

# Case Study: Fluency Shaping Study in a Child with Autism Spectrum Disorder and Stuttering

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## INTRODUCTION

Stuttering and Autism Spectrum Disorder (ASD) are common disorders that speech language therapists (SLP) may confront in their clinical settings frequently. When these two disorders comorbid it becomes rarer and a more complicated condition.

The relationship between stuttering and comorbid disorders such as autism spectrum disorder (ASD) has just started to be discussed in the literature. There is an increase in the number of case reports of children with ASD who stutter (Miyamoto and Tsuge, 2021). When stuttering and ASD co-occur the communication of the child becomes more disrupted (Brundage, Whelan and Burgess, 2012).

There is limited research that describe the effectiveness of therapy techniques for children with ASD and stuttering. The aim of the recent study is to investigate effectiveness of the fluency shaping therapy program to reduce stuttering frequency in a child with ASD.

## CASE DESCRIPTION

The participant is a 10-year-old male who has been diagnosed as ASD at age 3 years. Besides, he also started stuttering at the age of 3.

Per parent report, there is no apparent reason why stuttering was started. Five months before the initiation of the current study the participant received a stuttering evaluation at University Research Centre for Speech and Language Disorders. Results of this evaluation showed that the case has severe stuttering characterized by word and phrase repetitions and prolongations, a high rate of disfluency (27,6 % of spoken syllables) without secondary behaviors such as eye closing, head shaking etc. Furthermore, he was aware of stuttering behaviors.

Although he had difficulties in pragmatic skills, other language modalities such as semantic, morphology, phonology and syntax were better. He could maintain long conversations especially when the topic is in his interest areas. On the other hand, sometimes he might speak out of context.

## METHOD

### Intervention

Fluency shaping methods was implemented in the therapy sessions. Fluency shaping is a method of acquiring new fluent speech as an appropriate behavior in the speech of people who stutter. The goal of fluency shaping is to teach a new way of speaking that is incompatible with stuttering, focusing primarily on the behavioral aspects of stuttering. Examples of therapy techniques include "gentle onset," "light contact," "rate reduced," and "prolonged vowel (Guitar, 2006). The participant attended one session per week totally in 12 clinical sessions. Fluency shaping methods was studied in a hierarchy (word level, sentence level, conversation etc.) Once the participant had achieved the conversational level with his clinician through generalization games, unfamiliar listeners were invited into the treatment sessions in order to generalize his fluency skills to unfamiliar listeners.

### Procedure

The participant's percentage of stuttered syllables (stuttering frequency) was calculated during conversational interactions with multiple conversation partners within and outside of the clinic weekly. Stuttering frequency in speech was calculated by obtaining the number of stuttered syllables in a natural speech sample consisting of minimum 400 syllables, then dividing the number of stuttered syllables by the total number of syllables, and then converting the result into a percentage.

The following formula is used in the calculation of stuttering frequency (SF)

$$SF = \frac{\text{The number of stuttered syllables}}{\text{Total number of syllables}} \times 100$$

Besides the mother's anxiety level about his child's stuttering was calculated before, at the middle and at end of the therapy process. The mother was asked to mark her anxiety level by giving a score out of 10 perceptually.

### Data Analysis

The findings related to stuttering frequency and parent's anxiety level were presented as frequency and percentage. SPSS 24.0 package program was used for statistical analysis.

## REFERENCES

- Brundage, S. B., Whelan, C. J., & Burgess, C. M. (2013). Brief Report: Treating stuttering in an adult with autism spectrum disorder. *Journal of autism and developmental disorders* 43 (2), 483-489.
- Miyamoto, S., & Tsuge, M. (2021). Treating Stuttering in Children with Autism Spectrum Disorder. In *Education and Technology Support for Children and Young Adults with ASD and Learning Disabilities* (pp. 208-222). IGI Global.
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## RESULTS

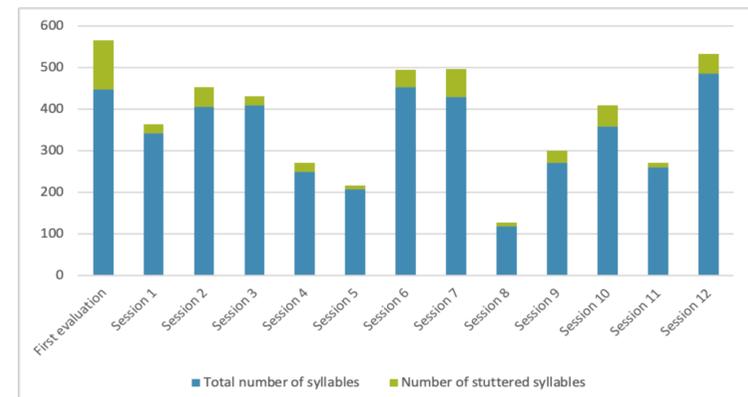


Figure 1. Number of total syllables and stuttered syllables

The participants has the highest number of stuttered syllables in the first session. Total number of syllables change in each session ( $\bar{X} = 340,76$ ). Number of stuttered syllables also changes accordingly ( $\bar{X} = 38,07$ ).

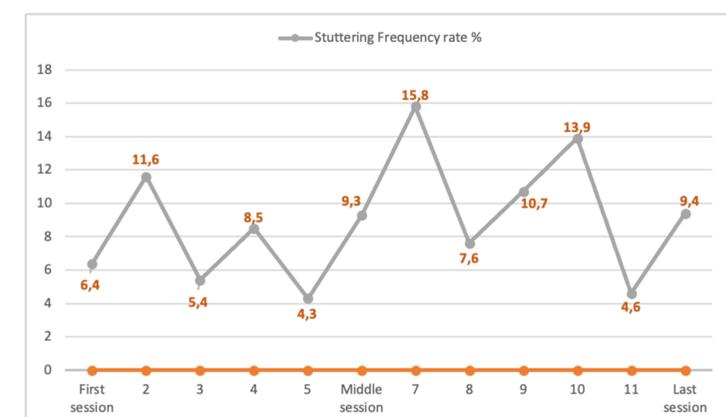


Figure 2. Stuttering frequency rate

The participants' stuttering frequency rate does not follow steady line. From the first session to the last session stuttering frequency rate increases and decreases without a specific pattern. The participants' rate was 27,6% in the evaluation session. Until intervention starts it reduced spontaneously. During the whole therapy process it never shows plateau.

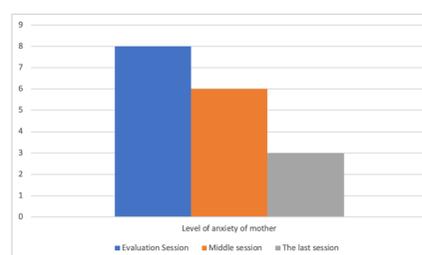


Figure 3. Level of anxiety of mother

For three times level mother of the participant was asked to rate her anxiety level out of 10. Her level of anxiety gradually decreased until the end of the therapy sessions.

## DISCUSSION

In the study by Miyamoto and Tsuge (2021) the participants were two children with stuttering and ASD. The factors influencing the prognoses of two children with stuttering and ASD were investigated. While one child's stuttering had improved and had almost been eliminated, the other's stuttering continued. The child who continued to stutter showed high level of anxiety than the other.

Brundage, Whelan and Burgess (2012) were conducted a study with an adult with ASD in order to examine the effectiveness of a modified version of the fluency rules program to reduce stuttering frequency. This program was based on fluency shaping methods. It was found that the percentage of stuttered words (%SW) was reduced by the application of the program. A reduction was revealed in %SW from an average of 14.5 %SW during baseline to 2.07 %SW during the withdrawal phase.