

Júlia Janssen Pantuza¹ 

Ingrid Occhi Alexandre¹ 

Adriane Mesquita de Medeiros¹ 

Anna Carolina Ferreira Marinho¹ 

Letícia Caldas Teixeira¹ 

Sense of Coherence and the fear of public speaking in university students

Senso de Coerência e o medo de falar em público em universitários

Keywords

Sense of Coherence

Fear

Anxiety

Speech

Students

Descritores

Senso de Coerência

Medo

Ansiedade

Fala

Estudantes

ABSTRACT

Purpose: To test the association between the Sense of Coherence (SOC) and the fear of public speaking in university students. **Method:** Cross-sectional study was carried out with a sample of 1124 undergraduate students of a Brazilian public university. An online questionnaire was used divided into three blocks: the first evaluated the sociodemographic data and the somatic symptoms of the fear of public speaking; the second evaluated the SOC, through the SOC-13 questionnaire; and the third was composed by the Scale for Self-Assessment in Public Speaking (SSPS), with questions that point out cognitive aspects of this activity. The students were divided into two groups (high SOC and low SOC) through the Two-step Cluster analysis. Data were analyzed descriptively and by the Mann-Whitney test and bi and multivariate logistic regression models, with significance set at 5%. **Results:** The students who reported not being afraid to speak in public were more likely to belong to the high SOC group (OR = 3.19, 95% CI = 2.30-4.42). Students from the high SOC group self-assessed more positively on the SSPS scale ($p < 0.001$). **Conclusion:** College students over 30 years old, on the second half of graduation, with breathing discomfort, who do not report fear of public speaking and who perceive themselves more positively for public speaking, they have the highest SOC. Thus, it is observed the importance of considering the SOC as an important coping resource, given the great interference of emotional aspects in public speech.

RESUMO

Objetivo: Testar a associação entre o Senso de Coerência (SOC) e o medo de falar em público em universitários. **Método:** Estudo transversal, com amostra de 1.124 estudantes de cursos de graduação de uma universidade pública brasileira. Foi utilizado questionário *online* dividido em três blocos: o primeiro avaliou os dados sociodemográficos e os sintomas somáticos do medo de falar em público; o segundo avaliou o SOC, por meio do questionário SOC-13; e o terceiro foi composto pela Escala para Autoavaliação ao Falar em Público (SSPS), que norteia aspectos cognitivos dessa atividade. Os universitários foram divididos em dois grupos (SOC alto e SOC baixo) por meio da análise de *Cluster* de dois passos. Os dados foram analisados de forma descritiva e por meio do teste de Mann-Whitney e modelos de regressão logística bi e multivariado, com significância de 5%. **Resultados:** Os universitários que relataram não ter medo de falar em público apresentaram mais chance de pertencer ao grupo SOC alto (OR=3,19, IC95%=2,30-4,42). Os universitários do grupo SOC alto se autoavaliaram mais positivamente na escala SSPS ($p < 0.001$). **Conclusão:** Universitários com mais de 30 anos, na segunda metade da graduação, das áreas da Saúde e Exatas, com sintoma de respiração ofegante, que não relatam medo de falar em público e que se autopercebem mais positivamente para falar em público, apresentam o SOC mais alto. Diante do estudo, observa-se a importância de se considerar o SOC como um recurso de enfrentamento importante, tendo em vista a grande interferência dos aspectos emocionais na fala em público.

Correspondence address:

Julia Janssen Pantuza. Av. Professor Alfredo Balena, 190, sala 251, Santa Efigênia Belo Horizonte (MG), Brasil, CEP: 30.130-100.
E-mail: juliapantuza@gmail.com

Received: June 09, 2019.

Accepted: September 19, 2019.

Study conducted at the Universidade Federal de Minas Gerais – UFMG, programa de pós-graduação em Ciências Fonoaudiológicas, Belo Horizonte (MG), Brasil.

¹ Universidade Federal de Minas Gerais – UFMG – Belo Horizonte (MG), Brasil.

Conflict of interest: Nothing to declare.

Financial support: Nothing to declare..



This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The Sense of Coherence (SOC) reflects a person's ability to respond to stressful situations and is considered the central concept of Salutogenic Theory. The theory recommends that factors harmful to the individual belong, in part, to the environment and, in part, to the individual's perception and way of facing these factors⁽¹⁾.

SOC is considered an important coping resource for the preservation of health, based on the development of a positive state of mental health⁽²⁻⁵⁾. The dimensions used to measure it address aspects of emotional health and are divided into three dimensions: comprehensibility, manageability and significance. Comprehensibility is a cognitive component, and it refers to the ability to understand what is happening around you. Manageability, considered a behavioral component, is related to the ability to manage a situation individually or through significant people from the social network itself. Significance, a motivational component, is the ability to find meaning in a situation⁽⁴⁾.

Thus, the more an individual perceives the world as predictable and meaningful, the less likely he is to develop states of stress and anxiety⁽²⁾. Studies show that people with a high SOC have a good perception of their health and a better quality of life, less fatigue, depression and anxiety, compared to those with a low SOC^(6,7).

However, research on public speaking shows that fear of speaking is one of the most difficult social situations to face and one of the most common forms of social anxiety related to suffering and lost of opportunities. In the general population, as well as in the university population, fear of public speaking is a very prevalent fear⁽⁸⁻¹⁰⁾, which arises in anticipation of the stressful or permanent situation when the individual needs to expose himself to the public⁽¹¹⁾. The response to this stressful situation happens through somatic symptoms, cognitive and behavioral responses⁽¹²⁾.

Somatic symptoms are expressed by palpitation, flushing, tremor, sweating or tachycardia^(8,13). The cognitive response results from a negative self-image of the individual and a belief that the evaluation of the other will also be negative⁽¹⁴⁾. Behavioral responses refer to the establishment of tactics to avoid public speaking^(11,13).

Despite the relevance of the topics introduced, there are still no studies about the relationship between SOC and fear of public speaking. Exploring these factors will provide elements to understand this relationship and support speech therapy for public speaking. Given the above, the objective of this study was to test the association between SOC in university students and the fear of public speaking.

METHOD

The study protocol was approved by the Research Ethics Committee (CEP) under opinion number 1.619.724. All participants received a consent form.

A cross-sectional study was carried out with a sample of undergraduate students at a public Brazilian university. The university students were invited to participate in the research through an invitation letter sent by email, with a link that directed them to an online questionnaire.

The sample calculation was based on a total of 16,000 students, considering a probabilistic sample without replacement by undergraduate courses in the areas of Humanities, Exact, Health and Arts. The assumptions used were a 95% confidence interval with an accuracy of 2%. It was obtained a sample size of 1,124 subjects.

The inclusion criteria to participate in the research were: being a student enrolled in an undergraduate course in the areas of Arts, Exact, Humanities and Health, at the University Campus of the study and having access to the internet. Students who self-reported stuttering and students enrolled in Speech Therapy and / or Psychology courses were excluded, since these students had knowledge in their curriculum that could influence their responses.

The online questionnaire was available through Google Forms and configured to not allow multiple conclusions from the same participant. The questionnaire was divided into three blocks. The first addressed questions regarding sociodemographic factors, frequency of public speaking activities and somatic symptoms before or during public speaking. The options to be checked were: always, often, rarely, never or almost never. With regard to somatic symptoms before or during public speaking, university students should mark what symptoms they had between the options of tremor, sweating or cool hands, facial flushing, wheezing and heart rate acceleration.

The second block consisted of the Sense of Coherence scale questionnaire (SOC-13), cross-culturally adapted and validated for Brazilian Portuguese⁽¹⁾. The SOC-13 questionnaire contains 13 questions, with five alternative described answers, scored from one to five. The sum of the 13 questions generates a score that can vary from 13 to 65, with higher values representing a greater capacity for the individual to face stressful situations and stay healthy⁽¹⁵⁾.

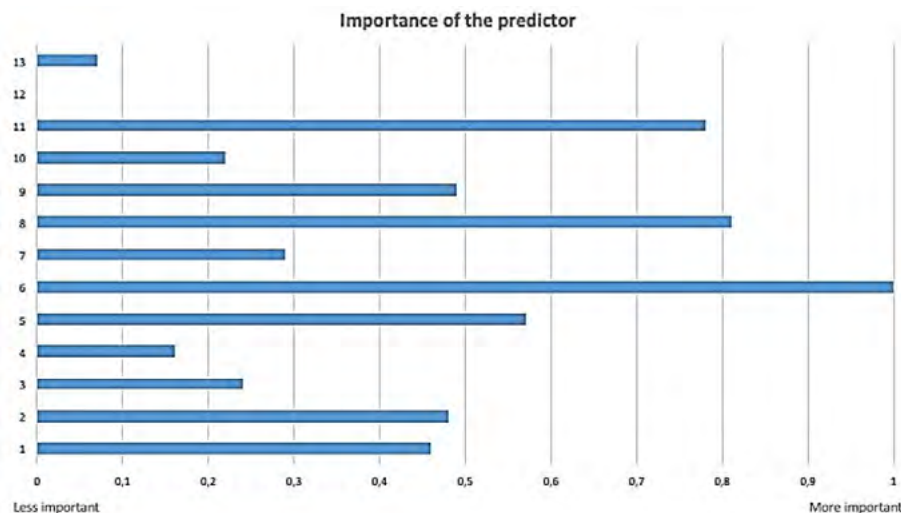
As there is still no consensus on a cut-off point for SOC-13⁽⁴⁾, SOC was categorized into high or low through the two-step Cluster Analysis, considering the answers to each of the SOC-13 questions. In addition to the response pattern for each SOC-13 question, this analysis shows how important each question was for the formation of groups ("SOC high" and "SOC low")⁽¹⁶⁾. From Table 1, it is possible to view the average score and standard deviation for each of the SOC-13 questions in both SOC groups. The average scores for each question in the low SOC group, when compared by the Mann-Whitney test with those in the high SOC group, were statistically higher, except in the 12th question. This question was the one that least influenced the formation of the two groups (Figure 1).

Table 1. Sense of Coherence dichotomization by cluster analysis based on item scores of the Brazilian version of SOC-13 (n=1124)

SOC-13 items	Low SOC			High SOC			p value *
	n	Mean	SD	n	Mean	SD	
1. What you do daily is:	401	2.89	0.78	723	3.71	0.69	<0.001
2. To this day your life has been:	401	2.85	0.96	723	3.88	0.85	<0.001
3. Do you have interest in what goes around you?	401	3.43	1.00	723	4.09	0.75	<0.001
4. Do you think that you are treated unfairly?	401	3.23	0.82	723	3.71	0.71	<0.001
5. Do you have confused ideas and feelings?	401	1.85	0.85	723	3.02	0.95	<0.001
6. Do you think the things you do in your life make little sense?	401	2.34	0.85	723	3.85	0.82	<0.001
7. Have you ever been disappointed with people you trusted?	401	2.34	0.87	723	3.03	0.75	<0.001
8. Do you have feelings you wish you had not?	401	1.72	0.76	723	3.07	0.90	<0.001
9. Do you have doubt if you can control your feelings?	401	2.26	1.01	723	3.40	0.95	<0.001
10. Have you ever been surprised by the behavior of people you thought you knew well?	401	2.53	0.88	723	3.14	0.77	<0.001
11. In some situations, people feel unsuccessful. Have you ever felt failed?	401	2.05	0.77	723	3.28	0.80	<0.001
12. Do you feel that you are in an unusual situation, and don't know what to do?	401	2.87	0.96	723	2.85	1.01	0.677
13. Sometimes things happen in our lives that we later think we did not give the proper importance. When something happens in your life, you end up thinking you gave the importance:	401	2.92	0.90	723	3.26	0.75	<0.001

Number of cases (n); Sense of Coherence (SOC) ; Brazilian version of Sense of Coherence 13-items scale (SOC-13); Standard deviation (SD)
 * Mann-Whitney test. Results in bold type are statistical significant at 5% level

Figure 1. Importance degree of each SOC-13 item “High SOC” and “Low SOC” in groups formation



The third block consisted of the Scale for Self-Assessment in Public Speaking (SSPS)⁽¹⁴⁾, a self-applicable instrument adapted to Brazilian Portuguese⁽¹⁷⁾. The scale is based on cognitive theories that assume that social anxiety is the result of a negative perception of oneself and others in relation to oneself. The SSPS consists of ten questions and two subscales, one with a positive self-assessment and the other with a negative self-assessment, answered on a scale from zero (strongly disagree) to five (strongly agree) points. The maximum total score is 50 points, obtained by adding the ten items of the protocol, and the negative subscale score should be inverted according to the Brazilian group's proposal. Thus, the closer the values are to 50, the greater the positive assessment and the lower the negative; on the contrary, the lower the score obtained on the total score, the more negatively the subject self-evaluates in the situation of public speaking.

The dependent variable was the SOC. The independent variables were: fear of public speaking in a self-reported, sex, age range, area of the graduation (Health, Exact, Human or Arts), current period of graduation, frequency of public speaking, somatic symptoms of fear of public speaking and self-assessment of public speaking (Scale for Self-Assessment when Speaking in Public). For statistical analysis, the variable frequency of public speaking was categorized as yes or no. The graduation period variable was categorized into first half (1st to 6th period) and second half (7th to 12th period).

The analyzes were performed using the Statistical Package for the Social Sciences - SPSS (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.) statistical program. After descriptive analysis, the Bi and Multivariate Logistic Regression Model Method was used to compare the self-report of fear, demographic variables and somatic aspects of fear with

the SOC (low or high). Variables with a significance level of 20% in the bivariate analysis were considered able to enter the multivariate model (stepwise selection). The variables that presented a 5% significance level remained in the final model. To compare the total scores of the total SOC and its domains, in addition to the SSPS between students with low SOC and high SOC, the Mann-Whitney test was performed with a significance level of 5%.

RESULTS

1.124 university students participated in this study. More than half of the sample was female (64.6%), with a higher concentration between 21 and 25 years old (43.1%) and divided between the areas of Human (35.5%), Health (33.5%), Exact (26.6%) and Arts (4.4%). Regarding the period of graduation,

more than half of the students were studying between the 1st and the 6th period (59.6%). Most university students reported not speaking in public often (51.3%) and being afraid to speak in public (70.7%). Regarding the somatic symptoms of fear of public speaking, most individuals reported wheezing (95.6%). In sequence, the symptoms were an heart rate acceleration (64.7%), tremor, sweating or cool the hands (59.7%) and facial flushing (51.7%). Regarding the SOC values, most of the sample had a high SOC (64.4%), with a median SOC value for the total sample of 41 points, with a minimum score of 15 and a maximum of 59 points.

In Table 2, was verified through the bivariate analysis that the age range, the area of graduation, the period of graduation, the frequency of public speaking, the self-report of the fear of speaking in public and the somatic symptom wheezing were associated with SOC, these being the variables included in

Table 2. Association between SOC and sociodemographic variables, frequently public speech, public speech fear (self-reported) and somatic symptoms of fear (n=1124).

	Low SOC n (%)	High SOC n (%)	Unadjusted OR (95% CI)	p-value*	Ajusted OR (95% CI)	p-value*
Sex						
Female	267 (36.8)	459 (63.2)	1.0	0.298	-	-
Male	134 (33.7)	264 (66.3)	1.15 (0.89-1.48)		-	-
Age range (years)						
≤ 20	115 (38.9)	181 (61.1)	1.0	-	1.0	-
21-25	185 (38.2)	299 (61.8)	1.03 (0.76-1.38)	0.861	0.81 (0.57-1.15)	0.238
26-29	58 (36.7)	100 (63.3)	1.10 (0.74-1.63)	0.654	1.00 (0.64-1.56)	0.993
≥ 30	43 (23.1)	143 (76.9)	2.11 (1.40-3.19)	<0.001	2.19 (1.39-3.45)	0.001
Graduation area						
Human	161 (40.4)	238 (59.6)	1.0	-	1.0	-
Health	116 (30.9)	260 (69.1)	1.52 (1.13-2.04)	0.006	1.91 (1.39-2.62)	<0.001
Exact	106 (35.5)	193 (64.5)	1.23 (0.90-1.68)	0.188	1.49 (1.07-2.09)	0.019
Arts	18 (36.0)	32 (64.0)	1.20 (0.65-2.22)	0.554	1.54 (0.81-2.92)	0.186
Graduation period						
1° to 6° period	256 (38.2)	414 (61.8)	1.0	-	1.0	-
7° to 12° period	145 (31.9)	309 (68.1)	1.32 (1.03-1.69)	0.031	1.41 (1.04-1.91)	0.025
Frequently public speech						
No	229 (39.7)	348 (60.3)	1.0	0.004	1.0	0.653
Yes	172 (31.4)	375 (68.6)	1.44 (1.12-1.83)		1.06 (0.81-1.39)	
Public speech fear (self-reported)						
Yes	337 (42.4)	458 (57.6)	1.0	<0.001	1.0	<0.001
No	64 (19.5)	265 (80.5)	3.05 (2.24-4.14)		3.26 (2.35-4.52)	
Somatic Symptoms:						
1. Tremor, sweating or cool hands						
No	162 (35.8)	291 (64.2)	1.0	0.961	-	-
Yes	239 (35.6)	432 (64.4)	1.01 (0.79-1.29)		-	
2. Facial flushing						
No	201 (37.1)	341 (62.9)	1.0	0.341	-	-
Yes	200 (34.4)	382 (65.6)	1.13 (0.88-1.44)		-	
3. Wheezing						
No	24 (49.0)	25 (51.0)	1.0	0.050	1.0	0.031
Yes	377 (35.1)	698 (64.9)	1.78 (1.00-3.16)		1.94 (1.06-3.54)	
4. Heart rate acceleration						
No	138 (34.8)	259 (65.2)	1.0	0.636	-	-
Yes	263 (36.2)	464 (63.8)	0.94 (0.73-1.21)		-	

Sense of Coherence (SOC); Number of cases (n); Relative frequency(%); Odds ratio (OR); Confidence interval (CI). * Logistic regression. Results in bold type are statistical significant at 5% level

the multivariate model. Also in Table 2, it was found in the multivariate model that university students who reported not being afraid to speak in public were 3.26 (95% CI = 2.35-4.52) times more likely to have a high SOC, compared with those who reported being afraid to speak in public. Students aged 30 or over were 2.19 (95% CI = 1.39-3.45) times more likely to have a high SOC when compared to students under 20. With regard to the area of graduation, students in the Health field were 1.91 (95% CI = 1.39-2.62) times more likely to have a high SOC, compared to students in the Human area. Exact students were 1.49 (95% CI = 1.07-2.09) times more likely to have a high SOC, also compared to Human students. Students who were in the second half of their undergraduate course (between the 7th and 12th periods) had 1.41 (95% CI = 1.04-1.91) times more likely to have a high SOC. Among the somatic symptoms of fear, students who reported wheezing were 1.94 (95% CI = 1.06-3.54) times more likely to have a high SOC.

The data in Table 3 reaffirmed the difference between the high and low SOC groups, formed through cluster analysis. Both the sum of the total SOC score and the sum of the scores for each SOC domain had higher median values in the high SOC group than in the low SOC group ($p < 0.001$). University students from the low SOC group rated themselves more negatively on the public speech self-assessment scale (SSPS), compared with those from high SOC ($p < 0.001$).

Table 3. Comparison of SOC scores (total and each domain) and Public Speech Self- Assessment Scale (SSPS) between the high and low SOC groups [median; min-max]. (n=1124)

Variables	Total Score instrument	Low SOC (n=401)	High SOC (n=723)	p-value*
		Median; min-max	Median; min-max	
SSPS	50	29; 0-49	34; 0-50	<0.001
SOC (total score)	65	34; 15-42	44; 35-59	<0.001
Comprehensibility	25	12; 6-20	15; 9-22	<0.001
Manageability	20	10; 4-16	13; 9-19	<0.001
Meaningfulness	20	12; 4-17	16; 10-20	<0.001

*Mann-Whitney Test. Results in bold type are statistical significant at 5% level

DISCUSSION

This study showed that SOC in university students is associated with self-reported fear of public speaking. College students who did not report fear of public speaking were three times more likely to have a high SOC. Having a high SOC reflects a person's resources and ability to manage tension positively. In this way, the individual is able to identify and mobilize resources to promote effective coping and find solutions to resolve the tension in order to promote health⁽¹⁸⁾, aspects that favor the individual's coping with public speaking.

It is known that the way a subject gives meaning or deals with situations of public speaking is closely related to internal and emotional factors^(2,3) and, to control the fear of speaking

in public, the individual needs to face and process positively symptoms, emotions and the environment^(2,4).

The low SOC contributes to the perception of yourself as a bad speaker, and seeking strategies to increase confidence is, therefore, essential for public speaking advice. A good communicator must believe in what he says and develop an assertive form of communication, that is, be self-confident and not be afraid to express his opinion⁽¹⁹⁾.

Among the causal factors of fear of speaking in public are the lack of knowledge about the subject, a negative personal image and the low frequency in public presentations, a task that is a challenge for most people^(3,19). For high performance presentations, you must have mastery of the subject, organization of the content and good support and training material⁽¹⁸⁾. In order to break the barriers of fear of public speaking, training is required, changing the personal image from negative to positive and developing positive coping strategies, such as self-confidence, expressiveness, voice and body training and, mainly, practice^(3, 19).

The association of the low SOC with individuals who evaluate themselves negatively in public speaking is clear when we analyze the phenomenon of "illusion of transparency". This phenomenon occurs when the speaker believes that his fear and anxiety are more noticeable to his listeners than it really is⁽²⁰⁾.

University students over 30 years old are more likely to have a high SOC, as well as university students who were already in the second half of the graduation course (7th to 12th term). According to Antonovsky, there is no significant change in SOC after youth, as there is stabilization or small variations of 10%, except when there are major changes in the individual's life⁽⁶⁾. SOC values appear to be relatively stable over time, at least for individuals who have a high SOC. However, research indicates that SOC values tend to increase throughout life^(2,18,21), which confirms the result of this study, in which it was observed that students that had 30 years old or more and were in more advanced periods of graduation had the highest SOC.

Regarding the association between the SOC and the graduation area, the data indicated that students from the Health and Exact areas are more likely to have a high SOC, when compared to students from the Human area. There are no studies that compare SOC scores in different areas of knowledge and, although there are reports of stress among students in the Health field^(22,23), this is also an area that develops sensitivity to social issues and stress itself.

In this study, the frequency of public speaking reported by university students was not associated with SOC. However, studies indicate that the higher frequency of public speaking significantly reduces the fear of public speaking^(20,22,24-26). The practice of communicative performance allows the individual to perceive this moment as controllable and assign more positive meanings to situations of public speaking, being less likely to develop states of stress and anxiety. The more a subject positively faces everyday social events, the more he will be able to deal with many stressful situations that threaten his health, such as the fear of speaking in public⁽²⁷⁾.

In view of the above, it is suggested that public speaking consultants focus on improvised speech strategies, seeking to

develop the ability of assertive speech in order to establish good personal communication. Thus, the greater the frequency and positive skills in public speaking activities, the better the image that these individuals will have of themselves.

Regarding symptoms of public speaking, it was observed that university students reported several somatic symptoms, as described in the literature^(9,10,28). However, individuals who reported wheezing were more likely to have a high SOC, that is, the symptom of wheezing remains even in students who cope well with stress. Within the framework of vocal psychodynamics, breathing marks the rhythm of life and wheezing gives the idea of agitation and nervousness and, thus, whether conscious or not, individuals influence and are influenced by the way they speak⁽²⁹⁾.

In response to a risky situation, the human body releases hormones, and this response resulting from the escape reaction causes significant changes in the body, one of which is the acceleration of breathing^(9,30). This change is caused by the activities of the autonomic nervous system and indicates sympathetic arousal, which may reflect variations in stress and levels of anxiety⁽³⁰⁾. In view of the data, we emphasize the importance of consultants reinforcing techniques to minimize the effects of wheezing, which marks a negative psychodynamic reading in public speech.

It is importante to note that this was a pioneering study that related the SOC to the fear of speaking. It is believed that the creation of guiding situations for the SOC and SSPS protocols, in which the responses of individuals can be compared, in different situations, produces an even greater deepening of these instruments. In this way, we encourage that in future research they are explored and tested.

The investigation of the SOC associated with the fear of public speaking is relevant in Speech Therapy and shows the SOC as a health predictor and an individual coping resource, which can serve as a subsidy in the planning of actions for public speaking consultancies or therapies.

CONCLUSIONS

SOC in university students is associated with self-reported fear of public speaking and self-perception of public speaking. University students over 30 years old, in the second half of graduation, in the Health and Exact area, with wheezing symptoms, who do not report fear of speaking in public and who perceive themselves more positively to speak in public, have a sense of highest consistency. The results of this study encourage that public speaking consultations include, in addition to specific approaches for their improvement or development, the harmful factors of the environment and the individual's way of facing these factors.

REFERENCES

1. Teixeira KB. Senso de coerencia materno: Relação com saúde bucal de pré-escolares. (Dissertação) Minas Gerais:Universidade Federal de Minas Gerais,2006. <http://hdl.handle.net/1843/ZMRO-78HJ7P>
2. Eriksson M, Lindström B. Validity of Antonovsky's sense of coherence scale: A systematic review. *J Epidemiol Community Health*. PMID:15911640. 2005;59(6):460–6. <https://doi.org/10.1136/jech.2003.018085>
3. Chu JJ, Khan MH, Jahn HJ, Kraemer A. Sense of coherence and associated factors among university students in China: Cross-sectional evidence. *BMC Public Health*. *BMC Public Health*; 2016;16(1):1–11. PMID:27083414. PMCID: PMC4833908. <https://doi.org/10.1186/s12889-016-3003-3>
4. Eriksson M, Lindström B. Antonovsky's sense of coherence scale and the relation with health: A systematic review. *J Epidemiol Community Health*. 2006;60(5):376–81. PMID:15911640. <https://doi.org/10.1136/jech.2003.018085>
5. Henje Blom EC, Serlachius E, Larsson JO, Theorell T, Ingvar M. Low Sense of Coherence (SOC) is a mirror of general anxiety and persistent depressive symptoms in adolescent girls - a cross-sectional study of a clinical and a non-clinical cohort. *Health Qual Life Outcomes*. 2010;8. PMID:20537185. PMCID: PMC2906444. <https://doi.org/10.1186/1477-7525-8-58>
6. Coutinho VM, Heimer MV. Senso de coerência e adolescência: uma revisão integrativa de literatura. *Ciênc. saúde coletiva*. 2014, Mar; 19(3): 819-827. <https://doi.org/10.1590/1413-81232014193.20712012>
7. Moksnes UK, Lohre A, Espnes GA. The association between sense of coherence and life satisfaction in adolescents. *Qual Life Res* (2013) 22:1331–1338. PMID:22886139. <https://doi.org/10.1007/s11136-012-0249-9>.
8. Osório FL, de Souza Crippa JA, Loureiro SR. Aspectos cognitivos do falar em público: Validação de uma escala de autoavaliação para universitários brasileiros. *Rev Psiquiatr Clin*. 2012;39(2):48–53. <https://doi.org/10.1590/S0101-60832012000200002>
9. Leal CG, Graeff FG, Del-Ben CM. Experimental public speaking: Contributions to the understanding of the serotonergic modulation of fear. *Neurosci Biobehav Rev*. Elsevier Ltd; 2014;46(P3):407–17. PMID:25277282. <https://doi.org/10.1016/j.neubiorev.2014.09.011>
10. D'El Rey GJF, Pacini CA. Medo de falar em público em uma amostra da população: prevalência, impacto no funcionamento pessoal e tratamento. *Psicol Teor e Pesqui*. 2005;21(2):237–42. <https://doi.org/10.1590/S0102-37722005000200014>
11. Diagn M, Mentais SDET. Transtornos Depressivos - DSM - 5. Manual Diagnóstico E Estatístico De Transtornos Mentais - Dsm - V. 2013. 948 p.
12. Bodie GD. A racing heart, rattling knees, and ruminative thoughts: Defining, explaining, and treating public speaking anxiety. *Commun Educ*. 2010;59(1):70–105. <https://doi.org/10.1080/03634520903443849>
13. Burato KRS, Crippa JAS, Loureiro SR. Transtorno de ansiedade social e comportamentos de evitação e de segurança: uma revisão sistemática. *Estud Psicol*. 2009;14(2):167–74. <https://doi.org/10.1590/S1413-294X2009000200010>
14. Hofmann SG, Dibartolo PM. An instrument to assess self-statements during public speaking: scale development and preliminary psychometric properties. *Behav Ther*. 2000;31(3):499–515. PMID:16763666
15. Bonanato K, Ramos-jorge ML, Kaeppler KC, Pré-escolares MDC. Trans-Cultural Adaptation and Psychometric Properties of the “ Sense of Coherence Scale ” in Mothers of Preschool Children. *Interam J Psychol* 2009;43(31):144–53
16. Bendo CB, Paiva SM, Varni JW, Vale MP. Oral health-related quality of life and traumatic dental injuries in Brazilian adolescents. *Community Dent Oral Epidemiol*. 2014 Jun; 42(3): 216-223. <https://doi.org/10.1111/cdoe.12078>
17. Osório FDL, Crippa JAS, Loureiro SR. Escala para Auto-Avaliação ao Falar em Público (SSPS): Adaptação transcultural e consistência interna da versão brasileira. *Rev Psiquiatr Clin*. 2008;35(6):207–11. <https://doi.org/10.1590/S0101-60832008000600001>
18. Moksnes UK, Espnes GA, Illeffel M. Sense of coherence and emotional health in adolescents. *Journal of adolescence*.2012;35(2): 433-441. PMID:21831417. <https://doi.org/10.1016/j.adolescence.2011.07.013>
19. Santos AAL, Pereira EC, Marcolino J, Dássie- Leite AP. Self-perception and voice quality of journalism students. *Rev. CEFAC*. 2014;16(2):566–572. <https://doi.org/10.1590/1982-0216201419412>
20. Goberman AM, Hughes S, Haydock T. Acoustic characteristics of public speaking: Anxiety and practice effects. *Speech Communication*.2011;53(6): 867-876. <https://doi.org/10.1016/j.specom.2011.02.005>

21. Geulayov, Galit Drory, Yaacov Novikov, Ilya Dankner, Rachel. Sense of coherence and 22-year all-cause mortality in adult men. *Journal of Psychosomatic Research*.2014; 78(4): 377-383. <https://doi.org/10.1016/j.jpsychores.2014.12.010>
22. Silva M, Gonçalves B. Percepção De Estresse De Servidores Na Atenção Básica De Saúde De Dourados-Ms. *Saúde em Redes*.2016;1(4): 35-52. <https://doi.org/10.18310/2446-4813.2015v1n4p35-52>
23. Wai MFPorfirio, Carvalho AMP. Estresse Ocupacional E Senso De Coerência Na Enfermagem De Centro Terapia Intensiva. *Revista de Enfermagem UFPE on line*.2014;8 (10): 3314-24. <https://doi.org/10.5205/reuol.6039-55477-1-ED.0810201409>
24. Silva VLS, Chiquito NC, Andrade RAPO, Brito MFP, Camelo SH. Stress factors in the final year of undergraduate nursing: students perceptions. *Rev. enferm. UERJ*. 2011;19(1): 121-126
25. Aparecida R, Azevedo S. Nascimento ACF. . *Distúrb Comun*.2013; 25(3): 458-476
26. Cheng J, Niles AN, Craske MG. Exposure reduces negative bias in self-rated performance in public speaking fearful participants. *Journal of Behavior Therapy and Experimental Psychiatry*. 2017;54: 101-107. PMID:27459691. <https://doi.org/10.1016/j.jbtep.2016.07.006>
27. Grevenstein D, Aguilar-Raab C, Schweitzer J, Bluemke M. Through the tunnel, to the light: Why sense of coherence covers and exceeds resilience, optimism, and self-compassion. *Pers Individ Dif*. Elsevier Ltd; 2016;98:208–17. <https://doi.org/10.1016/j.paid.2016.04.001>
28. Marinho ACF, Mesquita AM, Gama ACC, Teixeira LC. Fear of Public Speaking: Perception of College Students and Correlates. *J Voice* .2017;31(1):127- 134. <https://doi.org/10.1016/j.jvoice.2015.12.012>
29. Behlau, M. *Voz: o livro do especialista*. Rio de janeiro: Revinter, 2001. v. 2.pg.430
30. Graeff FG. Anxiety, panic and the hypothalamic-pituitary-adrenal axis. *Revista Brasileira de Psiquiatria*. 2007; 29(1):3-6. PMID:17546345. <https://doi.org/10.1590/s1516-44462007000500002>

Authors' contributions

JJP participated in the idealization of the study, collection, analysis, interpretation of data and writing of the article; IGPOA participated, as a co-supervisor; in the idealization, study, analysis, interpretation of data and writing of the article; ACFM participated in the collection, interpretation of data and writing of the article; AMM participated in the analysis, interpretation of data and writing of the article; LCT participated, as a supervisor; in the idealization, study, analysis, interpretation of data and writing of the article.