ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

DOI: 10.5336/healthsci.2022-90443

Comparing the Anxiety Types of Children with and without Stuttering Through a Self-Report Method: A Descriptive Study

Kekemeliği Olan ve Olmayan Çocukların Kaygı Tiplerinin Öz Bildirim Yöntemiyle Karşılaştırılması: Tanımlayıcı Çalışma

Ahsen ERİM[a], Ayşe AYDIN UYSAL[b]

[a]Department of Speech and Language Therapy, University of Health Sciences Hamidiye Faculty of Health Sciences, İstanbul, Türkiye
[b]Department of Special Education, Kocaeli University Faculty of Education, Kocaeli, Türkiye

This study was presented as an oral presentation at International Gevher Nesibe Health Sciences Conference-VIII, September 17-18, 2021, İstanbul, Türkiye.

ABSTRACT Objective: The aim of this study was to compare the anxiety types of school-age children with and without stuttering based on self-report. A further aim was to examine the possible relationships between anxiety levels and stuttering characteristics in children with stuttering. **Material and Methods:** The participants included 25 children who stutter aged between 9-12 years (mean age=115.64±9.8 months; 22 boys, 3 girls) and 25 age- and gender- matched children who did not stutter (mean age=116.52±10.3 months; 22 boys, 3 girls). The children's anxiety types were examined with the Spence Children's Anxiety Scale Child Version. The Stuttering Severity Instrument-4-TR was used to evaluate the stuttering characteristics of children with stuttering. **Results:** There was no significant difference between the separation anxiety, fear of physical injury, generalized anxiety, obsessive compulsive disorder, and panic disorder-agoraphobia sub-factor scores of the children with and without stuttering. However, the social phobia (Mann-Whitney U test; p=0.008; effect size: 0.75) and the Spence Children's Anxiety Scale total scores (independent samples t-test; p=0.009; effect size: 0.77) of the children with stuttering were significantly higher than for children without stuttering. **Conclusion:** It is thought that the knowledge of speech and language therapists about different types of anxiety may help them to better understand the individual's stuttering. Thus, anxiety levels should be checked during routine stuttering assessments.

Keywords: Anxiety; anxiety types; social anxiety disorder; social phobia; stuttering

ÖZET Amaç: Bu çalışmanın amacı, kekemeliği olan ve olmayan okul çağı çocukların öz bildirim raporuna dayalı olarak kaygı tiplerinin karşılaştırılmasıdır. Ayrıca kekemeliği olan çocuklarda, kaygı düzeyleri ile kekemelik özellikleri arasındaki muhtemel ilişkilerin incelenmesi amaçlanmıştır. **Gereç ve Yöntemler:** Çalışmanın katılımcı grubu 9-12 yaş arasında kekemeliği olan 25 (ortalama yaş=115,64±9,8; 22 erkek, 3 kız) ve kekemeliği olan çocuklar ile yaş ve cinsiyet özellikler açısından eşleştirilmiş kekemeliği olmayan 25 çocuktan (ortalama yaş=116,52±10,3; 22 erkek, 3 kız) oluşmaktadır. Çalışmada kaygı tiplerini değerlendirmek için Spence Çocuklar için Kaygı Ölçeği-Çocuk Formu kullanılmıştır. Kekemeliği olan çocukların kekemelik özelliklerinin değerlendirilmesi için ise Kekemelik Şiddetini Değerlendirme Aracı-4 kullanılmıştır. **Bulgular:** Çalışma sonucunda, 2 grup arasında; ayrılık kaygısı, fiziksel yaralanma korkusu, genel kaygı, obsesif kompulsif bozukluk ve panik bozukluk-agorafobi alt faktör puanları arasında istatistiksel açıdan anlamlı olarak farklılık bulunmamıştır. Ancak kekemeliği olan çocukların; sosyal fobi (Mann-Whitney U test; p=0,008<0,01; etki büyüklüğü: 0,75) ve Spence Çocuklar için Kaygı Ölçeği-Toplam puanları (bağımsız örneklemler için t-testi; p=0,009<0,01; etki büyüklüğü: 0,77), kekemeliği olmayan akranlarına kıyasla istatistiksel açıdan anlamlı olarak daha yüksek bulunmuştur. **Sonuç:** Dil ve konuşma terapistlerinin farklı kaygı tipleri hakkındaki bilgi düzeylerinin, kekemeliğin daha iyi anlaşılmasını sağlayacağı düşünülmektedir. Buna göre rutin kekemelik değerlendirmelerinde bireyin kaygı düzeyleri de değerlendirilmelidir.

Anahtar Kelimeler: Kaygı; kaygı tipleri; sosyal kaygı bozukluğu; sosyal fobi; kekemelik

Stuttering is a fluency disorder characterised by sound, syllable, word, and phrase repetitions, sound/syllable prolongation, and blocks which influences the flow and rhythm of speech.[1] Repetitions, prolongations, and blocks are the most evident elements of stuttering, which can be easily noticed by

Correspondence: Ahsen ERİM
Department of Speech and Language Therapy, University of Health Sciences Hamidiye Faculty of Health Sciences, İstanbul, Türkiye
E-mail: ahsen.erim@sbu.edu.tr

Peer review under responsibility of Turkiye Klinikleri Journal of Health Sciences.

Received: 09 Apr 2022 ***Received in revised form:*** 27 Jun 2022 ***Accepted:*** 15 Aug 2022 ***Available online:*** 23 Aug 2022

listeners. However, individuals with stuttering may exhibit various responses, such as avoidance behaviors, to hide their stuttering, and these may not be evident to listeners.[2] Furthermore, many of the theories and models about onset and course of stuttering include the effect of psychosocial factors.[3]

Anxiety is one of the psychosocial factors associated with stuttering.[1] It is a response to perceived danger, which has behavioral, physiological, and cognitive components. The behavioral component is correlated with avoiding anxiety-triggering situations, the physiological component is correlated with physical reactions, such as increased heart rate and sweating, and the cognitive component is correlated with negative thoughts, beliefs, and expectations of harm.[4,5] There are numerous defined anxiety types, such as separation anxiety disorder, specific phobias, social phobia (social anxiety disorder), panic disorder, agoraphobia, and generalized anxiety disorder. Children with separation anxiety disorder feel fear and worry intensely about separation (e.g., from primary caregiver). Specific phobia is a state of excessive and constant fear of an object, situation, or activity that is usually not harmful (e.g., spider, airplane, etc.). Social phobia is a state of intense worry about being embarrassed, humiliated, rejected, or despised in social interaction (e.g., public speaking, meeting new people, etc.). Panic disorder is characterized by bouts of fear which may manifest as sweating, dizziness, palpitations, shortness of breath, tremors, loss of control, and fear of dying, even though there is no real danger. Agoraphobia is the fear of open spaces and is typified by the fear that a person cannot easily escape in case of danger or threat. Lastly, generalized anxiety disorder is characterized by permanent and intense worry affecting daily life.[6]

Current stuttering models see anxiety not as the cause of stuttering but as a result and means of it.[7] A recent review identified many risk factors for anxiety associated with stuttering. This review suggested that the negative social experiences of children and adolescents with stuttering and their negative attitudes towards communication may be risk factors for anxiety.[8] For instance, even at the age of four, children with stuttering (CWS) can be evaluated more negatively compared to their fluently speaking peers.[9] Similarly, school age CWS can be perceived as less popular by their non-stuttering peers and are more likely to be seen as "bullying victims", compared to their non-stuttering peers.[10]

In previous studies, stuttering has been observed as a risk factor that increases the incidence of social phobia in adults.[11] Many studies have highlighted increased anxiety symptoms in adults with stuttering (AWS).[11-13] As an illustration, in their study on the prevalence of anxiety disorders in AWS, Iverach et al. found that 22% of stuttering individuals who applied for stuttering therapy met the diagnostic criteria for social phobia.[11]

The link between stuttering and anxiety has also been studied in child and adolescent groups. For example, in a recent study comparing the anxiety levels of children and adolescents with and without stuttering, the anxiety levels of the group with stuttering were found to be significantly higher than those of the group without stuttering.[14] This result is in agreement with studies in which the anxiety levels of children and adolescents with and without stuttering were examined via self-report scales.[14-18]

In a later study conducted by Iverach et al., comparing different anxiety types in children with and without stuttering, CWS were found to be six times more likely to have social phobia, seven times more likely to have subclinical generalized anxiety disorder, and four times more likely to be at risk for any anxiety disorder, compared to their fluently speaking peers.[19] In another study, children aged 8-11 years with stuttering were more likely to have separation anxiety but less likely to have generalized anxiety disorder, compared to children aged 12-18 with stuttering. In the same study, CWS who have high levels of social phobia paid greater attention to faces with a negative appearance, exhibiting attentional bias towards sad faces.[20] Similarly, it was shown that adolescents with stuttering have higher communication-related anxieties and weaker self-perceptions regarding their communication competencies, compared to adolescents without stuttering. In addition, it was discovered that children with higher severity of stuttering feel more fear during group discussions and conversations.[21]

In another study comparing the anxiety types of CWS based on parental statements, it was seen that CWS differ from their non-stuttering peers in certain anxiety types.[22] However, there are also studies showing that CWS do not differ from their non-stuttering peers in terms of anxiety characteristics.[23,24]

In summary, most evidence indicates that anxiety type and state are clinically important. While adolescence is a developmentally sensitive period for the onset of social phobia, it is still unclear whether the onset of anxiety is earlier in CWS. Hence, examining the characteristics of anxiety disorder in CWS is important to understand whether they also experience similar symptoms to those shown to affect AWS.[8]

Besides, it has been recommended that researchers collect as much detailed information as possible when examining psychological characteristics.[25] It is stated that a psychological measurement tool, such as the Spence Children's Anxiety Scale (SCAS), may be suitably functional, as the SCAS was developed to assess the severity of anxiety symptoms in general.[26] It is routinely used by psychologists in practice and research.[8] Furthermore, school age is considered a crucial period in terms of requiring children to communicate with their peers and in terms of environmental risk factors related to anxiety that may be seen in individuals with stuttering. Therefore, the aim of this study was to compare the anxiety types of school age children with and without stuttering using the SCAS, which is a self-reported scale. The answers to the following questions were sought:

1. Is there a statistically significant difference between the sub-factor and total scores of the SCAS between children aged 9-12 with stuttering and their non-stuttering peers?

2. Is there a relationship between the stuttering children's stuttering frequency, duration, and secondary behavior scores evaluated via the Stuttering Severity Instrument-4-TR (SSI-4-TR) and their sub-factor and total scores from the SCAS?

MATERIAL AND METHODS

PARTICIPANTS

The participants consisted of a total of 50 school age children; 25 (22 boys, 3 girls) stuttering children aged 9-12 years, and 25 non-stuttering children (22 boys, 3 girls) who were matched with the CWS in terms of age and gender. The mean age of the CWS was 115.64±9.8 months, the youngest was 108 months old, and the oldest was 141 months old. Similarly, the mean age of the children without stuttering (CWNS) was 116.52±10.3 months, the youngest was 108 months old, and the oldest was 148 months old.

CWS were recruited through special education and rehabilitation centers in İstanbul/Türkiye, and those without stuttering were recruited through primary schools. Inclusion criteria for the children in the group with stutter study were: CWS between the ages of 9-12 years; not having any history of cognitive, hearing or neurological impairments; and not using any medication that may affect their cognitive processes. Participants were evaluated by an experienced speech and language therapist using a detailed clinical interview. Stuttering frequency of 3% or greater per 400 syllables was identified as an inclusion criteria for the study.

The criteria for identifying CWNS were: CWNS aged between 9-12 years; no disability (cognitive, hearing, neurological disorders) according to the parental report; no diagnosis of stuttering according to both the parents and speech and language therapist assessment; and not using any medication that will affect their cognitive processes as reported by the parents. These data were obtained through a demographic information form prepared by the researchers.

DATA COLLECTION TOOLS

SSI-4-TR

SSI-4 is a standardized tool for assessing stuttering.[27] The total of the scores obtained by separately assessing the stuttering frequency, secondary behaviors, and the duration of stuttering moments constitutes the stuttering severity score. The SSI-4-TR is a validated Turkish language version of the SSI-4 that evaluates the stuttering characteristics of children aged 6-16. The Cronbach's alpha value of SSI-4-TR is 0.94. No significant difference was found in the test-retest measurements, except for secondary behaviors.[28]

The SCAS (Child Version)

The SCAS was developed to evaluate different dimensions of anxiety disorders according to Diagnostic and Statistical Manual of Mental Disorders-IV. The scale consists of 45 items in total: 44 questions are in the form of a 4-point Likert type and there is one open-ended question. The highest score that can be obtained from the scale is 114. The scale consists of six subfactors: panic disorder-agoraphobia, social phobia, separation anxiety, obsessive compulsive disorder, generalized anxiety, and fear of physical injury.[26] Its Turkish adaptation was conducted in 461 children aged 9-12 years. The Cronbach's alpha value was 0.83 and the split-half coefficient was 0.80.[29]

DEMOGRAPHIC INFORMATION FORM

This form was created for completion by the child's parents by the researchers. In the form, the child's age, gender, stuttering status, whether there is an additional diagnosis, and if there is any medication use that will affect their cognitive processes are investigated.

DATA COLLECTION

This study was conducted in accordance with the Helsinki Declaration of principles. To conduct this study, permission was obtained from the University of Health Sciences Hamidiye Scientific Research Ethics Committee (date: December 12, no: E-46418926-050.01.04-84469). Also, informed consent forms were received from the children participating in the study and their parents. The data were collected as a result of the researchers' individual assessments with the children and their parents. Children who were reported by their parents to have an additional diagnosis were not included in the study. The children's disfluency characteristics were evaluated by video-recording at least 400-syllable speech samples in both spontaneous speaking and reading tasks by the researchers. The children then completed the scales individually.

STATISTICAL ANALYSIS

SPSS, version 26 was used for data analysis (IBM Inc., Armonk, NY, USA). Mean and standard deviation values were calculated to describe the participants' demographics. Normality of distribution of data sets was assessed using the Kolmogorov-Smirnoff test. The Obsessive Compulsive Disorder scores and the SCAS total scores were normally distributed and thus the independent samples t-test was used to compare between the groups. All other data sets were non-parametric and thus the Mann-Whitney U test was used to compare the other SCAS subfactor scores in the intergroup analysis. The effect size of the values obtained from the comparisons between the groups was also calculated. In addition, Spearman or Pearson correlation analyses were used for assessing the relationships between the SSI-4-TR scores of CWS and their SCAS sub-factor and total scores.

RESULTS

COMPARISON OF SCAS SUB-FACTOR AND TOTAL SCORES OF CWS AND CWNS

According to the normality analysis, the Obsessive Compulsive Disorder scores and the SCAS total scores were normally distributed in both groups ($p>0.05$). Thus, the independent samples t-test was utilized to compare the Obsessive Compulsive Disorder scores and the Spence total scores, while the Mann-Whitney U test was used to compare the other variables. The data compared using the Mann-Whitney U test and are shown in Table 1 other data sets compared with the independent samples t-test are shown in Table 2.

As can be seen from Table 1, there was no significant difference between the Panic Disorder-Agoraphobia, Separation Anxiety Disorder, Generalized Anxiety, and Fear of Physical Injury sub-factor scores of the children with and without stuttering. However, the Social Phobia scores of the CWS were significantly higher than those of the CWNS ($p=0.008<0.01$). The effect size for differentiation between the groups was 0.75.

The results shown in Table 2 indicate a significant difference between the SCAS total scores of the children with and without stuttering ($p=0.009<0.01$). The effect size for differentiation between the groups was 0.77.

TABLE 1: Comparison of the panic disorder-agoraphobia, social phobia, separation anxiety disorder, generalized anxiety, and fear of physical injury sub-factor scores of the children with and without stuttering.

Groups		n	Mean rank	Sum of rank	U	Z	p value	Effect
Panic disorder-agoraphobia	Stuttering	25	26.62	665.5	284.5	-0.547	0.584	
	Nonstuttering	25	24.38	609.5				
Social phobia	Stuttering	25	30.92	773.0	177	-2.642	0.008**	0.75
	Nonstuttering	25	20.08	502.0				
Separation anxiety disorder	Stuttering	25	29.46	736.5	213.5	-1.932	0.053	
	Nonstuttering	25	21.54	538.5				
Generalized anxiety	Stuttering	25	28.98	724.5	225.5	-1.698	0.09	
	Nonstuttering	25	22.02	550.5				
Fear of physical injury	Stuttering	25	27.10	677.5	272.5	-0.781	0.435	
	Nonstuttering	25	23.90	597.5				

**p<0.01.

TABLE 2: Comparison of the obsessive compulsive disorder scores and the Spence Children's Anxiety Scale total scores of the children with and without stuttering.

Groups		n	Mean	SD	t value	df	p value	Effect
Obsessive compulsive disorder	Stuttering	25	10.12	3.3	1.501	48	0.140	
	Nonstuttering	25	8.68	3.5				
Spence total	Stuttering	25	41.24	14.5	2.715	48	0.009**	0.77
	Nonstuttering	25	31.20	11.5				

**p<0.01; SD: Standard deviation; df: degrees of freedom.

ASSESSMENT OF THE RELATIONSHIP BETWEEN THE SSI-4-TR SCORES AND THE SCAS SCORES OF THE CWS

No statistically significant relationship was found between the SSI-4-TR frequency scores and the SCAS sub-factor and total scores of the CWS (Spearman correlation analysis was used for the relationships between the SSI-4-TR frequency scores and the Panic Disorder and Fear of Physical Injury scores, while Pearson correlation analysis was utilized for the others; p>0.05). No statistically significant relationship was found between the SSI-4-TR duration scores and the SCAS sub-factor and total scores of the CWS (Spearman correlation analysis; p>0.05).

A statistically significant, negative, low-level correlation was found between the SSI-4-TR secondary behavior scores and the SCAS scores of the CWS (Pearson Correlation Analysis; r=-0.402; p=0.046<0.05). No statistically significant relationship was found between the secondary behavior scores and the Panic Disorder, Social Phobia, Obsessive Compulsive Disorder, Generalized Anxiety, Fear of Physical Injury, and total scale scores of the CWS (Spearman correlation analysis was calculated between the Panic Disorder and Fear of Physical Injury scores and the SSI-4-TR secondary behavior scores, while Pearson Correlation Analysis was calculated for the others; p>0.05).

DISCUSSION

This study firstly aimed to compare the anxiety types of school age children with and without stuttering. To this end, children's anxiety types were examined using the SCAS which is a scale based on self-report.[30] in this study no significant difference was found between the separation anxiety, fear of physical injury, generalized anxiety, obsessive compulsive disorder, and panic disorder-agoraphobia sub-factor scores of the children with and without stuttering. However, the social phobia and the SCAS total scores of the CWS were significantly higher than those of the CWNS. This result is in line with earlier studies in which the anxiety levels of children and adoles-

cents with and without stuttering were examined using self-report scales.[14-18]

In a study conducted with Turkish-speaking children who stutter, in which the anxiety types of children aged 8-11 with and without stuttering were examined using the parent version of the scale used in our study, a significant difference in the anxiety types of social phobia, separation anxiety and obsessive compulsive disorder was found between the two groups.[22] Various factors (Child and parent features) may have led to the significant difference in the social phobia subtype scores in our study, while there was no difference in the other two subtypes. For instance, the children participating in the study may have avoided fully expressing the anxiety characteristics that they experience. Also, different results may have been influenced by the anxiety levels of the parents of CWS about their child's stuttering.[22,30] Similarly, in a study by Iverach et al., both parent and child versions of the scale used in our study were utilized. Iverach et al. reported the mean scores for the social phobia and separation anxiety subscales (child and parent report) and generalized anxiety subscale (parent report) to be significantly higher for the CWS compared to their non-stuttering peers, with a moderate effect size.[19] In contrast, in the current study, which only used the child report, the social phobia anxiety types of CWS were greater than reported by Iverach et al. and with a high effect size (0.75), compared to their non-stuttering peers.[19]

Stuttering causes unpredictable, obstructive, and sometimes disruptive speech by interrupting the communication process.[31] This can evoke various physiological, behavioral, cognitive, and emotional responses in the speaker.[32] Social phobia (social anxiety disorder) is defined as an anxiety disorder characterized by a serious and constant fear of being humiliated and negatively evaluated in social or performance-based situations (e.g. making a presentation).[6,33] It has been reported that experiences, such as fear of being negatively evaluated, negative thoughts, and attentional bias that non-stuttering individuals with social phobia often have, are frequently associated with stuttering, too.[33] CWS may face with the negative peer attitudes from an early age. Considering the negative social experiences that they have, such as being victims of bullying at school age, the difference detected in the anxiety type of social phobia becomes more clearer.[9,10] It has previously been emphasized that the negative social experiences of children and adolescents with stuttering may be a risk factor for anxiety.[8]

Various models have been proposed to explain the social phobia characteristics observed in individuals with stuttering. For instance, an individual with stuttering may expect social threats in a social situation or a situation requiring a performance, which may trigger thoughts about the future, such as "Everyone will hear me stutter" or "No one will like me if I stutter". It has been suggested that these negative thoughts may be rooted in negative attentional bias or experiences of individuals with stuttering, such as negative reactions of listeners, such as impatience, indifference, or discomfort that the person with stuttering has experienced previously. Therefore, individuals with stuttering may have some thoughts, such as fear of being negatively evaluated, in response to their stuttering in social environments (e.g., if I stutter, no one will like me). This then triggers the perception that speaking in social environments is a threat, and this threat is correlated with having anxiety and fear.[33]

In summary, social phobia findings which have been frequently reported in AWS are in agreement with the current study's results regarding the participant children aged 9-12 years.[13,34] Despite these results, there are also studies showing that children with and without stuttering do not differ in terms of anxiety characteristics.[23,24] To resolve this controversy, it is anticipated that longitudinal studies will be able to provide more comprehensive data about the subject.

Another aim of this study was to examine the possible relationships between stuttering frequency, duration and secondary behavior scores from the SSI-4-TR, and their sub-factor and total scores from the SCAS-Child Version in CWS. However, no relationship was found between the stuttering frequency and duration scores of the CWS and the scores derived from the SCAS. Thus, it is possible that other factors, rather than the severity of stuttering, may have had an effect on the relationship between anxiety and stut-

tering. For example, in the study by Kaddah et al., it was found that as the onset age and duration of stuttering increased, the level of anxiety observed in the individual with stuttering also increased.[14]

This study has some limitations which should be noted. First, all the children participating in the study were those receiving speech and language therapy sessions. If it is assumed that the CWS who participated sought stuttering therapy because they already have a high level of anxiety about it, it can be concluded that receiving therapy may have had an effect on these children having higher levels of social phobia. For a more detailed understanding of the effect of receiving therapy on the results, the anxiety characteristics of children who receive and do not receive therapy can be examined longitudinally. Moreover, the sample size in the study was small, and the anxiety characteristics were examined only via self-report, using a single measurement tool. In future studies, it is recommended to examine anxiety characteristics also using physiological methods and to include factors that may be related to anxiety, such as attentional bias.[20]

CONCLUSION

To conclude, it should be considered that individuals who apply to speech and language therapy clinics for school age stuttering therapy can also have various anxiety symptoms. Different anxiety types that can be observed in individuals with stuttering may affect different parts of the individual's life in addition to their stuttering. Speech and language therapists, who plan individual therapy, can better understand the individual's stuttering when they have knowledge about different types of anxiety. Also, CWS being self-aware of their anxiety characteristics is also important to be able to prevent its possible negative effects in adulthood. Anxiety and other mental health disorders are observed to negatively affect the long-term continuation of the achievements from stuttering therapy.[11] We therefore suggest that beliefs and anxiety levels related to stuttering should also be checked in routine speech and language assessments.[13,31] We also suggest that greater understanding of these issues may be obtained by conducting research into not only the anxiety levels and possibly anxiety types of the CWS but also the anxieties affecting their immediate families, ideally in a large, single study. Finally we suggest that speech and language therapists are recommended to enrich their clinical practice with evidence-based intervention approaches that also target the psychological well-being levels of CWS. In addition to all these, some studies indicate that mothers of CWS also need social support.[35] Accordingly, we suggest that conducting a study that explores the anxiety levels (and possibly types) of both children who stutter and their families within the same study may lead to more comprehensive results.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Ahsen Erim;* ***Design:*** *Ahsen Erim, Ayşe Aydın Uysal;* ***Control/Supervision:*** *Ahsen Erim, Ayşe Aydın Uysal;* ***Data Collection and/or Processing:*** *Ahsen Erim;* ***Analysis and/or Interpretation:*** *Ahsen Erim, Ayşe Aydın Uysal;* ***Literature Review:*** *Ahsen Erim;* ***Writing the Article:*** *Ahsen Erim, Ayşe Aydın Uysal;* ***Critical Review:*** *Ahsen Erim, Ayşe Aydın Uysal;* ***References and Fundings:*** *Ahsen Erim, Ayşe Aydın Uysal;* ***Materials:****Ahsen Erim, Ayşe Aydın Uysal.*

REFERENCES

1. Guitar B. Stuttering: An Integrated Approach to its Nature and Treatment. 4th ed. Baltimore: Lippincott Williams & Wilkins; 2014.
2. Constantino CD, Manning WH, Nordstrom SN. Rethinking covert stuttering. J Fluency Disord. 2017;53:26-40. [Crossref] [PubMed]
3. Smith A, Weber C. How stuttering develops: the multifactorial dynamic pathways theory. J Speech Lang Hear Res. 2017;60(9):2483-505. [Crossref] [PubMed] [PMC]
4. Craske MG, Rauch SL, Ursano R, Prenoveau J, Pine DS, Zinbarg RE. What is an anxiety disorder? Depress Anxiety. 2009;26(12):1066-85. [Crossref] [PubMed]
5. Kraaimaat FW, Vanryckeghem M, Van Dam-Baggen R. Stuttering and social anxiety. J Fluency Disord. 2002;27(4):319-30; quiz 330-1. [Crossref] [PubMed]
6. American Psychiatric Association [Internet]. © 2022 American Psychiatric Association [Cited: October 10, 2021]. What are anxiety disorders? Available from: [Link]
7. Craig A, Tran Y. Fear of speaking: chronic anxiety and stammering. Adv Psychiatr Treat. 2006;12(1):63-8. [Crossref]
8. Smith KA, Iverach L, O'Brian S, Kefalianos E, Reilly S. Anxiety of children and adolescents who stutter: a review. J Fluency Disord. 2014;40:22-34. [Crossref] [PubMed]
9. Ezrati-Vinacour R, Platzky R, Yairi E. The young child's awareness of stuttering-like disfluency. J Speech Lang Hear. 2001;44(2):368-80. [Crossref]
10. Davis S, Howell P, Cooke F. Sociodynamic relationships between children who stutter and their non-stuttering classmates. J Child Psychol Psychiatry. 2002;43(7):939-47. [Crossref] [PubMed] [PMC]
11. Iverach L, O'Brian S, Jones M, Block S, Lincoln M, Harrison E, et al. Prevalence of anxiety disorders among adults seeking speech therapy for stuttering. J Anxiety Disord. 2009;23(7):928-34. [Crossref] [PubMed]
12. Iverach L, Rapee RM. Social anxiety disorder and stuttering: current status and future directions. J Fluency Disord. 2014;40:69-82. [Crossref] [PubMed]
13. Messenger M, Onslow M, Packman A, Menzies R. Social anxiety in stuttering: measuring negative social expectancies. J Fluency Disord. 2004;29(3):201-12. [Crossref] [PubMed]
14. Kaddah F, Mesallam TA, Shoeib RM, Abdelgoad AA. Anxiety profile in children and adolescents with stuttering. Egypt J Ear Nose Throat Allied Sci. 2020;21(2):37-43. [Crossref]
15. Blood GW, Blood IM. Preliminary study of self-reported experience of physical aggression and bullying of boys who stutter: relation to increased anxiety. Percept Mot Skills. 2007;104(3 Pt 2):1060-6. [Crossref] [PubMed]
16. Blood GW, Blood IM, Maloney K, Meyer C, Qualls CD. Anxiety levels in adolescents who stutter. J Commun Disord. 2007;40(6):452-69. [Crossref] [PubMed]
17. Cherif L, Boudabous J, Khmakhem K, Kammoun S, Kacem IH, Ayadi H, et al. Self-esteem and anxiety in stuttering children and attitude of their parents. Health Edu Care. 2018; 3(2):1-5. [Crossref]
18. Mulcahy K, Hennessey N, Beilby J, Byrnes M. Social anxiety and the severity and typography of stuttering in adolescents. J Fluency Disord. 2008;33(4):306-19. [Crossref] [PubMed]
19. Iverach L, Jones M, McLellan LF, Lyneham HJ, Menzies RG, Onslow M, et al. Prevalence of anxiety disorders among children who stutter. J Fluency Disord. 2016;49:13-28. [Crossref] [PubMed]
20. McAllister J, Kelman E, Millard S. Anxiety and cognitive bias in children and young people who stutter. Procedia Soc Behav Sci. 2015;193:183-91. [Crossref]
21. Blood G, Blood I, Tellis G, Gabel R. Communication apprehension and self-perceived communication competence in adolescents who stutter. J Fluency Disord. 2001;26(3):161-78. [Crossref]
22. Cangi ME, Erim A. Comparison of children who do and do not stutter regarding dimensions of temperament, aspects of attention-deficit hyperactivity disorder and anxiety types. Turkish Psychological Counseling and Guidance Journal. 2021;11(61):263-79. [Link]
23. Rocha M, Yaruss JS, Rato JR. Stuttering impact: a shared perception for parents and children? Folia Phoniatr Logop. 2020;72(6):478-86. [Crossref] [PubMed]
24. Smith KA, Iverach L, O'Brian S, Mensah F, Kefalianos E, Hearne A, et al. Anxiety in 11-year-old children who stutter: findings from a prospective longitudinal community sample. J Speech Lang Hear Res. 2017;60(5):1211-22. Erratum in: J Speech Lang Hear Res. 2018;61(1):52. [Crossref] [PubMed]
25. Nauta MH, Scholing A, Rapee RM, Abbott M, Spence SH, Waters A. A parent-report measure of children's anxiety: psychometric properties and comparison with child-report in a clinic and normal sample. Behav Res Ther. 2004;42(7):813-39. [Crossref] [PubMed]
26. Spence SH. A measure of anxiety symptoms among children. Behav Res Ther. 1998;36(5):545-66. [Crossref] [PubMed]
27. Riley GD, Bakker K. Stuttering Severity Instrument: SSI-4. 1st ed. Austin: Tex: Pro-Ed; 2009.
28. Mutlu Aİ, Tırank ŞB, Gündüz B. 6 ve 16 yaş okul çocukları arasındaki SSI-4-TR/KEŞIDA-4 dördüncü baskısının Türkçe versiyonunun güvenilirliği ve geçerliliği [Reliability and validity of the Turkish version of the stuttering severity instrument, fourth edition (SSI-4-TR/ KEŞİDA4) between 6 and 16 years old school children]. Izmir Democracy University Health Sciences Journal. 2020;3(2):135-44. [Link]
29. Direktör C, Serin NB. Psychometric Properties of Spence Children's Anxiety Scale (SCAS). Eurasia J Math Sci Technol. 2017;13(10):6725-36. [Crossref]
30. Costelloe S, Davis S, Cavenagh P, Doneva SP. Attention levels in young children who stutter. Appl Neuropsychol Child. 2019;8(4):355-65. [Crossref] [PubMed]
31. Menzies RG, Onslow M, Packman A, O'Brian S. Cognitive behavior therapy for adults who stutter: a tutorial for speech-language pathologists. J Fluency Disord. 2009;34(3):187-200. [Crossref] [PubMed]
32. Beilby JM, Yaruss JS. The impact of a stuttering disorder on Western Australian children and adolescents. Perspectives on Fluency & Fluency Disorders. 2012;22(2):51-62. [Crossref]
33. Iverach L, Rapee RM, Wong QJJ, Lowe R. Maintenance of social anxiety in stuttering: a cognitive-behavioral model. Am J Speech Lang Pathol. 2017;26(2):540-56. [Crossref] [PubMed]
34. Iverach L, Jones M, O'Brian S, Block S, Lincoln M, Harrison E, et al. The relationship between mental health disorders and treatment outcomes among adults who stutter. J Fluency Disord. 2009;34(1):29-43. Erratum in: J Fluency Disord. 2009;34(4):301. [Crossref] [PubMed]
35. Yaşar Ö, Vural Batık M, Özdemir Ş. Kekemeliği olan okul çağı çocukların annelerinin öznel iyi oluş ve umut düzeylerinin incelenmesi: kesitsel araştırma [The subjective well-being and hope levels of mothers with children who stutter: cross-sectional study]. Türkiye Klinikleri Sağlık Bilimleri Dergisi. 2022;7(2):349-57. [Crossref]