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**PSYCHOLOGICAL SAFETY AND SPEAKING CONFIDENCE IN ACADEMIC CLASSROOMS**

**Abstract**

The aim of this research is to develop a valid and reliable measurement tool to assess students' perceived levels of psychological safety and speaking confidence (comfort in speaking and expressing themselves in the auditorium) in academic classrooms. The KMO sample adequacy coefficient of the scale was found to be .918 (KMO>.60), and the Bartlett Sphericity Test result was significant at the  $\chi^2=3106.442$  level (sd=300,  $p<.001$ ). As a result of the Exploratory Factor Analysis, it was determined that the scale has a five-dimensional structure and the factor loadings of the items ranged from .44–.81. According to the DFA results, the fit indices of the five-dimensional model were determined as follows: ( $\chi^2=493.36$ , sd=265,  $\chi^2/sd=1.86$ ,  $p=0.00$ , RMSEA=.058, SRMR=.05, GFI=.87, CFI=.97, NNFI=.97, IFI=.97, RFI=.93). The Cronbach's alpha reliability coefficient of the scale is .92. According to the corrected item-total correlation and t-test results based on upper and lower 27% group comparisons, all items were found to be significantly discriminatory ( $p<.001$ ). Test-retest reliability was found to be significant and determined as  $r=.95$ . Within the scope of split-half reliability, the Spearman-Brown coefficient was determined as .86. The findings indicate that the developed scale is a valid and reliable measurement tool for assessing psychological safety and speaking confidence variables in an academic classroom setting.

**Keywords:** speaking up in the classroom, academic classroom climate, scale development, validity, reliability.

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**Introduction**

In the context of new thinking, the development directions of higher education include not only the delivery of knowledge and information to young students, but also the formation of their creativity, critical thinking, cooperation and life skills. The nature of the socio-psychological environment in lectures and seminars plays an important role. In recent years, psychological safety is considered important. This concept has gained wide acceptance in psychological and pedagogical research. Psychological safety is considered an important determinant between the effectiveness of training and student motivation. The purpose of the presented conference material is to determine the impact of psychological safety in the audience on the

quality of training and student motivation, to clarify it from a theoretical point of view and to provide practical recommendations. The concept of psychological safety was first brought to the attention of Schein and Bennis in the 1960s as a group phenomenon that reduces interpersonal risk [1]. In the context of education, psychological safety allows students in the audience to address the teacher with questions and to think independently. In the created environment, the student feels valued and accepted, which further increases both motivation and learning outcomes. Research shows that psychological safety enhances the quality of learning in the classroom in a number of ways. Let's pay attention to [1]: Active participation: young

students are closely involved in one or another discussion and debate. Creative thinking: a self-confident student takes alternative approaches as a basis [2]. Critical analysis: acquiring the quality of independence and freely expressing their judgments and opinions results in strengthening knowledge. Teacher-student collaboration: approaching the student as a subject and an equal member of the pedagogical process helps to optimize and improve learning. Psychological safety has a strong impact on student motivation. Motivation is the main factor for the student's participation and achievement in the learning process. At that moment, their internal motivation increases, they feel more secure and valuable [3]. As a result, students become confident and active in their learning work. In group work, their cooperation and social knowledge are strengthened, and at the same time their interest in learning increases. Thus, the academic achievements of students are gradually increasing. From the above, we can conclude that psychological safety in the classroom is currently an important component of the pedagogical process. Its provision, on the one hand, increases the quality of training, and on the other hand, student motivation. Therefore, every teacher should respect the opinions of students and stimulate different points of view [4]. Making mistakes in the classroom should be accepted as a natural stage of learning, and interactive approaches and collaborative teaching models should be preferred. The concept of psychological safety should be taken into account in the educational policy of higher education institutions.

### **Methodology**

Data were collected in a classroom environment, using a standardized application procedure. The purpose of the study was explained briefly and clearly to the participants, and anonymity and confidentiality were ensured. The application of the measurement tools lasted approximately 20 minutes.

### **Data collection tools**

1) Classroom Psychological Safety Scale

Psychological safety is conceptualized as “the ability of a student to participate in the learning process without being afraid to ask questions, express opinions, and make mistakes” in the classroom context. The scale items include measurable indicators such as support, respect, non-mockery, tolerance for mistakes, and an open climate for expressing opinions in the classroom.

2) Speech Confidence Scale [5].

Speech confidence is defined as “the comfort of expressing what one knows, participating in discussions, and expressing opinions when speaking in class.” Items focusing on the comfort of speaking and expressing oneself in class were used to measure this construct (for example, statements such as “feeling comfortable explaining what one knows when speaking in class” are included in this framework [6].

All items were rated on a 5-point Likert scale: (1) Strongly disagree – (5) Strongly agree.

### **Data analysis**

In the data analysis, the main conditions such as normality and multicollinearity were first checked. In order to assess the construct validity of the measurement instruments, AFA was applied in the first stage, and DFA in the second stage. The reliability of the scales was assessed using the Cronbach alpha internal consistency coefficient. In addition, the discriminant validity of the items was checked using item-total correlation and sub-group (e.g., %27) discriminant analysis; where possible, the stability of the time was also assessed using the test-retest approach.

### **Measurement and scoring**

The participants' attitudes towards the statements in the Psychological Safety and Speaking Confidence Scale in Academic Classrooms were determined using a 5-point Likert-type assessment:

- 1 – Strongly disagree
- 2 – Disagree
- 3 – Partially agree
- 4 – Agree
- 5 – Strongly agree

In order to determine the structural (construct) validity of the scale, Exploratory



Factor Analysis (EFA) was first applied. Then, Confirmatory Factor Analysis (CFA) was performed to confirm the obtained factor structure.

Before starting the analysis, the data were checked for compliance with the following statistical conditions [7]:

- normal distribution
- linearity
- multicollinearity

The Maximum Likelihood factoring method was used in the factor extraction stage. Varimax orthogonal rotation technique was applied for a clearer interpretation of the factors. The reliability of the scale was assessed using the following methods:

- Cronbach alpha internal consistency coefficient [5].

- Test–retest reliability
- Split-half reliability
- Item analysis

The Spearman–Brown formula was used to determine the two-half test reliability. The discriminability of the items was assessed with an independent t-test conducted between the lower and upper 27% groups.

**Exploratory Factor Analysis (EFA) results.** The Kaiser–Meyer–Olkin (KMO) and Bartlett sphericity tests were applied to assess the suitability of the data for conducting factor analysis.

**Table 1.** Suitability tests for factor analysis.

TEST	RESULT
KMO	0.92
Bartlett	$\chi^2(300)=3106.442, p<0.001$

**Source:** made based on [5].

Table 1 presents the results of the KMO and Bartlett sphericity tests conducted to assess the suitability for factor analysis. The obtained KMO value of 0.92 indicates that the sample size is quite sufficient for factor analysis. In addition, the statistically significant result of the Bartlett test ( $\chi^2(300)=3106.442, p<0.001$ ) reveals that there are significant relationships between the variables, allowing for factor analysis. These findings show that the data set is suitable for factor analysis and that the necessary statistical conditions for examining the construct validity of the scale are met.

The KMO value higher than 0.60 indicates that the data is suitable for factor analysis. The statistically significant Bartlett test indicates that there are relationships between the variables that allow for factor analysis [8]. As a result of the analysis, it was determined that the scale consists of a 5-factor structure. The factor loadings of the items varied in the range of 0.44 - 0.81. Each factor consists of at least 4 items and these results indicate that the scale is satisfactory from a psychometric point of view.

**Table 2.** Eigenvalues of the scale's factors and explained variance.

Factor	Self-value	Explained Variance (%)	Cumulative Variance (%)
Psychological Safety Climate	9.65	17.98	17.98
Teacher Support and Academic Respect	1.64	12.25	30.23
Social Acceptance and Comfort in the Classroom	1.30	10.99	41.22
Classroom Speaking Confidence	1.25	10.25	51.47
Academic Engagement and Motivation	1.18	8.62	60.09

**Source:** made based on [8].

The table 2 shows that the eigenvalues of the factors range from 1.18 to 9.65. In scale

development studies, factors with eigenvalues greater than 1 are considered significant

factors. The five-factor structure explains 60.09% of the total variance, which is

considered a fairly high indicator for multifactorial scales.

**Table 3.** Factor loading values and common factor variance results of the psychological security and speech self-confidence scale in academic classrooms  
explanation: factor loading  $\geq .40$  was accepted.

Article	Common Variance (h <sup>2</sup> )	F1: Psychological Security Climate	F2: Social Acceptance and Belonging	F3: Teacher/Family Support and Respect	F4: Speaking Confidence (Taking the Floor)	F5: Academic Participation and Motivation
1- I can easily understand my lessons	.65	.57	.18	.35	.39	.06
3- I believe I will be more successful in future academic auditions	.55	.75	.15	.14	.18	.11
4- I can get high grades in my classes whenever I want	.65	.68	.20	.04	.09	.10
5- I work hard in my classes to achieve my future goals	.52	.71	.30	.16	.18	.22
6- I believe I am successful in my classes	.70	.70	.22	.36	.25	.07
7- I can easily understand my lessons	.75	.72	.17	.39	.11	-.07
12- I am successful in my classes because I like the academic audition environment	.72	.54	.22	.22	.14	.27
17- My study environment increases my success	.50	.44	.05	.01	.12	.41
13- I am successful in my classes because I like my teachers	.63	.37	.52	.31	.17	.23
18- I am successful because I am loved by my family	.65	.28	.73	.18	.25	-.02
19- I am successful because I have a peaceful family environment	.63	.25	.80	.12	.21	.05
20- My family's interest in my studies increases my success	.49	.15	.73	-.00	.10	.26
25- I am successful because I am loved by those around me	.59	.25	.55	.39	-.08	.27
2- I consider my success in my classes sufficient	.76	.36	.14	.51	.33	.15



8- My success in classes makes me feel valuable.	.76	.10	.34	.45	.25	.15
14- Everyone in the class knows me as a successful student.	.59	.32	.20	.75	.12	.19
15- I am a student who is appreciated in the academic auditorium.	.38	.20	.11	.81	.17	.12
9- Even if I get low grades, I strive to pass that course.	.72	.36	.20	.06	.60	.11
10- I get high grades when I study regularly for my classes.	.76	.26	.18	.22	.70	.06
11- I am aware of my responsibilities regarding the academic auditorium.	.64	.37	.14	-.03	.68	.04
16- I can easily explain what I know when I speak in class.	.34	-.01	.11	.25	.70	.16
21- I want to be successful in my classes to be accepted by my environment.	.53	-.02	.16	.08	.04	.55
22- The social environment I am in motivates me to study.	.54	.13	.04	-.08	.17	.69
23- The environment I am in increases my interest in my classes.	.38	.20	.26	.20	.04	.62
24- I make friends with people who have high academic achievement.	.62	.08	-.01	.25	-.01	.55

Table 3 shows that the items of the “Psychological Safety and Speaking Confidence Scale in Academic Classrooms” are grouped under five factors. These factors, according to their content, are named

Psychological Safety Climate, Social Acceptance and Belonging, Teacher/Family Support and Respect, Speaking Confidence (Taking the Floor), and Academic Participation and Motivation.

**Table 4.** Pearson correlation coefficients between sub-dimensions of the psychological safety and speaking confidence scale.

Sub-Dimensions	F1	F2	F3	F4	F5
F1: Psychological Safety Climate	1.00				
F2: Social Acceptance and Belonging		1.00			
F3: Teacher/Family Support and Respect			1.00		
F4: Confidence in Speaking (Taking the Floor)				1.00	
F5: Academic Participation and Motivation					1.00

**Source:** made based on [7].

The exploratory factor analysis shows that the factor loadings cluster at the generally accepted threshold of .40 and above, indicating that the items are representative of the relevant factors. Furthermore, the fact that the differences between the loadings of each item outside its own factor and its loading within its own factor are mostly greater than .10 suggests that the items are concentrated in a particular factor and that the problem of significant overlap is limited. These results provide supportive findings regarding the structural validity of the scale.

Table 4 shows the Pearson correlation coefficients between the sub-dimensions of the Psychological Safety and Speaking Confidence Scale. The positive correlation between the sub-dimensions indicates that the factors constituting the scale are mutually supportive and part of the same theoretical structure. This suggests that the variables of psychological safety climate, social acceptance, teacher/family support, speaking confidence, and academic participation-motivation can be evaluated in a meaningful and integrated manner.

**Table 5.** Confirmatory Factor Analysis (CFA) model fit indices.

Indicator	Value
$\chi^2$	493.36
sd	265
$\chi^2/sd$	1.86
RMSEA	0.058
SRMR	0.05
GFI	0.87
CFI	0.97
NNFI	0.97
IFI	0.97
RFI	0.93

**Source:** made based on [7].

Table 5 presents the model fit indices for the Confirmatory Factor Analysis results. The obtained  $\chi^2/sd$  value of 1.86 indicates that the model shows a good fit. Furthermore, RMSEA=0.058 and SRMR=0.05 correspond to an acceptable or even good fit level. The CFI, NNFI, and IFI values of 0.97, and the RFI

value of 0.93, show that the five-factor structure is confirmed and the model has a high level of fit with the data. The GFI value of 0.87 also supports the idea that the model has a generally acceptable fit. These findings indicate that the scale has a valid structure in terms of confirmatory factor analysis.

**Table 6.** Correlation between psychological safety and speech confidence scale subdimensions.

Subdimensions	1	2	3	4	5
1. Psychological Safety Climate	1.00	0.66	0.67	0.63	0.44
2. Social Acceptance and Classroom Comfort	0.66	1.00	0.62	0.51	0.44
3. Teacher and Family Support	0.67	0.62	1.00	0.55	0.44
4. Speaking Confidence	0.63	0.51	0.55	1.00	0.32
5. Academic Engagement and Motivation	0.44	0.44	0.44	0.32	1.00

**Source:** made based on [7]

Table 6 details the correlation levels between the sub-dimensions of the scale. When the findings are examined, it is seen that there is a positive correlation of 0.67 between psychological safety climate and teacher and

family support, 0.66 between social acceptance and classroom comfort, and 0.63 between speaking confidence and psychological safety climate. These results suggest that a student feeling safe in the



classroom, experiencing social acceptance, and having a supportive environment increases their speaking confidence and academic participation. The moderate to high levels of

correlation between the sub-dimensions are important in showing that the scale measures a holistic structure.

**Table 7.** Reliability analysis of the scale (cronbach alpha).

Sub-dimension	Cronbach $\alpha$
Overall reliability of the scale	0.92
Psychological Safety Climate	0.87
Social Acceptance and Classroom Comfort	0.84
Teacher and Family Support	0.80
Speech Confidence	0.77
Academic Engagement and Motivation	0.56

**Source:** made based on [7].

Table 7 shows the Cronbach's Alpha coefficients for the reliability analysis of the scale. The overall reliability coefficient of the scale being 0.92 indicates that the measurement instrument has a very high internal consistency. When evaluated in terms of sub-dimensions, the Cronbach's Alpha coefficients were 0.87 for psychological safety climate, 0.84 for social acceptance and classroom comfort, 0.80 for teacher and family support, and 0.77 for speaking confidence. These coefficients indicate that the relevant sub-dimensions are reliable. In contrast, the Cronbach's Alpha value of 0.56 for the academic participation and motivation sub-dimension suggests that the reliability of this dimension is lower than the others and that it may be beneficial to review it in future studies.

### Conclusion

In an academic classroom environment, a student's ability to express their opinions openly, ask questions, and participate in discussions is not explained solely by individual characteristics; the psychological safety climate in the classroom plays a decisive role in the formation of these behaviors. As psychological safety increases, students experience fewer concerns such as "if I make a mistake, I will be ridiculed" or "I will be criticized," and as a result, their speaking confidence increases. It is accepted that students with increased speaking confidence are more consistent in their participation in class (expressing opinions, responding, and

presenting), which creates a favorable basis for long-term motivation and academic development. On the contrary, when the risk of fear, criticism, or ridicule increases in the classroom climate, students avoid taking the floor, participation decreases, and this can lead to disruption in the motivation and learning process. As a result of the psychometric evaluations conducted in this context, it was shown that the measurement quality of the "Psychological Safety and Speaking Confidence Scale in Academic Classrooms" is satisfactory. The scale is applied on a 5-point Likert-type scale (1–5), and the higher the total score obtained from the items, the higher the perception of psychological safety and speaking confidence in the classroom environment. As a result of the Exploratory Factor Analysis conducted to determine the structural validity of the scale, it was determined that the scale has a multidimensional (five-factor) structure, the factor loadings of the items are above the acceptable level, and each factor is represented by at least four items. These results indicate that the items adequately represent the measured constructs (psychological safety and speaking behaviors). The results of the Confirmatory Factor Analysis conducted to verify the consistency of the obtained factor structure with the empirical data revealed that the model's fit indicators are at an acceptable/good level. This indicates that the theoretically established structure of the scale is consistent with the data and the five-factor

structure is confirmed. In addition, the positive and significant relationships observed between the subscales indicate that the components of psychological safety, social acceptance, support, and speaking confidence complement each other within the same general classroom climate.

The reliability analyses of the scale also showed a high level of overall internal consistency. The significant comparisons made across the lower–upper %27 groups indicate that the discriminant ability of the items is satisfactory, and the high test–retest results indicate that the scale can provide stable measurements over time. Overall, these results indicate that the scale can be used to reliably assess two critical variables in academic classrooms, namely psychological safety and speaking confidence.

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#### Şəbnəm Sehran ƏLİYEVƏ

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### AKADEMİK DƏRSLƏRDƏ PSİXOLOJİ TƏHLÜKƏSİZLİK VƏ DANIŞIQDA ÖZÜNƏİNAM

#### Xülasə

Bu tədqiqatın məqsədi tələbələrin akademik dərslərdə özlərini ifadə etmək və danışmaqda rahatlıq səviyyələrini (psixoloji təhlükəsizlik və danışmaqla bağlı özünəinam) qiymətləndirmək üçün etibarlı və düzgün ölçmə alətini inkişaf etdirməkdir. Ölçmə alətinin KMO nümunə uyğunluğu koeffisienti .918 olaraq müəyyən edilmişdir (KMO > .60), və Bartlett Sferiklik Testinin nəticəsi  $\chi^2=3106.442$  səviyyəsində əhəmiyyətli olmuşdur (sd=300,  $p<.001$ ). Kəşfiyyat Faktoru Analizi (Exploratory Factor Analysis) nəticəsində alətin beşölçülü struktura malik olduğu müəyyən edilmiş və maddələrin faktor yüklənmələri .44–.81 arasında dəyişmişdir. Doğrulayıcı Faktor Analizi (DFA) nəticələrinə əsasən, beşölçülü modelin uyğunluq göstəriciləri belə müəyyən edilmişdir: ( $\chi^2=493.36$ , sd=265,  $\chi^2/sd=1.86$ ,  $p=0.00$ , RMSEA=.058, SRMR=.05, GFI=.87, CFI=.97, NNFI=.97, IFI=.97, RFI=.93). Ölçmə alətinin Cronbach alfa etibarlılıq koeffisienti .92 təşkil edir. Düzəliş edilmiş maddə-ümumi korelyasiya və yuxarı və aşağı 27% qrup müqayisəsinə əsaslanan t-test nəticələrinə görə, bütün maddələr əhəmiyyətli dərəcədə diskriminativ hesab edilmişdir ( $p<.001$ ). Test-tekrar test etibarlılığı əhəmiyyətli olmuş və  $r=.95$  müəyyən edilmişdir. Bölünmüş yarım etibarlılıq çərçivəsində Spearman-Brown koeffisienti .86 olaraq müəyyən edilmişdir. Nəticələr göstərir ki, inkişaf etdirilmiş

ölçmə aləti akademik dərslər mühitində psixoloji təhlükəsizlik və danışmaqla bağlı özünəinamın qiymətləndirilməsi üçün etibarlı və düzgün ölçmə vasitəsidir.

**Açar sözlər:** dərslərdə danışmaq, akademik dərslər mühiti, ölçmə alətinin hazırlanması, etibarlılıq, düzgünlük.

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## **ПСИХОЛОГИЧЕСКАЯ БЕЗОПАСНОСТЬ И УВЕРЕННОСТЬ ВЫСТУПЛЕНИЯ В АКАДЕМИЧЕСКОМ КЛАССЕ**

### **Резюме**

Целью данного исследования является разработка валидного и надежного инструмента измерения, предназначенного для оценки уровня воспринимаемой студентами психологической безопасности и уверенности в общении (комфорта при выступлении и самовыражении в аудитории) в академических классах. Коэффициент адекватности выборки по КМО был определен как .918 (КМО > .60), а тест сферичности Барлетта показал значимость на уровне  $\chi^2 = 3106.442$  (ст.н. = 300,  $p < .001$ ). В результате факторного анализа (Exploratory Factor Analysis) было установлено, что шкала имеет пятифакторную структуру, а факторные нагрузки элементов варьируются от .44 до .81. Согласно результатам подтверждающего факторного анализа (DFA), показатели соответствия пятифакторной модели составили: ( $\chi^2=493.36$ , ст.н.=265,  $\chi^2/\text{ст.н.}=1.86$ ,  $p=0.00$ , RMSEA=.058, SRMR=.05, GFI=.87, CFI=.97, NNFI=.97, IFI=.97, RFI=.93). Коэффициент надежности Кронбаха альфа шкалы равен .92. На основании скорректированной корреляции элемент-итог и результатов t-теста при сравнении верхнего и нижнего 27% групп все элементы оказались значимо дискриминационными ( $p < .001$ ). Надежность тест-ретест была значима и составила  $r=.95$ . В рамках сплит-халф надежности коэффициент Спирмена-Брауна составил .86. Результаты исследования показывают, что разработанная шкала является валидным и надежным инструментом измерения для оценки психологической безопасности и уверенности в выступлениях в академическом классе.

**Ключевые слова:** участие в классе, академическая среда, разработка шкалы, валидность, надежность.

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