (.087)

(2) second-party monitoring condition	Amount of change in the second-party monitoring condition		
	ND	AD	TD
Amount of change in speech rate	-.205 (.373)	-.006 (.979)	-.441* (.045)

Note. The values are Pearson correlation coefficient *r* (*p*). ND=normal disfluency; AD=abnormal disfluency; TD=total disfluency.
$^{*}p<.05$

3. Comparison of Changes in Monitoring Conditions According to Severity of Stuttering

When comparing the amount of change in the self-monitoring condition and the amount of change in the second-party monitoring, there was a statistically significant difference in abnormal disfluency. In the self-monitoring condition, abnormal disfluency increased



Note. ND=normal disfluency; AD=abnormal disfluency; TD=total disfluency.

Figure 2. The amount of change in second-party monitoring condition according to the value in non-monitoring condition

by an average of .30 compared to the non-monitoring condition, while the average in the second-party monitoring condition decreased by −.79.

4. Correlation Between Change in Disfluency Frequency and Speech Rate by Monitoring Conditions

Table 7 shows the results of analyzing the correlation between the change in the frequency of disfluency and the change in speech rate under the self-monitoring and second-party monitoring conditions. There was no correlation between the change in disfluency and the change in speech rate in the self-monitoring condition, and there was a statistically significant negative correlation between the change in TD and the change in speech rate in second-party monitoring condition. In the second-party monitoring condition, the decrease in TD was significantly correlated with the increase in speech rate.

Ⅳ. Discussion

This study attempted to find out how disfluency changes under monitoring conditions. Under the self-monitoring condition, ND, AD, TD, and speech rate all decreased, but were not statistically significant. This is consistent with the results in previous studies in which the change of disfluency was inconsistent concerning self-monitoring conditions. Depending on the person who stuttered, some people had good responsiveness to self-monitoring, while others did not respond, or the stuttering worsened (Goldiamond, 1965; La Croix, 1973). This study also analyzed the correlation between the frequency of disfluency at baseline level (non-monitoring condition) and the amount of change in self-monitoring condition to explain this individual difference. Except for AD, ND, TD, and speech rate changes, all showed a negative correlation. Among them, ND and TD showed a statistically significant correlation. In other words, the ND and TD were found to be more responsive to self-monitoring as the disfluency was severe at the baseline level. On the other hand, AD was found to coexist in self-monitoring conditions with more severe AD and those with weakening fluency. It can be seen as consistent with the individual differences in responsiveness to self-monitoring in previous studies (James, 1981b).

Second, ND, AD, and TD all decreased under the second-party monitoring condition, and, in particular, AD decreased statistically significantly. This result is consistent with previous studies showing that disfluency decreases in the subsequent stimulus of monitoring others. Speech rate increased, which can be explained in association with a decrease in ND, AD, and TD. Depending on the level of disfluency at the baseline status (non-monitoring condition), the responsiveness to second-party monitoring conditions was also significantly negatively correlated with the self-monitoring conditions. On the other hand, AD was not statistically significant, but when looking at the visually presented graph, it was found that the greater the disfluency, the greater the extent of the decrease (James, 1981).

Third, there was a statistically significant difference in the amount of change in AD, whether there was a difference in the change in disfluency and speech rate in the self-monitoring condition and second-party monitoring condition. In the self-monitoring condition, the disfluency increased on average, but it decreased under the second-party monitoring condition. In addition to the monitoring effect, in self-monitoring conditions, an exercise process of pressing a button by monitoring one's disfluency is added, resulting in high reaction complexity. On the other hand, in the second-party monitoring condition, it can be inferred that the inflexibility is improved by paying more attention to spoken language according to others' feedback. However, there is a tendency among these groups to respond otherwise, but because individual differences in responsiveness to self-monitoring conditions and second-party monitoring conditions are enormous, care should be taken to generalize the monitoring effect suggested in previous studies.

Fourth, a correlation analysis between disfluency and changes in speech rate was conducted to determine whether improved disfluency under self-monitoring conditions and second-party monitoring conditions is related to simplifying spoken language (e.g., a decrease in speech rate). As a result, no correlation was found in the self-monitoring condition, and there was a significant negative correlation between the TD and the speech rate change in the second-party monitoring condition. Even under such condition, it is difficult to explain the change in normal disfluency or stuttering related to the change in speech rate. Among the effects of consequent stimuli claimed by researchers in previous studies, it is difficult to see that stuttering is improved by simplifying spoken language output.

Based on this study's results, it was confirmed that the effects of self-monitoring or second-party monitoring on stuttering did not appear consistently in all stuttering adults. Follow-up studies are needed to determine why stuttering and disfluency are more severe under monitoring conditions. Moreover, in the intervention of adult stuttering, monitoring can be selectively used to treat stuttering by dividing the cases with and without responses to the monitoring conditions.

Reference

Andrews, G., Howie, P., Dozsa, M., & Guitar, B. E. (1982). Stuttering : Speech pattern characteristics under fluency-inducing conditions. *Journal of Speech and Hearing Research, 25,* 208-216. doi:10.1044/jshr.2502.208

Bloodstein, O. (1995). *A handbook on stuttering* (5th ed.). San Diego: Singular Publishing Group.

Cooper, E. B., & Cooper, C. S. (1993). Fluency disorders. In D. E. Battle (Ed.), *Communication disorders in multicultural populations* (pp. 189-211). Stoneham: Andover Medical Publishers/ Butterworth-Heinemann.

Goldiamond, I. (1965). Stuttering and fluency as manipulatable response classes. In L. Krasner & L. P. Ullman (Eds.), *Research in Behavior Modification* (pp. 106-156). New York: Holt, Rinehart, & Winston.

Hanson, B. R. (1978). The effects of contingent light-flash on stuttering and attention to stuttering. *Journal of Communication Disorders, 11,* 451-458. doi:10.1016/0021-9924(78)90038-2

Ingham, R. J. (1984). *Stuttering and behavior therapy: Current status and experimental foundations.* San Diego: College-Hill Press.

Ingham, R. J. (1990). Research on stuttering treatment for adults and adolescents: A perspective on how to overcome a malaisa. In J. A. Cooper (Ed.), *Research needs in stuttering: Roadblocks and future directions.* Rockville: American Speech-Language-Hearing Association.

James, J. (1981a). Behavioral control of stuttering using time-out from speaking. *Journal of Applied Behavioral Analysis, 14,* 25-37. doi:10.1901/jaba.1981.14-25

James, J. (1981b). Self-monitoring of stuttering: Reactivity and accuracy. *Behaviour Research and Therapy, 19*(4), 291-296. doi:10.1016/0005-7967(81)90049-8

James, J. E. (1983). Parameters of the influence of self-initiated time out from speaking on stuttering. *Journal of Communication Disorders, 16,* 123-132. doi:10.1016/0021-9924(83)90043-6

James, J. E., Ricciardelli, L. A., Rogers, P., & Hunter, C. E. (1989). A preliminary analysis of the ameliorative effects of time-out from speaking on stuttering. *Journal of Speech and Hearing*

Research, 32, 604-610. doi:10.1044/jshr.3203.604

Kim, H. J. (2008). *The study on disfluency variation by attention and distraction conditions* (Doctoral dissertation). Deagu University, Gyeongbuk.

La Croix, Z. E. (1973). Management of disfluent speech through self-recoding procedures. *Journal of Speech Hearing Disorders, 38,* 272-274. doi:10.1044/jshd.3802.272

Martin, R. R., & Haroldson, S. K. (1982). Contingent self-stimulation for stuttering. *Journal of Speech and Hearing Disorders, 47,* 407-413. doi:10.1044/jshd.4704.407

Martin, R. R., & Ingham, R. J. (1973). Stuttering. In B. B. Lahey (Ed.), *The modification of language behavior.* Springfield: Charles C. Thomas.

Mowrer, D. E. (1978). Effect of audience reaction upon fluency rates of six stutterers. *Journal of Fluency Disorders, 3,* 193-203. doi:10.1016/0094-730x(78)90018-9

Oh, H. S. (2002). *Fair Attention Test.* Seoul: JungAng Aptitude Research Center.

Onslow, M. (1992). Choosing a treatment procedure for early stuttering: Issues and future directions. *Journal of Speech and Hearing Research, 35,* 983-993. doi:10.1044/jshr.3505.983

Onslow, M., Packman, A., Stocker, S., Van Doorn, J., & Siegel, G. M. (1997). Control of children's stuttering with response-contingent time-out: Behavioral, perceptual, and acoustic data. *Journal of Speech Language and Hearing Research, 40,* 121-133. doi:10.1044/jslhr.4001.121

Onslow, M., Ratner, N. B., & Packman, A. (2001). Changes in linguistic variables during operant, laboratory control of stuttering in children. *Clinical Linguistics & Phonetics, 15*(8), 651-662. doi:10.1080/02699200110076331

Prins, D., & Hubbard, C. (1988). Response contingent stimuli and stuttering: Issues and implications. *Journal of Speech and Hearing Research, 31,* 696-709. doi:10.1044/jshr.3104.696

Sim, H. S., Shin, M. J., & Lee, E. J. (2004). *Paradise-Fluency Assessment.* Seoul: Paradise Welfare Foundation.

언어치료연구 2021년 제30권 제1호 021-029
ISSN 1226-587X / eISSN 2671-7158
JSLHD (Journal of Speech-Language & Hearing Disorders)
ORIGINAL ARTICLE
http://dx.doi.org/10.15724/jslhd.2021.30.1.021
http://jslhd.org/

비유창성 모니터링 조건에 따른 말더듬 성인의 비유창성 변화 특성

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목적: 구어 학습에서 모니터링은 산출의 정확성을 높이는 데 중요한 요소이다. 비유창성에서 대한 모니터링은 타인에 의해 또는 자기 스스로 실시할 수 있다. 이와 같은 자기모니터링이나 타인모니터링은 구어산출에 영향을 줄 뿐만 아니라 비유창성에도 영향을 미친다. 본 연구는 자기 및 타인모니터링 조건에 따라 비유창성의 비율에 차이가 있는지 알아보고자 하였다.
방법: 연구대상은 21명의 말더듬 성인을 대상으로 비모니터링 조건, 자기모니터링 조건, 타인모니터링 조건에서 말하기를 실시하였다. 각 조건별 말하기에서 정상적 비유창성, 병리적 비유창성, 총 비유창성의 음절 비율과 말속도를 측정하여 차이를 비교하였다. 또한 비모니터링 조건에서 빈도나 속도와 모니터링 조건에서의 변화에 상관이 있는지, 모니터링 조건에서 비유창성과 말속도에 상관이 있는지 알아보기 위하여 상관분석을 실시하였다.
결과: 첫째, 자기모니터링 조건에서 비유창성이 전반적으로 감소하였으나 통계적으로 유의하지 않았다. 정상적 비유창성(ND)과 총 비유창성(TD)은 비모니터링 상태에서 빈도가 높을수록 자기모니터링 조건에서 감소하는 것으로 나타났다. 둘째, 타인모니터링 조건에서 비유창성이 감소하였고, TD는 통계적으로 유의하게 감소하였다. ND, TD와 말속도는 비모니터링 상태의 값이 높을수록 타인모니터링 조건에서 감소하는 것으로 나타났다. 셋째, 자기모니터링 조건보다 타인모니터링 조건에서 비정상적 비유창성(AD)이 통계적으로 유의하게 더 많이 감소하였다. 넷째, 타인모니터링 조건에서 TD의 변화와 말속도의 변화에 유의한 부적상관이 있었다.
결론: 말더듬 모니터링 조건에서 비유창성이 감소하는 것으로 나타났으나 전체 말더듬 집단의 동일한 경향성을 찾기는 어려웠다. 구어 모니터링에 대한 효과가 대상자마다 다를 수 있으므로, 대상자의 모니터링 반응 특성에 따라 대상자에게 적절한 중재접근 방법을 설정하는 근거로 사용할 수 있을 것이다.

검색어 : 말더듬 자기 모니터링, 타인 모니터링, 주의집중 효과, 후속자극 효과

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게재신청일 : 2020. 12. 31
수정제출일 : 2021. 01. 19
게재확정일 : 2021. 01. 29

이 연구는 2019학년도 고신대학교의 교내 연구비 지원을 받아 수행된 연구임.

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참 고 문 헌

김효정 (2008). **주의집중과 주의분산 조건에 따른 비유창성의 변화 연구.** 대구대학교 대학원 박사학위 논문.

오현숙 (2002). FAIR **주의집중력검사.** 서울: 중앙적성연구소.

심현섭, 신문자, 이은주 (2004). **파라다이스-유창성 검사.** 서울: 파라다이스 복지재단.