

Using Voice Training Practices to Improve Stuttering: Example of Guidance and Research Center (RAM)

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ABSTRACT

It is known that many methods including voice training practices are used in the improvement of stuttering. With the studies carried out for this purpose, it is aimed to relieve the individual from feelings such as lack of self-confidence, anxiety, and embarrassment, as well as to support the education life and literacy experiences of the individual. With this research, it is aimed to get the views of the teachers working in the Guidance and Research Center (RAM) about their ability to use voice training practices in the improvement of stuttering and to determine the level of the studies on this issue in the RAM. The study group of the research consists of 9 teachers determined by typical case sampling. An interview form consisting of 6 open-ended questions and a demographic information form with 4 questions were applied to the study group. Descriptive analysis technique was used in the analysis of the data obtained as a result of the interviews. In line with the findings obtained from this study, it was determined that the participants declared that the courses they took in undergraduate education for the improvement of speech disorders were not sufficient to use in their professional lives. In addition, it has been determined that the teachers working in these institutions consider the applications made in RAM to improve stuttering insufficiently. They believe that breathing and voice exercises can be used in the improvement of stuttering.

Key words: Special education, Stuttering, Voice training practices, RAM

INTRODUCTION

Speech, which distinguishes human beings from other creatures and makes them superior, is an instrument with which the individual can express his feelings, thoughts, designs and desires via verbal communication, express himself in a healthy way and improve his social relations (Akkaya, 2012; Uçgun, 2007). Mental processes that function abnormally during speech, which is a verbal tool by which the individuals can express themselves to those around, cause failure to convey the thoughts intended to be expressed to individuals or society correctly. Thoughts that cannot be expressed correctly cause speech disorders (Çakan & Gül, 2018; Akkaya, 2012; Doğan, 2009).

ASHA (American Speech-Language-Hearing Association) has classified speech disorders as voice disorder, articulation disorder and fluency disorder. Sound quality, height, pitch, resonance, continuity, and the defects that occur during the production of sound are defined as sound disorders; disturbances in the production of sounds during speech, such as disrupting, altering sounds, mixing sounds, jumping sounds are defined as articulation disorders; the rhythm and velocity of speech which is defined as

scattered speech, neurological and developmental problems are defined as fluency disorders. (Larinks, 1987; as cited in: Dumanoğlu, 2006; Çakan & Gül, 2018).

Stuttering is a rhythm disorder that occurs due to physiological, psychological or neurological reasons and prevents the flow of the speech as the individual repeats the sounds- syllables with unusual and uncontrollable gestures and facial expressions (MEB, 2001; Çıldır, 2013; Avcı et al., 2002; Baydık & Akçamete, 1999; Doruk et al., 2012; Tamam et al., 1998; Gergerlioğlu & Uysal, 2003; Erdem et al., 2011; Atay et al., 2014; Pınarcık & Sarı, 2013; Aksoy et al., 2010; Bloodstein et al., 2021; Penman et al., 2021).

The disorders in rhythm and timing due to mental, psychological and neurological deficiencies of individuals who cannot transfer their thoughts fluently can cause inability to express themselves in public and reduction in self-confidence (Çakan & Gül, 2018; Avcı et al., 2002; Cenkseven, 2000; Okan İbiloğlu, 2011, Boyle, 2011). Yet, this situation may cause the educational life of the individual to be negatively affected.

The general aim of improving stuttering is to control the fluency and articulation problems of the individual during

speaking and to eliminate the desire to abstain from speaking; is to save the individual from the feelings of lack of self-confidence, introversion, anxiety and shame (Avcı et al., 2002; Çıldır, 2013; Erdem, 2013). Studies carried out for this purpose are of great importance in terms of making a positive contribution to the development of literacy in the educational life of the individual.

In the treatment of stuttering, psychosocial therapy is used with the purpose of protecting the self-esteem of the individuals and speech therapy is used to correct the speech disorder status (Erdem, 2013). Although drug treatment is not used in the treatment of stuttering, drug treatment can be used for anxiety disorders of the individual. Apart from these, treatment methods such as passive airflow technique (Schwartz technique), speech restructuring therapy, Cognitive Behavioral Psychotherapy (BDP), evidence-based treatment applications and Lax Vox technique are used in stuttering individuals (Erdem et al., 2011; Ingham, 2003; Boyle, 2011; Bal & Ünsal, 2018; Denizoglu, 2013). Research shows that voice training practices can be used to treat stuttering. For example, Brady (1971), in his study, concluded that a significant increase in speech fluency and an overall improvement in general coherence of stuttering individuals were observed as a result of metronome treatment. In their study, Norton et al. (2009) found that melodic toning therapy can be used to treat speech disorders. Erdem (2013), examined speech disorders and ways of improvement in his study; stated that correct breathing exercises have an important place in the improvement of stuttering. Köşreli (2016), examined the usability of voice training practices in the treatment of stuttering in his study. As a result of the research, it was determined that voice training practices were effective in improving stuttering.

In this study, it was aimed to get the opinions of the teachers working in the Guidance and Research Center (RAM) on using voice training practices in the improvement of stuttering and to determine the level of studies on this subject in RAM. Depending on the purpose of the research, answers to the following questions were sought:

1. What are the participants' views on taking courses in undergraduate education for the elimination of speech disorders?
2. What are the participants' views on the situation of learning voice training practices that can be used in the improvement of stuttering in undergraduate education?
3. What are the participant views on the practices carried out for individuals with stuttering problems in the Guidance and Research Center?
4. What are the participants' views on the necessity of using breathing and vocal exercises to improve stuttering?
5. What are the participants' views on the necessity of breathing and voice training in terms of contributing to their professional gains?

METHOD

This section contains information about the design of the research, data collection tools and data collection.

Research Design

In this research, qualitative research method was used. Qualitative researches are the interpretative research approach based on the study of perceptions and events in a realistic way and in the individuals' natural environment (Yıldırım & Şimşek, 2006; Christensen et al., 2014).

Research Group

Easily accessible case sampling, one of the purposeful sampling methods, was used to determine the sample group of the study. The purpose of the easily accessible case sampling is to speed up the research and to reduce the cost of the research (Patton, 2005; Yıldırım & Şimşek, 2006).

The interviews were conducted face to face with 9 teachers working in Zonguldak Çaycuma Guidance and Research Center (RAM). The demographic information of the teachers participating in the research is given in Table 1.

As seen in Table 1, It was determined that 100% of the participants were male; 22.50% of the participants' professional experiences were 16-20 years, 44.50% of the participants' professional experiences were 11-15, and 33.25% of the participants' professional experiences were 6-10 years. In addition, it is seen that 44.50% of the teachers have graduated from classroom education, 44.50% from psychological counseling and guidance department and 11% from special education teacher license programs.

Data Collection

Research data were collected from interviews with the kind of semi-structured interview technique. In semi-structured interviews, researchers can affect the flow of the conversation, depending on the flow of the conversation with question has already been determined. The researcher allows the interviewee to answer questions as they wish (Türnüklü, 2000; Adhabi & Blash Anozie, 2017).

In order to obtain the research data, a demographic data form including information on the age, gender, seniority and graduate degree program status of the participants and an open-ended interview form consisting of 5 questions were prepared by the researcher. Three field experts were asked these questions to ensure validity and the questions were finalized according to their feedback.

Analysis of Data

The mean, frequency, and percentage calculations were used to analyze the demographic data. Descriptive analysis technique was used to analyze the data obtained from the interview. In the descriptive analysis, direct quotations are frequently given to reflect the views of the participants (Yıldırım & Şimşek, 2006; Dey, 1993).

The data obtained from the research were coded, then were divided into themes and were interpreted. While the quotations were made, the names of the participants were coded and shortened as Participant 1 (P.1) and Participant 2 (P.2).

FINDINGS

In this section, the findings obtained from the answers given by the teachers participating in the research to the research questions are given.

As can be seen in Table 2, there are participants who expressed their opinions about taking courses in undergraduate education for the elimination of speech disorders. It was determined that the participants expressed their views on the theme of “taking lessons” in the direction of articulation disorder (1), stuttering (1), not taking lessons (6), theoretical knowledge (1), and language-speech development lesson (1). Some of the views of the participants on this theme are given below.

I graduated from primary school teaching. So it wasn't. I passed special education by participating in the certificate program. (P4)

I studied primary school teaching. In the first reading and writing lessons, we saw lessons for children who start to talk late, and who stutter, superficially. (P7)

As can be seen in Table 3, there are participants who expressed their opinions on the situation of learning voice training practices that can be used in the improvement of stuttering in undergraduate education. It was determined that the participants expressed their opinions in the direction of not taking lessons (7) and breathing and voice exercises (1) regarding the theme of “Competence in Voice Training

Practices”. Some of the views of the participants on this theme are given below.

I did not receive. (P1, P2, P3, P5, P7, P8, P9).

I did not receive voice training. While I was studying primary school teaching, we took music lessons. The singing teacher was our music teacher. We practiced breathing and voice exercises. (P4)

However, P5 stated that he did not take any courses in his undergraduate education; he stated that he acquired the competence to use Ankara Articulation Test and Phonological Awareness Test applications in his professional life with his individual efforts.

As can be seen in Table 4, there are participants in the counseling and research centers who expressed their opinions about the practices carried out for individuals with stuttering problems. It was determined that they expressed an opinion in the direction of Phonological awareness test (1), Ankara articulation test (1), breathing exercises (1), fluent-expressive language training (1), sound-making studies (1), and diagnostic (3). Some of the views of the participants on this theme are given below.

We don't provide training, we diagnose. We direct them to teachers trained in language speech. (P4)

We use breathing exercises for those with anxiety disorders. We're making a diagnosis. We have difficulties in orientation and training. (P2)

Table 1. Findings of the demographic information of the participants

No	Code	Gender	Age	Graduated/Undergraduate Program	Professional Experience
1	P1	Male	41-50	Primary school teaching	16-20
2	P2	Male	31-40	Psychological counseling and guidance	11-15
3	P3	Male	31-40	Psychological counseling and guidance	6-10
4	P4	Male	31-40	Psychological counseling and guidance	6-10
5	P5	Male	41-50	Primary school teaching	16-20
6	P6	Male	31-40	Primary school teaching	11-15
7	P7	Male	31-40	Special Education Teaching	11-15
8	P8	Male	31-40	Primary school teaching	11-15
9	P9	Male	31-40	Psychological counseling and guidance	6-10

Table 2. Participant views on the status of taking courses in undergraduate education for the elimination

Theme	Code	Frequency	Participants
Course Taking Status	Articulation Disorder	1	P1
	Stuttering	1	P1
	Not Taking Lessons	6	P3, P4, P6, P7, P8, P9
	Theoretical Information	1	P2
	Language-Speech Development Lesson	1	P5

Table 3. Participant opinions on the status of learning voice training practices that can be used to improve stuttering in undergraduate education

Theme	Code	Frequency	Participants
Competence in Voice Training Practices	Not Taking Lessons	7	P1, P2, P3, P5, P7, P8, P9
	Breathing and Sound Exercises	1	P4

There is no training here, we diagnose. If individuals are younger and have problems with fluent-expressive language, we can provide training on this. (P1)

As can be seen in Table 5, there are participants who expressed an opinion on the necessity of using breathing and voice exercises in the improvement of stuttering. It was determined that the participants expressed their opinions in the direction of the applications made by the expert (2) and the building block of the process (2) regarding the theme of “necessity of breathing and vocal exercises”. Some of the views of the participants on this theme are given below.

I think these studies will be useful in studies aimed at improving stuttering.” I feel the lack of it because I did not receive training. I would also like to practice. (P7)

I think breathing and voice exercises will help when the existing situation is recognized. In this case, awareness is very important. We are teachers. We can encounter these individuals at any time. I would like to have the authority to intervene immediately in this situation. If there is a training, I will take it immediately. (P8)

As can be seen in Table 6, some participants expressed their opinions on the necessity of breathing and voice training to contribute to professional gains. It was determined that the participants expressed an opinion on the theme of “contribution to professional achievements” in the direction of interdisciplinary (1), applied courses in undergraduate programs (1), in-service theoretical and practical training (6), and being solution-oriented in classroom management (2). Some of the views of the participants on this theme are given below.

These pieces of training are necessary for language-speech disorders. To close this gap, we need to

take these training. Courses should be given in universities about this. (P2)

It is very important whether the language therapist knows breathing and voice training. The people who provide this training must have received this training at a sufficient level. (P3)

All special education teachers should receive training on breathing and vocal exercises. I think it will be beneficial for individuals who stutter. (P9)

DISCUSSION AND CONCLUSION

In line with the findings obtained from this study, it was determined that the majority of the participants did not find the courses they took to improve speech disorders in undergraduate education sufficient. In addition, it was determined that they considered themselves inadequate in terms of using breathing and voice exercises in the improvement of stuttering. Also, the teachers working in the RAM found the practices for the improvement of stuttering insufficient, thought that breathing and voice exercises could be used in the improvement of stuttering, but the educators could not perform the necessary applications because they did not consider themselves sufficient in this regard. Similarly, studies support the use of breath-voice exercises and singing exercises in the improvement of stuttering (Cohen, 1993; Schalausg et al., 2010; Wan et al., 2010; Titze, 2006; Pektaş & Belgin, 2011; Bosshardt, 2006). For this reason, breathing and voice exercises are considered necessary to support the healing process in studies carried out for the elimination of speech disorders. In line with the results obtained from the research, it has been determined that the teachers working in RAM

Table 4. Participant views on the practices for individuals with stuttering problems in guidance and research centers

Theme	Code	Frequency	Participants
Implemented Practices	Phonological Awareness Test	1	P5
	Ankara Articulation Test	1	P5
	Breathing Exercises	1	P2
	Fluent-Expressive Language Education	1	P1
	Studies on Making Sound	1	P3
	Diagnostics	3	P4, P8, P9

Table 5. Participant opinions on the necessity of using breathing and voice exercises in the h

Theme	Code	Frequency	Participants
Necessity of Using Breathing and Voice Exercises	Practices Made by Experts	2	P3, P2
	The building block of the process	2	P7, P8

Table 6. Participant views on the necessity of receiving breathing and voice training in contributing to professional acquisitions

Theme	Code	Frequency	Participants
Contribution to Professional Acquisitions	Interdisciplinary	1	P2
	Applied Courses in Undergraduate Programs	1	P2
	In-Service Theoretical and Applied Trainings	6	P2, P3, P4, P6, P8, P9
	Being Solution-Oriented in Classroom Management	2	P5, P8

have graduated from different undergraduate education programs other than special education teaching and they have been working in these institutions by obtaining certificates. In line with the findings obtained from the research results, the following suggestions can be made:

It is known that the use of breathing and voice exercises has an important place in the improvement of stuttering, which can occur for many different reasons, and contributes to obtaining positive results (Evren, 2006; Aycan, 2012; Norton et al., 2009). It is known that in the elimination of speech disorders, a well-planned program for the interests and needs of individuals, and well-trained teachers who will implement this program are needed. This can be done by educators who have received training in accordance with the characteristics of individuals with this need, and who have the competence to use voice training practices to improve speech disorders as well as diagnostic training.

The planning and implementation of the said training is an important step in the practices to be carried out to eliminate speech disorders. At this stage, the skill of the teacher in the practices to be carried out is directly related to his field proficiency. For this reason, it is necessary to ensure that teachers are included in qualified in-service training programs to gain these competencies. In these in-service trainings, teachers are trained on voice training teaching methods; however, it should be ensured that they acquire the competence to apply different tests that will contribute to their diagnosis in the elimination of speech disorders.

Voice training practices to be used in the elimination of speech disorders should be evaluated as a process and training should be carried out with well-trained experts in the field for a successful education process.

In addition, it is thought that it is necessary to assign music teachers who will support the work of special education teachers and contribute to these studies in institutions where practices for the elimination of speech disorders are carried out. Because voice training practices with a music teacher will not only contribute to the development of individuals for language-speech disorders; it will also support their social and emotional development.

In this context, it is considered necessary to reorganize music teaching undergraduate programs for special education and to provide application environments for teacher candidates where they can work with individuals with special needs.

REFERENCES

- Adhabi, E., & Blash Anozie, C. (2017). Literature review for the type of interview in qualitative research. *International Journal of Education*, 9(3), 1-12. <https://doi.org/10.5296/ije.v9i3.11483>
- Atay, İ. M., Tanrıtanır, B., Akpınar, A., & Demirdağ, A. (2014). Bir paradoks olarak risperidon kullanımına bağlı kekemelik olgusu [The phenomenon of stuttering due to the use of risperidone as a paradox]. *Nöropsikoloji Arşivi*, 51, 403-404. Doi: 10.5152/npa.2014.6946
- Akkaya, A. (2012). Öğretmen adaylarının konuşma sorunlarına ilişkin görüşleri [The opinions of prospective teachers on speech problems]. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 20(9), 405-420.
- Aksoy, S., İnal, Ö., & Kulak Kayıkçı, M. E. (2010). Kekeme çocuklarda duyu bütünlüğünün değerlendirilmesi [Evaluation of sense integrity in stuttering children]. *Fizyoterapi Rehabilitasyon*, 21(3), 117-124.
- Aycan, K. (2012). *Ses eğitimi yöntemlerinin türkçe konuşma eğitimindeki vurgu kusurlarının düzeltilmesine etkisi* [The effect of voice training methods on correction of emphasis on speech education in turkish] (Doktora tezi). Gazi Üniversitesi, Ankara.
- Avcı, A., Uğur, Ş., & Toros, F. (2002). Çocuklarda kekemelik: karşılaştırmalı bir izleme çalışması [Stuttering in children: a comparative study]. *Klinik Psikiyatri Dergisi*, 5, 16-21.
- Bal, F., & Ünsal, S. (2018). Kekeme çocuklarda laxvox tekniğinin değerlendirilmesi [Evaluation of laxvox technique in stuttering children]. *The Journal of Academic Social Science*, 6(77), 142-151. Doi: 10.16992/ASOS.14056
- Baydık, B., & Akçamete, G. (1999). 7-15 Yaş grubundaki kekeme olan ve olmayan bireylerin sözel iletişim tutumlarının karşılaştırılması [Comparison of verbal communication attitudes of children with and without stuttering in 7-15 age group]. *Özel Eğitim Dergisi*, 2(3), 75-86. https://doi.org/10.1501/Ozlegt_00000000037
- Bloodstein, O., Bernstein Rather, N., & Brundage, S. B. (2021). *A handbook on stuttering* (7th ed.). Plural Publishing.
- Bosshardt, H. G. (2006). Cognitive processing load as a determinant of stuttering: summary of a research programme. *Clinical Linguistics & Phonetics*, 20(5), 371-385. doi: 10.1080/02699200500074321
- Boyle, P. M. (2011). Mindfulness training in stuttering therapy: a tutorial for speech-language pathologists. *Journal of Fluency Disorders*, 36, 122-189. <https://doi.org/10.1016/j.jfludis.2011.04.005>
- Brady, J. P. (1971). Metronome conditioned speech retraining for stuttering. *Behavior therapy*, 2(2), 129-150. [https://doi.org/10.1016/S0005-7894\(71\)80001-1](https://doi.org/10.1016/S0005-7894(71)80001-1)
- Cenkseven, F. (2000). Kekemelik üzerine [On stuttering]. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 6(6), 37-47.
- Cohen, S. N. (1993). The application of singing and rhythmic instruction as a therapeutic intervention for persons with neurogenic communication disorders. *Journal of Music Therapy*, 30(2), 81-99. Doi:10.1093/jmt/30.2.81
- Christensen, L., Johnson, R., & Turner, L. (2014). *Research methods, design and analysis* (12th ed.). Pearson Education.
- Çakan, M., & Gül, G. (2018). Ses eğitiminde kullanılan nefes ve ses egzersizlerinin konuşma bozukluklarının giderilmesinde kullanılabilirliği [The use of breathing and voice exercises used in voice training to eliminate speech disorders]. *Afyon Kocatepe Üniversitesi Akademik Müzik Araştırmaları Dergisi*, 8(4), 50-53. <https://doi.org/10.5578/amrj.67099>

- Çıldır, B. (2013). *Kekeme bireylerde ton algı bozukluğunun değerlendirilmesi [Evaluation of tone perception disorder in stuttering individuals]* (Yayımlanmamış yüksek lisans tezi). Başkent Üniversitesi, Ankara.
- Denizoğlu, İ.İ. (2013). The laxvox voice therapy: method and application. *Turkey Clinics J.E.N.T. Special Topics*, 6(2), 32-40.
- Dey, I. (1993). *Qualitative data analysis: a user-friendly guide for social scientists*. Routledge Publications.
- Doğan, Y. (2009). Konuşma becerisinin geliştirilmesine yönelik etkinlik önerileri [Suggestions for improvement of speaking skills]. *Gülhane Tıp Dergisi*, 7(1), 185-204.
- Doruk, A., Erdem, M., Özenç, S., Balıkcı, A., & Özdemir, B. (2012). Gelişimsel kekemelik olgularında travmatik yaşantılar ve dissosiyasyon düzeyleri [Traumatic experiences and dissociation levels in developmental stuttering cases]. *Gülhane Tıp Dergisi*, 54, 23-28.
- Dumanoğlu, A. (2006). *Kekemelerde yaygın kekemelik tutumlarının kaygısı ve depresyon düzeyleri açısından incelenmesi [Investigating the common stuttering attitudes and stress levels of stutters]* (Yüksek lisans tezi). Ege Üniversitesi, İzmir.
- Erdem, İ. (2013). Konuşma eğitimi esnasında karşılaşılan konuşma bozuklukları ve bunları düzeltme yolları [Speech disorders during speech education and ways to correct them]. *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi Türkçenin Eğitimi Öğretimi Özel Sayısı*, 6(11), 415-448. <https://doi.org/10.14520/adyusb.453>
- Erdem, M., Çelik, C., Doruk, A., Özgen, F., Özşahin, A. (2011). Genç erişkin kekemelik vak'alarında anksiyete düzeyi ile başa çıkma tutumlarının ilişkisi [Relation of anxiety levels and coping attitudes in young adult stuttering cases]. *New Symposium Journal*, 49(2), 77-82.
- Evren, F. G. (2006). *Ses eğitimi yöntemlerinin ses hastalıklarının tedavisinde kullanımı [Use of voice training methods in the treatment of sound diseases]* (Yüksek lisans tezi). Selçuk Üniversitesi, Konya.
- Gergerlioglu, S. H., & Uysal, H. (2003). Erkek kekemelerde solunum fonksiyon testi değerleri [Pulmonary function test values in male stutters]. *Genel Tıp Dergisi*, 13(4), 163-166.
- Ingham, J. C. (2003). Evidence-based treatment of stuttering: 1. definition and application, *Journal of Fluency Disorders*, 28, 197-207. Doi:10.1016/j.jfludis.2005.04.002
- İbiloğlu Okan, A. (2011). Kekemelik [Stuttering]. *Psikiyatride Güncel Yaklaşımlar*, 3(4), 704-727. <https://doi.org/10.5455/cap.20110332>
- Kösreli, S. (2016). Ses eğitimi çalışmalarının kekemeliğin tedavisinde kullanılabilirliği [The usability of voice training studies in the treatment of stuttering]. *Erzincan Üniversitesi Eğitim Fakültesi Dergisi*, 18(1), 374-390 <https://doi.org/10.17556/jef.47650>
- Milli Eğitim Bakanlığı. (2001). Kekeme bir öğrencim var öğretmen el kitabı [I have a student who stutters teacher's handbook]. http://orgm.meb.gov.tr/kitaplar/kekemeIogrencim_var.pdf
- Norton, A., & Zipse, L., & Marchina, S., & Schlaug, G. (2009). Melodic intonation therapy shared insights on how it is done and why it might help. *Annals of the New York Academy of Sciences*, 1169, 431-432. doi: 10.1111/j.1749-6632.2009.04859.x
- Patton, M. Q. (2005). *Qualitative Research*. John Wiley & Sons, Ltd.
- Penman, A., Hill, A. E., Hewat, S., & Scarinci, N. (2021). Speech-language pathology students' perceptions of simulation-based learning experiences in stuttering. *International Journal of Language & Communication Disorders*, 56(6), 1132-1146. <https://doi.org/10.1111/1460-6984.12645>
- Pektaş, A., & Belgin, E. (2011). Kekeme bireylerde ritim algısının değerlendirilmesi [Evaluation of rhythm perception in stutters]. *Ankara Sağlık Hizmetleri Dergisi*, 10(2), 47-50.
- Pınarcık, Ö., Sarı, H. (2013). Tanım açısından kekemeliğe yönelik yeni bulguların değerlendirilmesi [Evaluation of new findings for stuttering in terms of definition], *Karaelmas Eğitim Bilimleri Dergisi*, 1, 33-42.
- Schlaug, G., Norton, A., Marchina, S., Zipse, L., & Wan, Y.C. (2010). From singing to speaking: facilitating recovery from nonfluent aphasia. *Future Neurology*, 5(5), 657-665. <https://doi.org/10.2217/fnl.10.44>
- Tamam, L., Öztanrıöver, S., & Özpoyraz, N. (1998). Erişkin çağda başlayan bir kekemelik olgusu [A case of stuttering that begins in adulthood]. *Türk Psikiyatri Derneği*, 9(1), 64-68.
- Titze, R. I. (2006). Voice training and therapy with a semi-occluded vocal tract: rationale and scientific underpinnings. *Journal of Speech Language, and Hearing Research*, 49, 448-459. [https://doi.org/10.1044/1092-4388\(2006/035\)](https://doi.org/10.1044/1092-4388(2006/035))
- Türnüklü, A. (2000). Eğitimbilim araştırmalarında etkin olarak kullanılacak nitel bir araştırma tekniği: Görüşme [A qualitative research technique to be effectively used in educational research: Interview]. *Kuram ve Uygulamada Eğitim Yönetimi Dergisi*, 24, 543-559.
- Uçgun, D. (2007). Konuşma eğitimini etkileyen faktörler [Factors affecting speech education]. *Sosyal Bilimler Enstitüsü Dergisi*, 22, 59-67.
- Wan, Y., Rüter, T., Hohmann, A., & Schlaug, G. (2010). The therapeutic effects of singing in neurological disorders. *Music Perception: An Interdisciplinary Journal*, 27(4), 287-295. <https://doi.org/10.1525/mp.2010.27.4.287>
- Yıldırım, A., & Şimşek, H. (2006). *Sosyal bilimlerde nitel araştırma yöntemleri [Qualitative research methods in the social sciences]*. Ankara: Seçkin Publishing.