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Evaluating the psychometric properties of the Multidimensional Externalising Behaviour Disorders Inventory in Pakistani truant students

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Abstract. The health of students is intricately connected to their academic performance, yet school truancy, a significant global public health issue, often remains overlooked in healthcare evaluations and health promotion efforts. This study aimed to examine the psychometric properties of the for Pakistani truant students. The externalising behaviour disorders inventory was designed to assess five distinct externalising behaviour disorders, including: (1) oppositional defiant disorder, (2) conduct disorder, (3) antisocial personality disorder, (4) individual deviance, and (5) group deviance. A total of 960 school students (truant, $n = 361$; punctual, $n = 599$) were enrolled from different government schools, internet cafes, and community parks in Faisalabad, Pakistan. Exploratory Factor Analysis was used to explore the underlying covert structure of the externalising behaviour disorders inventory scales for the true student sample. The findings of the Receiver Operating Characteristic curve analysis revealed that the scales for oppositional defiant disorder, conduct disorder, antisocial personality disorder, individual deviation, and group deviation demonstrated robust diagnostic efficacy. Moreover, the externalising behaviour disorders inventory exhibited acceptable levels of Multidimensional Externalising Behaviour Disorders Inventory reliability, construct validity, and criterion validity for the truant sample. The findings of this study highlight that the indigenously developed externalising behaviour disorders inventory scales are reliable and valid self-report diagnostic instruments for examining externalising behaviour disorders in school students

Keywords: school refusal behaviour; conduct disorder; oppositional defiant disorder; group deviance; individual deviance; antisocial personality disorder

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Introduction

Home and school environments play an important role in the academic, social, and emotional growth of school-going adolescents' students. However, chronic absenteeism, especially school truancy, is linked to a lot of deleterious consequences, such as mental health issues, poor academic performance, and delinquent behaviour. It is usually characterised as unexcused or illegal absences from school without the knowledge of higher school authorities or parents. Students who are involved in school truancy are at higher risk of both short- and long-term outcomes, including school dropout or refusal behaviour, poor employment prospects, and involvement in risky sexual and delinquent behaviours.

School truancy is a multifaceted and complex issue that requires the development of an appropriate and relevant assessment scale to address the social, academic, as well as mental health issues linked to externalising and internalising behavioural problems. A.D. Tissue *et al.* (2022) highlighted the dire need to comprehend and address behavioural problems to alleviate their influence in school students lives. They pointed out that Emotional and Behavioural Disorders Inventory (EBDI) aims to explore the etiological issues underlying persistent social, academic, emotional, and behavioural problems commonly noted in Pakistani school adolescents. According to H. Boettcher *et al.* (2020), externalising disorders, referred to as disruptive, aggressive, and criminal behaviours, are a noteworthy concern for mental health and education professionals internationally, and these factors are often linked to risky behaviours, which lead to academic failure, school refusal behaviour, and long-term social and mental health outcomes.

K. Champion (2022) emphasised that school truancy is closely associated with mental health challenges including oppositional defiant disorder (ODD), conduct disorder (CD), antisocial personality disorder (ASPD), and delinquent behaviour, which have co-morbidity with behaviour problems that enhance the risk of school dropout, sexual misconduct, juvenile delinquency, and criminal activities in adulthood. Critics both of the DSM-5 and International Classification of Diseases (ICD), such as M.D. Bonham *et al.* (2020), have emphasised the limits of their categorical methods to psychopathology, highlighting the dire need for dimensional approaches to better figure out the spectrum of emotional and behavioural disorders.

A recent study has highlighted the importance of dimensional approaches to examine externalising behaviour problems (EBP) and internalising behaviour problems (IBP) in school-aged students. C. Jiang *et al.* (2024) revealed that CD, ODD, and ASPD commonly manifest early onset in school truancy and are associated with severe criminal patterns as well as functional impairments, enhancing the probability of future delinquent and criminal activity. M. Aqeel & T. Rehna (2020) similarly observed the long-term outcomes of these

behaviour disorders on schoolchildren in Pakistan. Traditional diagnostic scales have encountered criticism for their lack of adaptability and inclusivity to diverse clinical and educational settings. S. Peters *et al.* (2020) and M.A. Rogers *et al.* (2024) recognised gaps in prevailing assessment approaches in capturing the indigenous diverse manifestation of externalising behaviours in Pakistani educational settings.

C.J. Hopwood *et al.* (2020) proposed dimensional approaches, which offer a more comprehensive comprehension of externalising behavioural problems by determining the severity, frequency, and duration of symptoms. This approach initially applied in personality disorder examination, which is now being used to examination of externalising behaviour disorders in school settings. The EBDI developed in present research based on this dimensional framework, assessing important psychopathological behaviour such as ODD, CD, ASPD, group deviance (GD) and individual deviance (ID) what was grounded on M.A. Rogers *et al.* (2024). By addressing these gaps, the present study was intended to offer an inclusive, comprehensive, and culturally sensitive assessment tool.

The EBDI's development is grounded in the recognition that externalising behaviour disorders commonly display overlapping symptomatology that undermines the reliability, validity, and precision of old categorical diagnostic methods. A dimensional method is as adopted by the EBDI and provides a more flexible and nuanced framework for measuring these behaviour disorders, which is improving diagnostic efficacy and helping to develop intervention strategies. The EBDI provides an original, dimensional approach to measuring EBP in truant adolescents' students, offering a more accurate and flexible instrument for educational and clinical use. It focuses on five important dimensions, including conduct, oppositional defiant, antisocial personality, and individual and group deviance. This study aimed to develop the psychometric properties of the EBDI, which is designed to measure its effectiveness in recognising externalising disorders in truant and punctual school-going students.

Materials and Methods

A mixed research design approach was applied to develop and validate the EBDI in both truant and punctual student samples. The research was conducted in two different studies, including a qualitative and quantitative approach. In the first study, a grounded theory approach was employed to develop themes by conducting ten mini-focus group discussions with 81 school-going truant students from Rawalpindi and Islamabad, Pakistan. Thematic analysis identified three themes related to its consequences and nine themes related to the causes of truancy in the truant sample, which is reported in a PhD dissertation. In the second study, items for the EBDI were constructed based on qualitative study

theses and validated through expert evaluation. The EBDI was developed using Exploratory Factor Analysis (EFA) to develop its construct validity, with further analyses also used to confirm the reliability and validity of the scales. The EFA was conducted to uncover the original factor structure of EBDI, which comprises five scales: ODD, CD, ASPD, ID, and GD. These scales assess externalising behaviour disorders in school students. The content validity of the EBDI scales was established with input from three experts in educational psychology. These experts, faculty members from various universities in Pakistan, provided names and validated the content of the five scales: CD, ODD, ID, ASPD, and GD. This ensured that each scale accurately measured EBP in truant students.

This study constructed an item pool for the EBDI, which was developed and validated for content validity. Initially, one hundred ninety items of EBDI were developed in Urdu and, after that, translated into English for an international audience by subject experts. A pilot study involved three subject experts who examined the items for relevance to truant behaviour and its associated psychopathology; further, these items were refined, modified, and reduced to ninety-five. These items were categorised into five scales through EFA analysis, including ODD, CD, ASPD, ID, and GD – each measuring different aspects of externalising behaviour in truant school-going students. The inventory was further modified based on feedback from professionals, and this preliminary study with prospective students was ensuring clarity and internal reliability.

In the main study, a purposive sampling technique and a cross-sectional design were employed to carry out this study. A total of 960 participants (truant students, $n = 361$ and punctual students, $n = 599$; $N = 960$) were recruited from various government schools, internet cafes, and community parks in Faisalabad, Pakistan, from August 1, 2021, to March 30, 2022. 361 school-going students with a previous history of truant behaviour (44.6% females, 55.4% males) were aged between 12 and 18 ($M = 15.17$, $SD = 1.96$) years. The three heterogeneous samples of truant students were included in the present study. For instance, the inclusion criteria of truant students were followed: those students who remained absent without information from higher school authorities, parents, and teachers from their schools for more than twenty-one days last year. They were assumed to be truant students. These truant students were found in different places in the school and outside schools, including internet cafes, and community parks. Parents' or guardians' written informed consent was taken from school-going truant students that under age of 18 years who were identified in schools. However, parental informed consent form was not possible from school-truant students under the age of 18 who were identified in internet cafes and community parks due to confidential issues and school students' skipping be-

haviour. For the purpose of the comparison and to establish criterion validity, 659 regular school students (44.9% females, 55.1% males) without a previous history of truant behaviour, aged ranged between 12 and 18 years were selected ($Mean = 15.21$, $Standard deviation = 1.80$). These students were incorporated from various government schools and parks in Faisalabad, Pakistan. Demographic information and the externalising behaviour disorders inventory were used to gather information about the EBP from both punctual and truant school going students.

The school refusal assessment scale (SRBS) scale was developed to examine the tendency and prevalence of school refusal behaviour in school students (Kearney, 2022). It consists of eighteen items that ask participants to rate their agreement on a seven-point Likert scale from 0 (strongly disagree) to 6 (strongly agree). The scale includes four subsets including avoidance of school-related situations that trigger negative emotions, pursuit of tangible rewards, avoidance of unpleasant social or evaluative interactions, and seeking parental attention. Greater scores on these subsets indicate a greater tendency toward school refusal behaviour. In contrast lower scores on these subsets revealed a lower tendency for school refusal behaviour. It has revealed good validity and reliability in school students.

The multidimensional externalising behaviour disorders inventory (EBDI) is developed in the present study. It was developed to measure EBP for truant students in the present study. It was designed to measure truant behaviour and its negative consequences related to psychopathology. It is a self-reported 95-item multidimensional externalising behaviour disorder inventory that examines EBP and psychopathology in school students. All the scale's items are statements related to the truant students that the truant students rate their level of agreement with a five-point Likert scale (1 – “strongly disagree”, 2 – “disagree”, 3 – “neutral”, 4 – “agree”, and 5 – “strongly agree”). This inventory was primarily designed to measure five different externalising behaviour disorders, including (1) ODD scale, (2) CD scale, (3) ASPD scale, (4) ID scale, and (5) GD scale. Each scale was independently designed to measure EBP in truant students.

The Multidimensional Externalising Behaviour Disorders Inventory (EBDI) and the School Refusal behaviour Scale were carefully translated and culturally adapted for the Pakistani context using forward and backward translation and pilot testing to ensure their relevance. The School Refusal Behaviour Scale was chosen to assess convergent and divergent validity. Ethical considerations, including informed consent and confidentiality, were comprehensively addressed, with participants and guardians fully informed of their rights, and data anonymised and securely stored. The statistical methods, including factor analysis, Cronbach's alpha, and regression modelling, were appropriately selected

and justified in the Data Analysis section to ensure robust evaluation of the EBDI's psychometric properties.

This research was sanctioned by the Institutional Research Ethical Board of the Department of Applied Psychology, and National University of Modern Languages, Islamabad, Pakistan (NUML/IRB/PSY/01-A/2020). A total of 960 participants (truant students, $n = 361$ and punctual students, $n = 599$) were recruited from various government schools, internet cafes, and community parks in Faisalabad, Pakistan. The procedure was conducted in accordance with American Psychological Association (2017). Both written and verbal informed consent were taken to conduct this research by the higher school authorities, teachers, and parents of both punctual and truant students. After receiving consent from all of them, two psychological instruments were applied to examine the EBP and school refusal behaviour of students. The Pearson correlation coefficient, EFA, ROC, and independent sample t-test analyses were applied to devise the psychometric properties of the indigenously EBDI in students.

This study developed the psychometric properties of the EBDI by different statistical analyses including: Pearson correlation coefficient, EFA, and Receiver Operating Characteristic curve (ROC), independent sample t-test analyses in punctual and truant students (Field, 2013). The IBM SPSS-21 Statistics software package was applied to analyse and establish the psychometric properties of the EBDI. Initially, missing values and outliers were dealt with through the imputation method technique in the present study. Further, EFA was carried out to examine the original covert factor structure or develop factorial validity of the EBDI in truant students. Furthermore, the internal consistency of the scale was examined through Cronbach's alpha re-

liability analysis technique (Steiger & Ward, 1987). EFA was applied to examine the covert original factor structure of EBDI, which included five independent EBP such as (1) ODD; (2) CD; (3) ASPD; (4) ID; and (5) GD scale for truant students. Further, EFA analysis was separately performed on each externalising behaviour disorder of the EBDI to establish the factorial validity in a sample of the truant students. A principal component analysis (PCA) method was utilised to extract appropriate items from the EBDI. Moreover, the descriptive statistics were also analysed to check the ceiling and floor effects of the EBDI scales. Additionally, the Kaiser-Meyer-Olkin (KMO) values of all the EBDI scales were obtained to study the sampling appropriateness of the present study sample.

Additionally, the Pearson correlation coefficient technique was carried out to evaluate the association the school's EBP with school refusal behaviour in both truant and punctual students. In addition, divergent and convergent validity were developed by the Pearson correlation coefficient method. Moreover, Advance ROC analysis technique was performed to determine a cutoff score that examines the diagnostic utility of the EBDI in identifying school EBP in both punctual and truant students. Finally, an independent sample t-test was used to establish known group validity and concurrent validity on school refusal behaviour and EBP in both punctual and truant school students.

Results and Discussion

The Table 1 provides the results of the EFA of EBDI, including item descriptions of each scale and their corresponding factor loadings. The descriptions and statistical values for each figure are detailed in Table 1, following the item descriptions.

Table 1. Factor loadings of the EBDI scales, including the ODD scale, CD scale, ASPD scale, GD scale, and ID scale, for truant students

	M(SD)	Externalising disorder factors loading										
		ODD		CD		ASPD			GD	ID		
		1	2	1	2	1	2	3	1	1	2	3
1	1.79(1.36)			0.63				0.73				0.53
2	1.68(1.31)			0.63					0.53			
3	1.80(1.26)			0.56				0.78				0.55
4	1.89(1.41)			0.65				0.72				0.59
5	1.65(1.22)			0.64					0.57			
6	1.86(1.41)			0.68					0.65			
7	1.86(1.26)	0.50		0.31								
8	1.50(1.09)	0.54		0.41								
9	1.54(1.18)	0.62		0.39								
10	1.65(1.24)	0.55										
11	1.76(1.33)	0.57										
12	1.62(1.20)	0.60				0.39				0.34		
13	1.90(1.37)	0.56		0.49								
14	1.68(1.25)	0.61		0.51								
15	1.56(1.15)	0.71		0.52								
16	1.72(1.30)	0.69		0.51								

Table 1. Continued

		Externalising disorder factors loading									
		ODD		CD		ASPD		GD		ID	
17	2.19(1.56)	0.61		0.53							
18	1.57(1.12)	0.61			0.39						
19	1.80(1.38)	0.60		0.49							
20	1.81(1.35)			0.38							
21	2.26(1.53)	0.63		0.46							
22	1.78(1.32)	0.56		0.57							
23	1.98(1.48)		0.48			0.49				0.39	
24	1.88(1.35)					0.53					0.47
25	1.70(1.19)										
26	1.64(1.17)										
27	2.04(1.50)										
28	3.31(1.59)										
29	2.01(1.40)			0.48		0.44				0.38	
30	1.78(1.31)			0.47							
31	1.58(1.18)			0.56		0.51				0.53	
32	1.84(1.30)				0.38		0.30				
33	2.01(2.63)				0.39						
34	2.17(1.52)			0.66				0.44			0.39
35	1.90(1.41)			0.63					0.59		
36	2.34(1.58)			0.66		0.64				0.67	
37	1.58(1.20)			0.63		0.62				0.59	
38	1.72(1.30)			0.59							
39	2.07(1.47)			0.60							
40	1.65(1.24)			0.60		0.68			0.66	0.61	
41	1.90(1.38)				0.42				0.42		
42	1.54(1.08)			0.58		0.74				0.70	
43	2.05(1.45)					0.67				0.81	
44	2.17(1.46)					0.61				0.66	
45	2.39(1.55)			0.50		0.49				0.40	
46	2.38(1.53)					0.64				0.63	
47	2.18(1.55)					0.41				0.53	
48	2.07(2.59)			0.39							
49	1.62(1.20)					0.64				0.43	
50	1.46(1.01)			0.45							
51	1.46(1.03)					0.54					
52	1.63(1.17)				0.43						
53	1.66(1.19)						0.42				0.31
54	1.81(1.31)							0.33		0.32	
55	1.78(1.35)					0.65				0.57	
56	1.74(1.23)			0.69					0.74		
57	1.64(1.24)			0.74					0.77		
58	1.81(1.37)								0.74		
59	1.56(1.13)			0.64					0.68		
60	1.75(1.21)			0.70					0.76		
61	2.05(1.49)		0.63	0.63		0.60				0.50	
62	2.52(1.58)		0.66	0.52							
63	1.82(1.32)		0.67	0.55		0.62				0.56	
64	2.00(1.40)			0.54							
65	2.27(1.45)		0.60								
66	1.97(1.42)		0.42		0.48						
67	1.87(1.39)		0.63								
68	2.21(1.42)		0.65								
69	1.98(1.43)										
70	1.88(1.37)										

Table 1. Continued

		Externalising disorder factors loading									
		ODD		CD		ASPD			GD	ID	
71	2.40(1.57)		0.66	0.53							
72	1.76(1.25)		0.45	0.36		0.43					0.38
73	1.96(1.41)										
74	2.34(1.48)		0.60			0.67				0.46	
75	1.84(1.34)							0.64			
76	1.97(1.50)					0.69				0.47	
77	1.80(1.25)		0.42	0.49							
78	1.43(.98)							0.68			
79	2.38(1.50)					0.71				0.51	
80	2.23(1.41)			0.39	0.54						0.55
81	2.32(1.43)			0.49		0.65					0.34
82	2.38(1.49)					0.70				0.39	
83	2.36(1.52)			0.43				0.63			
84	3.15(1.65)			0.51				0.54			
85	3.15(1.56)							0.63			
86	2.52(1.50)							0.54			
87	2.54(1.62)			0.36				0.46			
88	2.69(1.63)			0.50							
89	2.54(1.47)				0.55					0.39	
90	2.15(1.47)			0.60							
91	2.35(1.55)					0.41				0.66	
92	3.53(1.76)					0.45				0.60	
93	2.79(1.51)					0.53				0.51	
94	2.42(1.69)					0.83				0.38	
95	2.56(1.56)					0.44				0.63	
ODD	Eigen Values	8.35	2.28								
	% of Variance	30.96	8.44								
	Cumulative Variance	30.96	39.40								
CD	Eigen Values			15.86	2.94						
	% of Variance			28.33	5.25						
	Cumulative Variance			28.33	33.58						
ASPD	Eigen Values					12.01	2.4	1.71			
	% of Variance					30.79	6.16	4.40			
	Cumulative Variance					30.79	36.96	41.36			
GD	Eigen Values							7.33			
	% of Variance							34.91			
	Cumulative Variance							34.91			
ID	Eigen Values								12.01	2.40	1.71
	% of Variance								30.79	6.16	4.40
	Cumulative Variance								30.79	36.96	41.36

Source: compiled by the authors

The EFA of the ODD scale (Fig. 1) identified two main factors: IBP, represented by items 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 22; EBP, represented by items 23, 61, 62, 63, 65, 66, 67, 68, 71, 72, 74, and 77. The scale demonstrated high internal consistency with a Cronbach's alpha of 0.91. The KMO value was 0.91, and Bartlett's test of sphericity was significant

$\chi^2(351) = 4,740.48, p < 0.000$), indicating the sample was appropriate for factor analysis. Both eigenvalues and the scree plot supported a two-factor model as shown 1, validating the structure of the ODD scale.

The EFA of the CD scale (Fig. 2) revealed two primary factors: internalising and externalising behaviour problems (IEBP), including items 1, 2, 3, 4, 5, 6, 7, 8, 9,

13, 14, 15, 16, 17, 19, 20, 21, 22, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 48, 50, 56, 57, 59, 60, 61, 62, 63, 64, 66, 71, 72, and 77; and internal and social deviance (ISD), including items 18, 32, 33, 41, 52, 66, 77, 80, 81, 84, 87, 88, and 90. The scale showed excellent internal consistency, with a Cronbach's alpha of 0.96.

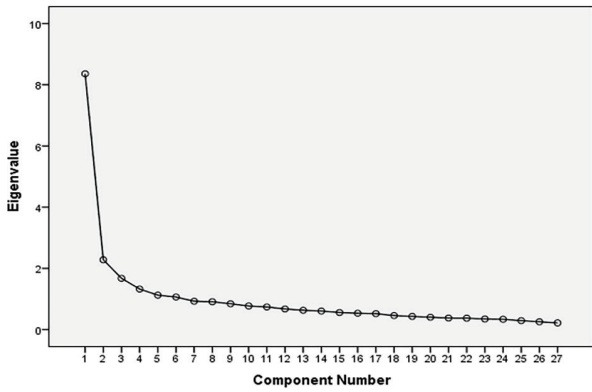


Figure 1. Scree plot and eigenvalue recommend two-factor solution of the ODD scale in truant students

Source: compiled by the authors

The EFA of the ASPD (Fig. 3) scale identified three factors: violation of school norms (VSN), with items 12, 23, 24, 29, 31, 36, 37, 40, 42, 43, 44, 45, 46, 47, 49, 51, 55, 61, 63, 72, 74, 76, 79, 80, 82, and 89; violation of social norms (VOSN), with items 1, 3, 4, 32, 34, 53, 54, 81, 91, 92, 93, 94, and 95; and violation of personal and social norms (VPSN), with items 1, 3, 4, 34, and 54. The ASP scale demonstrated strong internal consistency, with a Cronbach's alpha of 0.93. The KMO value was 0.93, and Bartlett's test of sphericity was significant $\chi^2(741) = 5,891.92, p < 0.000$. A three-factor solution was confirmed by eigenvalues and the scree plot, establishing the factorial validity of the ASP scale. Both eigenvalues and the scree plot supported a three-factor model as shown 3, validating the structure of the ASP scale.

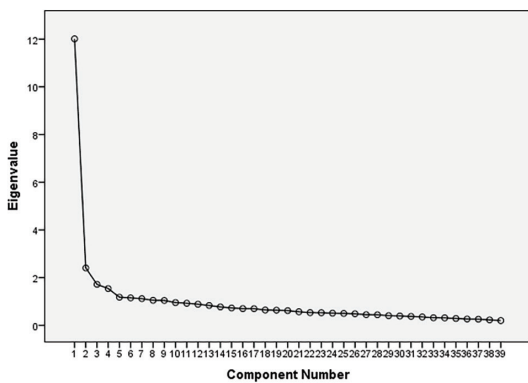


Figure 3. Scree plot and eigenvalue recommend a three-factor solution of the ASPD scale in truant students

Source: compiled by the authors

The KMO value was 0.91, and Bartlett's test of sphericity was significant $\chi^2(1540) = 10,220.60, p < 0.000$, supporting the two-factor solution and validating the factorial structure of the CD scale. Both eigenvalues and the scree plot supported a two-factor model as shown 2, validating the structure of the CD scale.

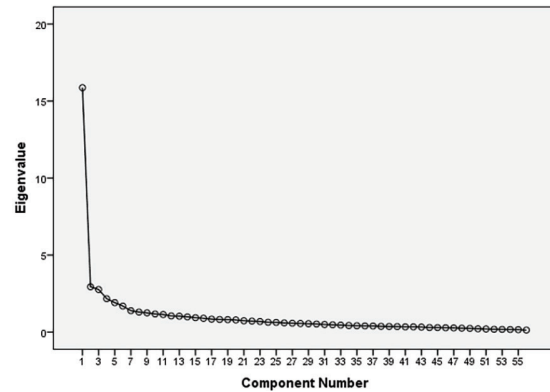


Figure 2. Scree plot and eigenvalue recommend a two-factor solution of the CD scale in truant students

Source: compiled by the authors

The EFA of the ID scale (Fig. 4) identified three main factors: internal and external excuses/blames in individual deviation (IEID), consisting of items 12, 29, 31, 36, 37, 40, 42, 43, 44, 45, 46, 47, 49, 54, 55, 61, 63, 74, 76, 79, and 82; personal base conflict with others (PCO), consisting of items 23, 72, 80, 89, 91, 92, 93, 94, and 95; and personal and social deviation preferences (PSDP), consisting of items 1, 3, 4, 24, 34, and 53, 81. The ID scale demonstrated high internal consistency with a Cronbach's alpha of 0.92. The KMO value was 0.92, and Bartlett's test of sphericity was significant $\chi^2(741) = 5,891.92, p < 0.000$. The analysis confirmed a two-factor solution, validating the factorial structure of the ID scale. Both eigenvalues and the scree plot supported a three-factor model as shown 4, validating the structure of the ID scale.

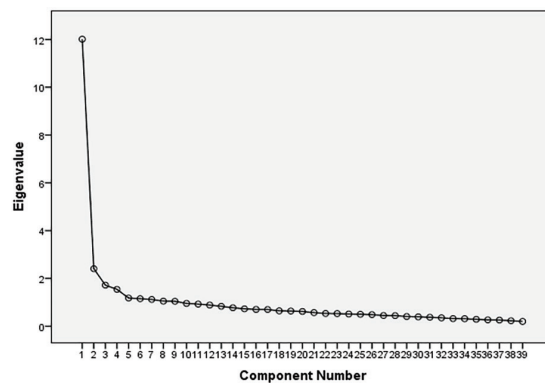


Figure 4. Scree plot and eigenvalue recommend a three-factor solution of the ID disorder scale in truant students

Source: compiled by the authors

The EFA was performed to examine the covert original factor structure of the GD scale (2, 5, 6, 35, 40, 41, 56, 57, 58, 59, 60, 75, 78, 83, 84, 85, 86, and 87) for truant school students (Fig. 5). The GD scale demonstrated strong internal consistency, with a Cronbach's alpha of 0.91. The KMO value was 0.90, and Bartlett's test of sphericity was significant $\chi^2(210) = 3,403.14$, $p < 0.000$), confirming the factorial validity of the GD scale. Both eigenvalues and the scree plot supported a one-factor model as shown 5, validating the structure of the GD scale.

In Table 2, the results of the correlation are presented, such as the item descriptions for internal consistency and correlation coefficient values, concurrent validity, and convergent validity. This table provides a summary of the association between school refusal behaviour and the EBDI scales, supporting the psychometric properties of the scales of school refusal behaviour and EBDI in truant and undergraduate students.

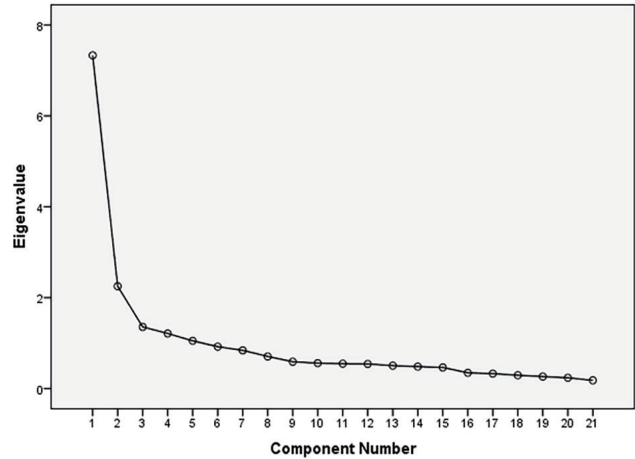


Figure 5. Scree plot and eigenvalue recommend a one-factor solution of the GD disorder scale in truant students

Source: compiled by the authors

Table 2. Mean standard deviation, correlation matrix, and alpha reliability coefficient of ODD scale, CD scale, APD scale, ID scale, and GD scales in students

Variables	T(α)	P(α)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.ODD	0.91	0.89	-	0.92**	0.83**	0.90**	0.89**	0.57**	0.83**	0.84**	0.58**	0.51**	0.82**	0.83**	0.38**	0.54**	0.73**	0.13**	0.17**	0.08*	0.05	0.09*
2.IBP	0.89	0.88	0.91**	-	0.57**	0.81**	0.82**	0.47**	0.72**	0.72**	0.51**	0.53**	0.72**	0.72**	0.30**	0.51**	0.63**	0.14**	0.19**	0.08*	0.05	0.10*
3.EBP	0.83	0.75	0.84**	0.56**	-	0.78**	0.75**	0.57**	0.77**	0.78**	0.53**	0.52**	0.76**	0.77**	0.39**	0.43**	0.68**	0.08	0.10**	0.05	0.03	0.05
4.CD	0.95	0.93	0.93**	0.80**	0.85**	-	0.97**	0.70**	0.93**	0.90**	0.73**	0.61**	0.93**	0.90**	0.45**	0.71**	0.88**	0.13**	0.15**	0.10*	0.04	0.10**
5.IEBP	0.94	0.92	0.92**	0.81**	0.82**	0.96**	-	0.52**	0.91**	0.91**	0.66**	0.61**	0.91**	0.91**	0.33**	0.74**	0.86**	0.14**	0.17**	0.10**	0.03	0.11**
6.ISD	0.77	0.63	0.58**	0.45**	0.60**	0.71**	0.51**	-	0.63**	0.53**	0.67**	0.64**	0.62**	0.53**	0.64**	0.35**	0.60**	0.05	0.03	0.03	0.05	0.03
7.ASPD	0.93	0.89	0.84**	0.65**	0.87**	0.94**	0.91**	0.65**	-	0.96**	0.80**	0.81**	0.99**	0.96**	0.55**	0.69**	0.84**	0.13**	0.14**	0.11**	0.04	0.12**
8.VSN	0.92	0.90	0.82**	0.62**	0.86**	0.90**	0.90**	0.54**	0.95**	-	0.60**	0.66**	0.95**	0.99**	0.35**	0.60**	0.82**	0.14**	0.15**	0.11**	0.05	0.11**
9.VOSN	0.73	0.60	0.65**	0.53*	0.63**	0.77**	0.68**	0.72**	0.80**	0.60**	-	0.45*	0.80**	0.63**	0.83**	0.67**	0.64**	0.08*	0.08*	0.06	0.01	0.09*
10.VPSN	0.67	0.76	0.61**	0.51*	0.60**	0.67**	0.61**	0.71**	0.80**	0.62**	0.65**	-	0.76	0.63**	0.81**	0.62**	0.69**	0.14*	0.15*	0.01	0.05	0.16*
11.ID	0.92	0.88	0.84**	0.65**	0.86**	0.94**	0.92**	0.64**	0.99**	0.95**	0.80**	0.70**	-	0.96**	0.53**	0.72**	0.84**	0.13**	0.14**	0.10**	0.04	0.11**
12.IEID	0.93	0.89	0.82**	0.63**	0.86**	0.90**	0.91**	0.53**	0.96**	0.99**	0.62**	0.65**	0.96**	-	0.35**	0.66**	0.83**	0.13**	0.15**	0.11**	0.05	0.10**
13.PCO	0.68	0.60	0.44**	0.34**	0.46**	0.53**	0.39**	0.75**	0.58**	0.37**	0.86**	0.65**	0.57**	0.37**	-	0.16**	0.34**	0.05	0.02	0.05	0.02	0.07
14.PSDP	0.78	0.68	0.61**	0.54**	0.55**	0.71**	0.76**	0.32**	0.70**	0.61**	0.69**	0.61**	0.73**	0.66**	0.23**	-	0.69**	0.07	0.12**	0.04	-0.01	0.08*
15.GD	0.91	0.87	0.79**	0.62**	0.79**	0.90**	0.89**	0.60**	0.90**	0.88**	0.69**	0.60**	0.90**	0.89**	0.43**	0.70**	-	0.10**	0.13**	0.08*	0.02	0.09*
16.SRBS	0.81	0.78	-0.06	-0.07	-0.04	-0.03	-0.02	-0.05	-0.05	-0.02	-0.10	-0.11	-0.05	-0.02	-0.13*	-0.01	-0.01	-	0.79**	0.74**	0.76**	0.77**
17.EASES	0.78	0.74	-0.05	-0.05	-0.03	-0.02	-0.02	-0.01	-0.02	0.01	-0.08	-0.07	-0.03	-0.01	-0.07	-0.04	0.01	0.79**	-	0.50**	0.48**	0.49**
18.ASPNA	0.79	0.72	-0.05	-0.07	-0.08	-0.01	-0.01	-0.02	-0.01	0.01	-0.05	-0.02	-0.01	0.01	-0.07	0.01	0.03	0.80**	0.66**	-	0.40**	0.39**
19.TR	0.80	0.71	-0.07	-0.06	-0.01	-0.01	-0.01	-0.01	-0.03	-0.02	-0.03	-0.01	-0.03	-0.02	-0.07	0.03	0.01	0.74**	0.40**	0.48**	-	0.45**
20.AS	0.77	0.70	-0.05	-0.03	-0.07	-0.06	-0.04	-0.09	-0.08	-0.05	-0.14*	0.14*	-0.08	-0.04	-0.16*	-0.03	-0.05	0.77**	0.52**	0.47**	0.35**	-

Note: the upper section of the correlational matrix represents the punctual student sample, while the lower section represents the truant student sample. P denotes Cronbach's alpha coefficient for the punctual sample, and α (P) – Cronbach's alpha coefficient for the truant sample; EASES – Escape from Aversive Social and/or Evaluative Situations; AS – Attention Seeking; ASPNA – Avoidance of Stimuli Provoking Negative Affectivity; TR – Tangible Rewards. Significance levels are indicated as $p < 0.05$, $p < 0.01$, and $p < 0.001$

Source: compiled by the authors

In Table 2, the internal consistency of EBDI scales, which include CD, ODD, ID, ASPD, and GD were examined using Cronbach's alpha in both truant and punctual student samples. The results indicated satisfactory internal consistency across all study scales, providing strong psychometric support for the EBDI in measuring EBP in these populations. In Table 2, the results reveal inter-correlations between the EBDI scales and

the school refusal behaviour scale in both punctual and truant student. The findings revealed statistically significant positive associations between the school refusal scale and the EBDI scales, including their respective subscales. These results support the convergent validity of the newly developed EBDI scales, indicating they effectively measure related constructs of externalising behaviour disorders in both student groups.

In Table 2, the concurrent validity of the EBDI was evaluated by examining the correlations between the newly developed scales and the previously validated School Refusal Behaviour Scale. The results showed statistically significant positive correlations across all scales in both truant and punctual students, confirming that the

EBDI scales can reliably predict relevant outcomes. These findings provide robust evidence for the concurrent validity of the EBDI in assessing EBP among school-going students. In Table 3, the results of the independent sample t-test to explain mean wise differences on CD, ODD, ASPD, ID and GD scales in punctual and truant students.

Table 3. Mean wise differences on CD, ODD, ASPD, ID and GD scales in punctual and truant students

Variables	Truant students (n = 361)		Punctual students (n = 599)		t (958)	p	95% CL	
	M	SD	M	SD			LL	UL
1.ODD	48.39	18.88	45.67	16.93	2.27	0.02	0.36	5.06
2.IBP	26.81	12.17	25.40	11.35	1.78	0.07	-0.13	2.96
3.EBP	21.58	9.22	20.27	7.66	2.33	0.02	0.20	2.40
4.CD	109.74	37.05	103.62	32.58	2.63	0.00	1.56	10.68
5.IEBP	73.36	30.80	69.26	27.02	2.12	0.03	0.31	7.88
6.ISD	36.38	10.25	34.35	8.92	3.16	0.00	0.76	3.27
7.ASPD	85.06	29.66	79.46	25.50	3.05	0.00	1.99	9.20
8.VSN	44.27	19.64	42.91	16.84	1.12	0.26	-1.02	3.74
9.VOSN	31.92	8.91	28.13	7.67	6.85	0.00	2.70	4.86
10.VPSN	8.86	4.97	8.41	4.28	1.47	0.14	-0.15	1.06
11.ID	71.40	25.21	66.39	21.81	3.20	0.00	1.93	8.08
12.IEID	34.71	16.02	33.84	14.12	0.87	0.38	-1.09	2.84
13.PCO	21.69	7.54	18.42	6.89	6.74	0.00	2.31	4.21
14.PSDP	15.00	5.29	14.12	4.92	2.54	0.01	0.19	1.54
15.GD	32.90	14.68	30.78	12.30	2.37	0.01	0.36	3.88
16.SRBS	48.72	16.71	52.78	16.91	-3.61	0.000	-6.25	-1.85
17.EASES	10.46	4.60	11.96	5.01	-4.64	0.000	-2.13	-0.86
18.ASPNA	9.97	4.41	11.72	5.46	-5.16	0.000	-2.41	-1.08
19.TR	15.31	6.15	15.12	5.58	0.49	0.62	-0.56	0.94
20.AS	12.97	6.32	13.95	5.92	-2.44	0.01	-1.78	-0.19

Note: significance levels are indicated as $p < 0.05$, $p < 0.01$, and $p < 0.001$

Source: compiled by the authors

In Table 3, an independent sample t-test revealed significant mean differences in ASPD in truant adolescents students ($M = 74.81$, $SD = 26.23$) as well as punctual adolescents students ($M = 71.05$, $SD = 22.34$), $t(918) = 2.36$, $p = 0.02$, indicating that truant students more frequently exhibit antisocial behaviour. Similarly, significant differences were found in individual deviant behaviour in truant adolescents students ($M = 78.54$, $SD = 27.89$) and punctual adolescents students ($M = 74.82$, $SD = 23.69$), $t(910) = 2.20$, $p = 0.02$, with truant students showing higher deviance. Conversely, punctual students displayed higher school

refusal behaviour ($M = 52.78$, $SD = 16.91$) compared to truant students ($M = 48.72$, $SD = 16.71$), $t(912) = -3.20$, $p < 0.001$. These findings support both group known validity and concurrent validity in assessing antisocial behaviour, individual deviance, and school refusal behaviour among truant and punctual students. In Table 4, the results of the receive operational curves to explain diagnostic performance of ODD scale, CD scale, ASPD scale, ID scale, and GD scale for recognition of oppositional defiant, conduct disorder, antisocial personality, individual and group deviant behaviours in punctual and truant students.

Table 4. Diagnostic performance of ODD scale, CD scale, ASPD scale, ID scale, and GD scale for recognition of oppositional defiant, conduct disorder, antisocial personality, individual and group deviant behaviours in punctual and truant students using receive operational curves

Variables	AUC	SE	p	95% CL		Cut-off point	Sensitivity	Specificity
ODD	0.60	0.01	0.00	0.56	0.62	0.41	0.55	0.50
CD	0.62	0.01	0.01	0.60	0.68	0.59	0.97	0.99
ASPD	0.65	0.02	0.07	0.57	0.62	0.58	0.69	0.67
ID	0.60	0.01	0.00	0.61	0.63	0.61	0.67	0.66
GD	0.62	0.04	0.00	0.60	0.68	0.40	0.24	0.18

Notes: AUC – area under the curve; students' status: 1 – punctual students (n = 599); 2 – truant students (n = 361); $p < 0.05$, $p < 0.01$, $p < 0.001$

Source: compiled by the authors

In Table 4, the specificity (FPR) and sensitivity (TPR) indices used in ROC curve analysis revealed that the all scales of EBDI effectively differentiate in punctual and truant students. The AUC, covering 60% of the area, indicates fair clinical efficacy, with high specificity and sensitivity validating these scales as accurate

diagnostic tools. Criterion validity was confirmed through ROC analysis, providing strong psychometric evidence. Additionally, predictive validity results showed that these newly developed scales are more effective than the school refusal behaviour scale in distinguishing between the two student groups (Figs. 6-11).

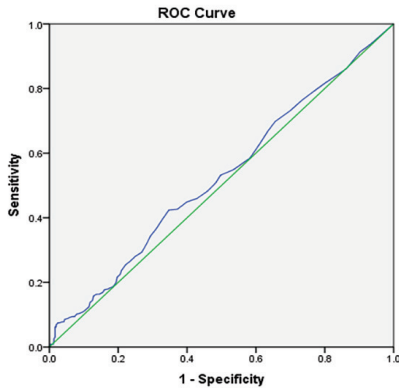


Figure 6. Sensitivity and specificity of the ODD for truant and punctual students
Source: compiled by the authors

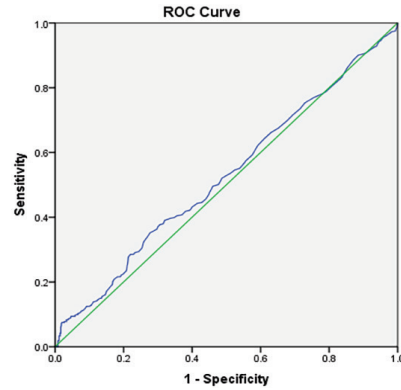


Figure 7. Sensitivity and specificity of the CD for truant and punctual students
Source: compiled by the authors

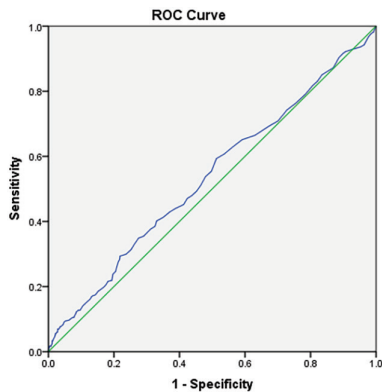


Figure 8. Sensitivity and specificity of the ASPD for truant and punctual students
Source: compiled by the authors

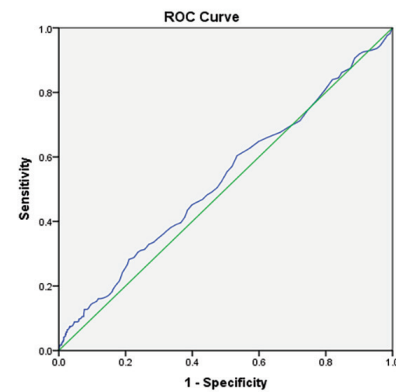


Figure 9. Sensitivity and specificity of the ID for truant and punctual students
Source: compiled by the authors

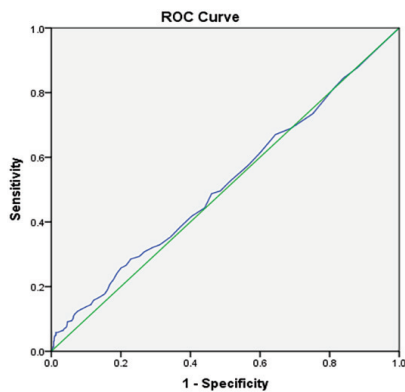


Figure 10. Sensitivity and specificity of the GD for truant and punctual students
Source: compiled by the authors

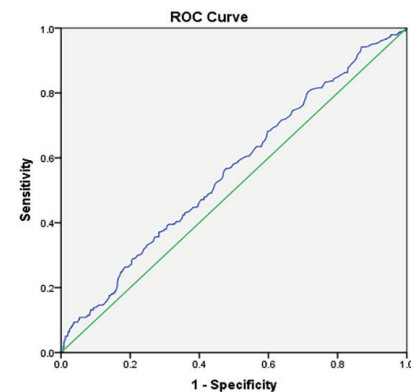


Figure 11. Sensitivity and specificity of EBDI for truant and punctual students
Source: compiled by the authors

This study's results revealed the robust psychometric properties of the EBDI in examining EBP in school-going truant and punctual students. All newly developed scales have shown satisfactory internal consistency and are supported by Cronbach's alpha analysis and display significant concurrent and convergent validity with the School Refusal Behaviour Scale in both samples. This study's results confirmed the validity and reliability of the EBDI as a clinical instrument for assessing EBP in Pakistani school-going adolescents. School truancy is a chronic and persistent problem worldwide that is consistently affecting students' social and academic lives (Kearney, 2022; da Fonseca *et al.*, 2024). Previous studies have consistently associated truancy with many adverse outcomes, such as EBP and IBP, substance abuse, and juvenile delinquency (Fornander & Kearney, 2020). The present study aimed to develop and validate EBDI for Pakistani school-going students. This study also examines its clinical efficacy in distinguishing EBP between punctual and truant school-going students. This study further sought to explore the convergent, discriminate, known group, and predictive validity of the EBDI.

This study's findings supported the robust psychometric properties of the EBDI for school-going truant students, especially the ODD, CD, ASPD, ID, and GD scales. EFA demonstrated distinct factor structures for each scale of the EBDI that are supported by prior studies that highlight the multidimensional nature of EBP in school and clinical contexts (Makowski *et al.*, 2020; Tahira & Jami, 2021). The CD scale similarly explored a two-factor structure in the truant school-going sample, encompassing EBP and IBP and internal and social deviance. These results also support the study of G. Atwood & P. Croll (2021), who highlighted the complex interaction between external and internal influences on the CD sample. On the other hand, the ASPD scale identified three factor structures: (1) violation of school norms, (2) violation of social norms, and (3) violence of personal and social norms in the total sample. These findings are also consistent with M. Crede *et al.* (2023), who emphasised the complex nature of ASPD in an adolescent sample.

The ID identified three key factor structures, such as internal and external excuses/blames, personal and social deviance preferences, and personal basis conflict with other. Finally, the GD scale established a uni-factor structure that demonstrated good internal consistency. Interesting, it did not differentiate between truant and punctual current samples. This is slightly opposite to the results of M.J. Fornander & C.A. Kearney (2020), who recommended that GD emerges from multifaceted social dynamics that might not be fully figured out by a single-factor model. The diagnostic efficacy of the EBDI was also confirmed using Receiver Operating Characteristic (ROC) analysis that showed high specificity and sensitivity across the ODD, CD, ASPD, and ID

scales in truant and punctual school samples. These results are aligned with the study by C.A. Kearney (2022), who highlighted the importance of using strong, multidimensional instruments for diagnosing internalising and externalising behaviour disorders in clinical and educational contexts. The high specificity and sensitivity of the EBDI instruments reveal their efficacy in accurately diagnosing school-going students who display EBP from punctual school-going students, which further validates the instrument's clinical relevance.

Interestingly, GD revealed comparatively low specificity and sensitivity, which was suggesting that GD was a very complex concept that may not be as effective in unique between punctual and truant students. This study's results are slightly supported by the D. Makowski *et al.* (2020) study, who observed that group-based deviant behaviours are regularly triggered by broader environmental and social factors that may not be fully figured out by individual and personal level assessments. Furthermore, the convergent and discriminate validity of the EBDI was further confirmed using Pearson correlational analysis that demonstrated positive associations between the School Refusal Behaviour Scale and all EBDI scales for truant students. These results are aligned with the study of M.J. Fornander & C.A. Kearney (2020), who found the same association between externalising behaviour disorders and school refusal behaviour in clinical sample. This study's findings also confirmed the EBDI's usefulness as a comprehensive inventory for examining externalising behaviour disorders in truant and punctual students.

This present study further investigated group differences in punctual and truant adolescents' students, demonstrating truant students were more likely to be inclined to ODD, CD, ASPD, ID, and GD as compared to punctual students. Overall, the present research contributes to the prevailing literature by providing a developed and validated EBDI's tools for measuring externalising behaviour disorders in both punctual and truant students. The findings support and extend prior studies, confirming the multidimensional nature of externalising behaviour issues and highlighting the importance of utilising comprehensive examination instruments.

Conclusions

The main goal of this research was to establish and validate the EBDI, which is designed to examine different externalising behaviour disorders such as ODD, CD, ASPD, ID, and GD in Pakistani truant students. The EBDI scales were developed with a focus on construct, content, and criterion validity, enabling their use in diagnosing and identifying externalising behaviour disorders in punctual and truant students. EFA was carried out to establish construct validity, while Pearson correlations were employed to develop convergent validity with the school refusal behaviour scale for both truant and punctual students. Reliability was confirmed by

Cronbach's alpha, as well as clinical efficacy, which was examined using ROC analysis. These results recommend that the EBDI scales are valid and reliable diagnostic tools for diagnosing and addressing externalising behaviours in truant students. This novel inventory holds potential for usage in personnel selection, educational, forensic, and clinical settings, especially in truant student assessment and intervention strategy planning. However, many limitations influenced the conclusions of the study. A major drawback was the separate claim of EFA for each EBDI scale that led to diverse dimensions across the truant and punctual samples. Whereas the scales were designed using DSM-5 criteria and insights

from mini-focus group discussions with a diverse total sample, CFA did not apply to further validate and confirm the construct validity of the scales. Future studies should address these gaps by employing CFA on larger and more diverse total and punctual student samples to approve the robustness, generalisability, or applicability of the EBDI in broader clinical and educational settings.

None.

None.

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Conflict of Interest

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Оцінка психометричних властивостей багатовимірної інвентаризації зовнішніх розладів поведінки серед пакистанських учнів

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Анотація. Здоров'я учнів тісно пов'язане з їхньою академічною успішністю, однак пропуски шкільних занять, які є суттєвою глобальною проблемою охорони здоров'я, можуть залишатися поза увагою в оцінюванні стану здоров'я та в заходах для його підтримки. Метою цього дослідження було вивчення психометричних властивостей інвентаризації зовнішніх розладів поведінки для пакистанських учнів, які пропускають заняття. Інвентаризація зовнішніх розладів поведінки була розроблена для оцінки п'яти різних розладів зовнішньої поведінки: (1) опозиційно викличний розлад, (2) розлад поведінки, (3) антисоціальний розлад особистості, (4) індивідуальне відхилення, (5) групове відхилення. У дослідженні взяли участь 960 учнів (учні, що пропускають заняття, $n = 361$; пунктуальні, $n = 599$), які були відібрані з різних державних шкіл, інтернет-кафе та громадських парків міста Фейсалабад, Пакистан. Задля вивчення прихованої структури шкал інвентаризації зовнішніх розладів поведінки для вибірки учнів, які пропускають заняття, був застосований факторний аналіз. Результати аналізу кривої робочої характеристики реципієнта показали, що шкали для опозиційно викличного розладу, розладу поведінки, антисоціального розладу особистості, індивідуального відхилення та групового відхилення продемонстрували високу діагностичну ефективність. Крім того, інвентаризація зовнішніх розладів поведінки виявила прийнятні рівні надійності, конструктивної валідності та критеріальної валідності для вибірки учнів, які пропускають заняття. Результати дослідження підтвердили, що індигонозно розроблені шкали інвентаризації зовнішніх розладів поведінки є надійними та валідними інструментами самозвіту для діагностики зовнішніх розладів поведінки серед школярів

Ключові слова: відмова від школи; розлад поведінки; опозиційно викличний розлад; групова девіація; індивідуальна девіація; антисоціальний розлад особистості

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Peculiarities of dialogic interaction of technical profile students with different types of communicative response

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Abstract. Dialogic interaction is crucial in human communication, but there is a lack of research on the development of these skills of technical profile students, especially taking into account their personal characteristics. In this regard, the purpose of the research was to study the peculiarities of dialogic interaction of technical profile students with different types of communicative response. The empirical study covered 300 students of technical higher education institutions. The empirical research programme included the “Dialogicity of Interpersonal Relationships” methodics and “Test of Communication Skills”. It was found that technical profile students had an average level in terms of the self-worth of relationships, the constructiveness of relationships, and the dialogicity of relationships. At the same time, it was determined that almost a third of respondents tend to demonstrate an unpreparedness to interact with other people effectively, and the smallest proportion of respondents demonstrates a high ability to adapt in interaction situations, self-confidence in communication and the ability to construct open relationships. Furthermore, the biggest part of the respondents is inclined to a competent response in communication, but a third part of them tends to act aggressively in interaction, and the rest are inclined to addiction in communication. The study demonstrates that all indicators of dialogicity of relationships strongly correlate with the competent type of communicative response, while no significant correlation was found with other types. Therefore, the study made it possible to state that the construction of dialogic interaction among technical profile students correlates positively with the tendency to partnership in communication

Keywords: interaction; dialogic interaction; self-worth of relationships; constructiveness of relationships; dialogicity of relationships; response in communication; technical profile students

Introduction

The concepts of dialogue and dialogic interaction have been used in various fields and have expanded their conceptual framework. Dialogue is seen as the primary and most fundamental form in the development of interpersonal communication. During a dialogue, a person comes into direct contact with others, has the opportunity to express his or her opinions on a number of issues, and to know the opinions of opponents on the same issues. The involvement of participants into complicity, interaction, and the joint search for common solutions is the main element of dialogue. During a dialogue, controversial and ambiguous issues may be discussed, and opinions may be exchanged on a problem that requires immediate resolution. As a result of this process, a single semantic field is formed, which

allows not only to understand the problem itself but also to comprehend your interlocutor better.

In modern society, the interpretation of dialogue goes from understanding it only as the speech mode. O. Slobodianiuk (2019) tend to accentuate on the dialogic nature of the whole human existence and to show dialogue as a creative interaction that allows new insights and unexpected ideas to emerge from the encounter. K. Sanders & E. Gutierrez-Garcia (2020) emphasise that the “dialogue” is the interaction between parties with the intention of generation a shared understanding, something deeper than knowledge transmission. According to studies of M. Pickering & S. Garrod (2021), dialogic interaction is something more than a mode of speech, as it is the main channel in the range

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of human communication channels. O. Liubashenko & Z. Kornieva (2019) came to the conclusion, that mostly, when it comes to students' dialogic interaction, it means work in the classroom under the guidance of a lecturer to acquire professional knowledge or develop skills necessary to perform professional functions. K. Šedová *et al.* (2020) identified various interactive teaching methods used by lecturers to improve students' professional skills.

In the works of W.S. Ng & G. Yu (2023) the influence of the lecturer on the process of professional competences formation of students of higher education institutions is analysed and how modern dialogical technologies can be integrated into the classroom learning process for the effective acquisition of professional knowledge and skills. A relatively smaller number of studies are devoted to the problems of developing students' dialogical skills as a feature of an effective specialist of the twenty-first century. Thus, N. Mercer *et al.* (2019a) considers methods and approaches to the development of students' dialogue skills necessary for successful professional activity, while J. Hill & H. West (2020) emphasise on the use of interactive teaching methods to develop students' dialogical skills.

N. Holota & A. Karnaukhova (2022) found specific methods and approaches to the development of dialogical skills of students studying on certain specialties. A similar study was conducted by N. Mercer *et al.* (2019b), who discovered the importance of dialogic interaction in the professional training of students and methods of its development. In the context of the formation of dialogic interaction skills of technical profile students, fewer studies are presented. Thus, R. Alexander (2020) studied methodological aspects of students' professional training, in particular, his attention was paid to classroom work under the guidance of a lecturer, as well as specific approaches and methods, including dialogue methods, used by lecturers to develop students' professional communicative skills.

The impact of dialogic interaction on the formation of students' professional competences, as well as the importance of dialogical skills in the professional activities of modern technical specialists and ways to develop them were the main result of studies by D. Alt & N. Raichel (2020). In studies of S. Semerikov *et al.* (2020) the specific methods of communicative skills formation of technical profile students are revealed, as well as the use of interactive methods for the development of communicative skills of technical profile students.

However, despite the fact that researchers have developed a fairly wide range of issues related to the problems and prospects of the development of communication skills of technical profile students, the points of taking into account the personal characteristics of technical profile students in the formation of their dialogic interaction skills remains studied insufficiently. In this regard, the aim of the study was to an-

alyse the features of dialogic interaction of technical profile students with different types of response in communication.

Materials and Methods

Studying the specifics of dialogic interaction of technical profile students with different types of communicative response is of particular interest in practical terms. Considering this, an empirical study was conducted.

Participants. The research was held in 2023-2024 academic year. It comprised 300 students of the institutions of higher technical education from Poltava and Kharkiv regions, Ukraine (Poltava State Agrarian University, Khorol Agro-Industrial College of Poltava State Agrarian University and State Biotechnology University). The age of participants was 18-22 years. The study included students obtaining professional junior bachelor's, bachelor's and master's degrees (100 respondents per each degree). The sample included 270 male participants (90%) and 30 female participants (10%), which represents the distribution of technical profile students by gender according to the Higher and professional higher education in 2023 (2023). Thus, a systematic selection of subjects from the general population was made. Consequently, the preliminary characterisation of the sample allows to assert that the empirical study was conducted on an appropriate sample that represents the general population by the required characteristics and is evidence of the reliability and validity of the subsequent results.

Procedure. The survey was conducted in a mixed format, both in the classroom and offline using Google Forms survey administration software. The study was conducted in accordance with the ethical principles set forth by the American Psychological Association (2017) and National Psychological Association of Ukraine (2021). All participants were informed of the purpose of the study prior to data collection, and their written consent was obtained. Also, the participants were informed that the research was voluntary and that any given information was strictly confidential. Furthermore, the survey was anonymous to ensure the confidentiality and reliability of data.

Study Tools. The programme of empirical research included:

1) "Dialogicity of Interpersonal Relationships" methodics (Dukhnovskiy, 2005), which diagnoses the desire to see and take into account the uniqueness of one's partner, the value and significance that the relationship has for the interacting subjects. The dialogical orientation is an unrestricted exchange of ideas and opinions between the subjects of relations, which is based on their mutual recognition and understanding. The diagnostic parameters of dialogicity that are included into the methodics are the self-worth and constructiveness of interpersonal relationships, with self-worth being the emotional side of dialogicity and constructiveness

being its cognitive side. The index of dialogicity of relationships is the total score of these two scales. Dialogicity of relationships imply their value and significance for the interacting subjects. The research procedure consisted of the following. Subjects responded on a 7-point Likert scale (1 = absolutely wrong to 7 = absolutely right) (Altuna & Arslan, 2016). The raw scores were converted to standard ones using a special table, and then a conclusion about the level of expression of the indicators on the diagnostic scales (low, medium, or high) was made.

2) "Test of Communication Skills" methodics (Michelson's communicative..., n.d.), which is aimed at the identification of the level of communicative competence and the quality of formation of the basic communicative skills of the individual. Communicative response is the actions performed in response to communicative influences of interlocutors and denoting the feedback that exists between the communicator and the communicant.

The test contains a description of 27 communication situations. For each situation, 5 possible behavioral options are offered. The respondent has to choose one way of behavior that is inherent in this situation. As a result of the study, the number of correct and incorrect answers is calculated as a percentage of the total

number of selected answers. The key is used to determine which type of response is inherent to the respondent: competent, dependent, or aggressive.

Statistical Tools. Data obtained from the study tools were compiled using the point-biserial correlation coefficient r_{pb} , which is applied for empirical data whose significance are obtained on different measurement scales (Bosniuk, 2020). The calculation was made using the Microsoft Excel 2016. The statistical computer programme IBM SPSS Statistics for Windows, Version 23.0. was used to analyse the data. The significance level was determined at $p < 0.01$.

Results and Discussion

According to the overall aim of the study, the purpose of the empirical research was to compare the indicators of dialogicity of relationships of technical profile students with the types of response in communication, which are inherent to them. The general hypothesis was that technical profile students' dialogical orientation in interpersonal relations is connected with the construction of more efficient partnership in communication.

At the first stage of the empirical study, the features of dialogicity of relationships of students using the "Dialogicity of Interpersonal Relationships" methodics (Dukhnovskiy, 2005) were identified (Table 1).

Table 1. Indicators of dialogicity of relationships among technical profile students (n = 300, %)

No.	Scales	Levels of expression			TOTAL
		Low	Medium	High	
1.	Self-worth of relationships	30	52	18	100
2.	Constructiveness of relationships	29	54	17	100
3.	Dialogicity of relationships	29	53	18	100

Source: author's elaboration

The self-worth of relationships is their importance, significance for a person through positive content. As usual, rapprochement and interactive feelings, self-confidence, and self-reliance dominate in these relationships. Such relationships are the characteristic of emotionally mature, optimistic people who are ready to overcome obstacles. According to the scale of self-worth of relationships, the majority of technical profile students (52%) demonstrate a medium level of manifestation. These subjects are usually well aware of the requirements of reality, do not hide their shortcomings, and are extroverted. About a third of the surveyed students (30%) have low indicators of the self-worth of relationships. This indicates a serious approach to life, rigidity, and suspicion. It may also indicate a reduced emotional stability and a predominance of negative emotional tone among these students. The smallest part of technical profile students' sample (18%) has high indicators of the self-worth of relationships scale. They denote the subjects' cheerfulness, optimistic attitude to the life situation, and readiness to overcome obstacles. In addition, this may be the evidence of

students' confidence in their strengths, capabilities, emotional maturity and resilience, and a good ability to adapt to interactions with different people.

Constructiveness of relations is a desire to achieve common goals, which implies free expression of thoughts and positions by the subjects of relations, as well as a style of relations that satisfies the subjects and corresponds to the situation of interpersonal interaction, taking into account the status and role characteristics of each other. Constructiveness is a kind of commonality in interpersonal relationships. On the scale of constructiveness of relationships, more than half of the surveyed students (54%) have a medium level. This indicates their orientation toward the group's opinion, their need for support, approval, and advice from others, as well as about their organisation, ability to plan their lives effectively, and a concern for their social reputation. A low level of constructiveness of relationships was reported for 29% of the surveyed technical profile students. This indicates that they are independent, self-sufficient people who do not seek contact with others on their own initiative. It can be difficult for them

to adapt to corporate or managerial hierarchies. Sometimes this can be an indication of disappointment with life, a falling into doubt, which allows them to avoid the need to make their own life choices. High rates of constructiveness of relationships are demonstrated by 17% of respondents. These technical profile students show readiness to overcome difficulties throughout realizing their abilities. They are characterised with practicality in matters, kindness, gentleness, and indulgence towards themselves and other people. In addition, they may be described with satisfaction with life, its course, and the process of realisation. Usually, they have a high level of personal success, and are able to take responsibility and make their own choices.

According to the index of dialogicity of relations, more than half of the surveyed students (53%) have a medium level of its manifestation. This indicates the ability of the respondents to plan their lives and activities effectively. They are characterised with a prudent approach to life and relationships, and care about their own social reputation. This can be an indicator that these students are well aware of the requirements of reality, they prefer not to destroy established ways of things going, and they do not have a strong willingness to confront the common habits and views. Their interpersonal relationships are also quite harmonious, but they are less flexible. 29% of the surveyed technical profile students demonstrate a low level of dialogicity of relationships, i.e., they show intolerance to criticism, isolation from the group's position, a possible sense of complacency and a sense of superiority over others. As a rule, their relationships are unstable

and disharmonious. They are also distinguished with rivalry, a desire to take a dominant position, regardless of the situation of interpersonal interaction and the intentions of their partners. 18% of respondents have a high level of dialogicity of relationships. This indicates an optimal distance in interpersonal relationships. The participants of the relationship are in a state of well-being, feel satisfied with the way their relationships develop. Rapprochement feelings dominates for them. Their relationships can be described with high self-worth and constructiveness. They are characterised with a friendliness, a desire to cooperate and to help, and to empathise with other people. Their relationships are open and natural. They have a desire to take into account each other's individual features. These subjects change their point of view easily, accept unstable views and ideas calmly, and are tolerant to contradictions.

Thus, basing on the results of this stage of the study, it is possible to conclude that technical profile students have medium scores on all scales that characterise dialogic interaction with others, namely, they have a medium level of both the self-worth of relationships and the constructiveness of relationships, and, accordingly, dialogicity of relationships. At the same time, almost a third of respondents have low scores on all indexes, which may indicate their unpreparedness for effective interaction with others. At the next stage of the study, the predominant type of communicative response of students using the "Test of Communication Skills" methodics (Michelson's communicative..., n.d.) was identified (Table 2).

Table 2. Indicators of the type of communicative response of technical profile students (n = 300, %)

No.	Type of communicative response	Respondents
1.	Dependent	30
2.	Competent	40
3.	Aggressive	30
TOTAL		100

Source: author's elaboration

Among the respondents, the majority of students tend to show a competent type of communicative response (40%). In communication they are more inclined to partnerships. It is not difficult for them to predict events basing on the understanding of thoughts, feelings, and intentions of communication partners, as well as to predict further actions of people basing on the analysis of real communicative situations. These subjects also have a well-developed sensitivity to the shades and nature of human relationships, which contribute to quick and correct understanding what people say to each other in the context of a particular relationship or a situation. It is easy for them to choose a topic for conversation or to support the topic previously chosen by the interlocutor.

The respondents demonstrate dependent and aggressive types of communicative response equally (30%). Students with a predominance of the dependent type in communication prefer to let their partner take the initiative, because they do not seek to take the initiative themselves. These students are inclined to choose easy paths that can not lead them to a conflict or to any misunderstandings with their partners, perhaps because they have a poorly developed ability to predict events basing on an understanding of the feelings, thoughts, intentions of the participants in communication, as well as to predict further actions of people basing on the analysis of real situations of communication (family, business, friendship). Most often, these students tend to adapt to their interlocutors in

communication, give in to them, agree with the topics of conversation chosen by their communication partners, even if they would prefer to talk about another issues.

Students, who are dominated by aggressive reactions in communication (30%), in contrast to those who adhere to dependent reactions, possibly due to incompetence in communication, tend to achieve what they want through aggressive behavior and manipulation, which in turn has a detrimental effect on communication with others and contributes to the isolation of

these people. Thus, the overall picture shows that most of the surveyed technical profile students are prone to a competent response in communicative situation, but one third of the respondents tend to behave aggressively in communicative situations, and another third of the respondents are prone to addiction in communication. Comparison of the specifics of dialogic interaction construction by technical profile students with different types of communicative response using the point-biserial correlation coefficient r_{pb} is given in Table 3.

Table 3. Correlation between the peculiarities of dialogic interaction construction and the type of communicative response of technical profile students according to the point biserial correlation coefficient r_{pb}

No.	Type of communicative response	Dependent	Competent	Aggressive
	Indicators of dialogicity of relationships			
1.	Self-worth of relationships	0.184	0.512**	0.104
2.	Constructiveness of relationships	0.142	0.429**	0.186
3.	Dialogicity of relationships	0.012	0.616**	-0.214

Note: * – correlation is significant at the 0.05 level; ** – correlation is significant at the 0.01 level

Source: author's elaboration

The obtained data give an opportunity to conclude that self-worth of relationships is in statistically significant strong correlation ($p \leq 0.01$) with the competent type of communicative response (0.512), while correlation with the dependent type is weak (0.184), as well as with the aggressive type (0.104). It means that the more students are inclined to partnerships in communication, the more they show optimistic attitude to the life, cheerfulness and readiness to overcome different life obstacles. And vice versa, the more the technical profile students show a good ability to adapt to interactions with different people, the more they have a well-developed sensitivity to the nature and shades of human relationships.

Constructiveness of relationships is in statistically significant strong correlation ($p \leq 0.01$) with the competent type of communicative response (0.429), while correlation with the dependent type is weak (0.142), as well as with the aggressive type (0.186). It means that the more students are inclined to partnerships in communication, the more they show readiness to overcome difficulties in realizing their abilities, and vice versa, the more the technical profile students are able to take responsibility and make their own choices, the more they can predict further actions of people basing on the analysis of real communicative situations.

Dialogicity of relationships is in statistically significant strong correlation ($p \leq 0.01$) with the competent type of communicative response (0.616), while correlation with the dependent type is weak (0.012), and the correlation with the aggressive type is negative (-0.214). It means that the more students are inclined to partnerships in communication, the more they are characterised with a friendliness and desire to help and

to empathise with other people, with a willingness to cooperate with others. And vice versa, the more the technical profile students' relationships are open and natural, the more they understand quickly and correctly what people say in the context of a particular situation or a particular relationship.

Hence, the main focus of the present study was to determine the existence or absence of a dialogic orientation in interaction among technical profile students and their tendency to respond in one or another way to the influences of partners in communication or interaction. The results of this study were supported by previous studies that revealed the problems faced by technical profile students in the formation of dialogical skills and ways to solve them (Vukadinova *et al.*, 2021). The data collected in this previous research offer a tool for developing professional communicative skills regarding the competence in communication, which is to some extent related to the current study.

Another previous study found the influence of learning technologies on the development of dialogical skills of technical profile students and due to this distinguished the approaches to the development of communicative competence through project work and interaction in pairs (Meshko *et al.*, 2021), as well as it was found in the similar study of T. Kramarenko (2021).

I. Ljunggren *et al.* (2022) conducted the research of communicational and interactional skills of psychology students. The focus of this study was on communicational microskills of psychology students and dialogue as psychological method in training interviewing and communication skills, so the peculiarities of students' communicative response were not considered.

The results obtained in the current study are confirmed by the data of H. Kuznetsova *et al.* (2023), which ascertained that the main elements of the communicative competence of higher education students are speech and communication skills that ensure communication, namely, the competent communicative response. Also results of the current study are in line with earlier research of L. Sushchenko *et al.* (2020), who substantiated that involvement of students into various forms of dialogic interaction in educational process creates opportunities for the formation of a communicative personality of future specialist. Thus, the common feature that unites this study and those analysed above is the idea that it is essential to explore more deeply the specifics of dialogic interaction of students, in particular, technical profile students, in order to develop and improve the dialogic interaction skills of students and to form the qualified specialists who are able to work effectively in their field and to meet modern challenges. However, the differences in approaches to dialogic interaction between students of different specialties are yet to be studied.

Conclusions

Thus, the results of the current study are consistent with the overall pattern of expectation, which stated that the dialogicity in interpersonal relations of technical profile students help them to construct the most efficient partnership in communication. The research showed that the technical profile students have a medium level of the self-worth, the constructiveness and the dialogicity of relationships. At the same time, almost a third of respondents show the unpreparedness for effective interaction with others. Furthermore, the

biggest part of the respondents is inclined to a competent response in communication, but a third part of them tends to act aggressively in interaction.

All the indicators of dialogicity of relationships are in strong correlation with the competent type of communicative response ($p \leq 0.01$) and has no correlation with the other types. This indicates that the more students are ready to construct partnership in communication, the more they are optimistic towards different life obstacles and ready to overcome interaction issues, are able to predict the further actions of others on the base of real communicative situations analysis. The more the students' interpersonal relations are natural and open, the more they understand what people say in particular situation or relations quickly and correctly. Therefore, it was proved that the dialogic interaction construction of technical profile students correlates positively with the tendency to partnerships in communication.

The practical significance of the study lies in the fact that the conclusions developed and proposed in the article can be used in the work of psychological services of higher education institutions to develop students' communication skills and their abilities to construct the effective communication and interaction in professional field. Prospects for further research within the framework of the outlined issues are to study the peculiarities of dialogic interaction of technical profile students of different types of educational institutions.

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Conflict of Interest

None.

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Особливості діалогічної взаємодії студентів технічного профілю з різним типом комунікативного реагування

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Анотація. Діалогічна взаємодія є ключовою в людській комунікації, але досліджень щодо формування цих навичок у студентів технічних спеціальностей недостатньо, особливо з урахуванням їхніх особистісних особливостей. У зв'язку з цим метою дослідження був аналіз особливостей діалогічної взаємодії студентів технічного профілю з різними типами комунікативного реагування. Емпіричним дослідженням було охоплено 300 студентів закладів вищої освіти технічного спрямування. Програма емпіричного дослідження включала методику «Діалогічність міжособистісних стосунків» та методику «Тест комунікативних здібностей». Встановлено, що студенти технічного профілю мають середній рівень за показниками самоцінності відносин, конструктивності відносин та діалогічності відносин. Водночас визначено, що майже третина респондентів схильні демонструвати неготовність до ефективної взаємодії з іншими людьми, а високу здатність до адаптації у ситуації взаємодії, впевненість у собі під час комунікації та здатність до побудови відкритих відносин виявляє найменша частина досліджуваних. Крім того, більшість респондентів схильні до компетентного реагування у спілкуванні, однак третина здатні до агресивної поведінки у взаємодії, а решта мають тенденцію до залежності у спілкуванні. Доведено, що усі показники діалогічних стосунків перебувають у сильному кореляційному зв'язку з компетентним типом комунікативного реагування і не мають кореляційного зв'язку з іншими типами. Отже, дослідження дало змогу констатувати, що у студентів технічного профілю побудова діалогічної взаємодії позитивно корелює зі схильністю до партнерства у спілкуванні

Ключові слова: взаємодія; діалогічна інтеракція; самоцінність відносин; конструктивність відносин; діалогічність відносин; реагування у спілкуванні; студенти технічного профілю

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Peculiarities of the influence of psychological traumatic events on the development of women's life scenarios

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Abstract. The relevance of the research is defined by the growing need to study the impact of psychological traumatic events on the development of women's life scenarios, in particular in the context of modern social and cultural challenges. The purpose of the article was to analyse the contributions of scholars and practitioners for further research on the impact of psychological traumatic events on the development of women's life scenarios. The analysis of the impact of psychological traumatic events on the development of women's life scenarios is carried out through the integrative approach that combines various research methods (analysis, synthesis, abstraction, and comparison, structural-functional, dialectical, concrete-historical, systemic, sociocultural) and takes into account the socio-cultural context. The paper examined the impact of traumatic events on the women's psychological state, their social roles and interpersonal relationships. The main focus was at the structural changes in the psyche, gender aspects and social inequality, which intensify the traumatic impact and form specific life scenarios. The use of systemic and socio-cultural methods ensured deeper understanding of the multifaceted nature of women's traumatic experience and its impact on further personal development. The peculiarities of the influence of psychological traumatic events on the development of women's life scenarios are based on the complex interaction of psychological and social factors that largely determine all life trajectories. Traumatic events have a significant impact on women's self-determination, social roles and the ability to be independent. The scenarios can be aimed either at avoiding stressful situations in the future or at regaining control over life. The practical value of the work includes developing recommendations for psychologists, social workers and other professionals working with women who have experienced psychological trauma based on the analysis of the selected topic

Keywords: post-traumatic stress disorder; emotional resilience; traumatic experience; psychosocial adaptation; psychological consequences

Introduction

The subject of the influence of psychological traumatic events on women's life scenarios is of high relevance in contemporary psychological and social discourse, as it is related not only to individual developmental trajectories but also to the broader social consequences of such events. Women, as a socially vulnerable group, are often exposed to specific traumatic factors, such as gender discrimination, sexual violence and economic instability, which significantly affect their psychological and social states. Psychological traumas occurring at critical moments of women's lives can dramatically change their life attitudes, values and scenarios for further personal development. A life scenario as a concept

of the theory of transactional analysis is defined as a system of expectations and decisions made at an early age and realised in further life. The development of a life scenario is often based on deep-seated internal beliefs formed under the influence of external stressors, such as traumatic events. This is especially true for women who can form specific life scenarios as a result of traumatic events that affect their self-esteem, perception of the world and positioning in interpersonal relationships. The issue of the influence of psychological traumatic events on women remains one of the most relevant topics in psychological research at the global level. The peculiarities of the impact of trauma on the

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formation of life scenarios and the overall development of the individual are actively studied through the prism of various factors, including socio-psychological, gender, age and cultural aspects. An important area of current research was to analyse the impact of psychological traumas on women who have experienced bullying or domestic violence, as well as to investigate recovery processes after such events.

H. Nievieikina (2020) analysed the various ways of overcoming psychological traumatic events; the researcher emphasised the importance of searching the effective methods of working with victims. The work by L.M. Volnova (2022) focused on preventing the destructive effects of psychotrauma on students emphasising that the psychological traumatic experience can significantly complicate the educational process and contribute to the decreased academic performance. A.A. Molotokas & S.V. Didenko (2022) studied the relationship between psychological traumatic events and the occurrence of depression; they pointed out that such events were a significant predictor for the development of depression. O.F. Yatsyna (2023) considered stress, crisis and trauma in clinical psychology and expanded the understanding of these phenomena in the modern discourse. The investigation by D.S. Peresunko (2024) offered a new approach to the study of time perceptions of people who have experienced psychotrauma by showing that traumatic events can profoundly affect the perception of the life time frame. This opens up new perspectives for investigating the impact of trauma on the subjective experience of time. The study by B. Sanz-Barbero *et al.* (2019) considers violence in women's relationships over their lifetimes, which is relevant for understanding the long-term effects of traumatic events. J. Kelman *et al.* (2022) analyse the experience of imprisonment as a traumatic factor for people with previous psychological traumas.

Insufficiently explored aspects of the topic concerning the impact of psychological traumatic events on women's life scenarios include the mechanisms of forming positive scenarios after traumatic events that facilitate adaptation and recovery. There is a limited number of studies dedicated to cross-cultural comparisons of trauma's effects on women in different sociocultural contexts, which could help identify both universal and specific factors. It is also essential to examine in greater detail the peculiarities of how psychological traumatic events influence the life scenarios of women of various age groups, particularly elderly women, as well as the aspects of intergenerational transmission of traumatic experiences. As a result of reviewing sources on the selected topic, it was established that the aspect of the impact of psychological traumatic events on the formation of women's life scenarios has been insufficiently studied. In this regard, the aim of this study was to analyse the contributions of scholars and practitioners to further explore the impact of psychological

traumatic events on the development of women's life scenarios. To achieve this goal, it was necessary to solve the following tasks: to analyse modern theoretical approaches to the study of life scenarios and the peculiarities of their formation under the influence of traumatic events; to characterise the impact of psychological trauma on the development of women's life scenarios.

An integrative approach was applied to analyse the impact of psychological traumatic events on the development of women's life scenarios, connecting theoretical concepts with real-life experiences of women who had faced trauma. The structural-functional method was employed to examine how traumatic events alter the psychological structures of women's lives, focusing on the interplay between internal transformations and their responses to external stressors. Similarly, the dialectical method was crucial for analysing the dynamic and often contradictory impacts of crises on women's psychological states and their personal development trajectories. The specific historical method, which allowed studying psychotrauma in the context of its impact on women's life scenarios in different historical conditions and social contexts, was also applied. The sociocultural method was pivotal in contextualising traumatic events within the broader framework of global societal transformations. The methodological foundation of this analysis was the systemic approach, as psychological trauma influences various dimensions of a woman's life, including her societal roles, career trajectories, and personal relationships. It is important to clarify that the study involved a review of literature on this topic, rather than the examination of real-life cases or interviews.

Theoretical foundations of psychological trauma

A traumatic event is perceived by an individual as a threat, loss or challenge based on a subjective assessment. A psychological trauma, usually unnoticed and unanalysed, makes a person vulnerable to similar traumas in the future. Each person has a unique threshold beyond which a life challenge turns into a psychological traumatic event. Navigating a psychological traumatic event leads to hardship and intricate cause-and-effect relationships associated with trauma occurrence and progression that complicate this experience. Nevertheless, even a significant breakdown resulted from a psychological trauma can be transformed into a constructive experience through deep self-awareness and recontextualisation of the traumatic event into personal experience (Kyrylenko & Ivanenko, 2019).

According to I.V. Muzychenko & I.I. Tkachuk (2017), a psychological traumatic event is defined as a situation caused by the influence of natural, social, informational, personal and other factors on a person and accompanied by increased psychological stress, disorders of adaptation and health mechanisms, partial or complete

collapse of the person's psychological world. Such traumatic experience can arise as a result of events that directly affect a person, as well as those that influence his or her loved ones or other people in the person's immediate environment. Accordingly, exposure to trauma includes witnessing scenarios (e. g., news or stories of loved ones) and/or direct participation in various traumatic events.

The main characteristics of a traumatic event include intense mental stress, significant feelings that serve as unique internal efforts to overcome life events or traumas, changes in self-esteem and motivation, as well as personal resources that involve both burdensome and protective factors inherent in women. It is not advisable to categorise psychological traumatic events by their severity (Oksiutovych & Sabadukha, 2023). Each traumatic event has different characteristics and nuances causing psychological consequences for both participants and witnesses, and each woman experiences it in her own way. A psychological traumatic event initiates a traumatic process in the psyche, which leads to mental activity disorganisation that is accompanied by the efforts to maintain psychological stability, localise and dissociate this process (Dziuba, 2017).

As S. Frieze (2015) pointed out, this experience can be related to such events as divorce, death, physical injuries, sexual and physical violence, serious accidents, life-threatening illnesses, natural or man-made disasters, war, terrorism, physical punishment, disabilities, child labour, prostitution, pornography, bullying, suicide of loved ones, living in poverty, forced displacement from home or parents' labour migration, service in a war zone, etc. (Bruno *et al.*, 2018). The term

"bereavement" is used in different ways: to describe the reaction to the loss, the loss itself and worrying in general. Experiencing some loss in childhood can affect personal development, which in this case will greatly depend on loss continuity and the security of a child's life in these circumstances, as well as the availability of the adaptation process support (Updegraff & Taylor, 2021). Loss can also make a significant contribution to a woman's personal growth and development.

Psychological and social consequences of trauma in women

The consequences of traumatic experiences can manifest in both short-term and long-term forms, appearing immediately after the event or unfolding over time. Unlike the physical effects of sexual violence, the psychological repercussions may persist for an extended period, profoundly impacting a woman's family life, interactions with the opposite sex, and leading to various communication challenges (Halietska & Harkavets, 2021). The model of trauma impact, which demonstrates the interaction between a traumatic event, should be considered sociocultural conditions, and life scripts as shown in Figure 1. Worldview, interpersonal relationships, behavioural patterns, and the overall life plan of an individual are subject to various influences from acquired traumatic experiences, particularly through the individual's reflective and meaningful engagement with these experiences. While scientific consensus often emphasises the detrimental effects of trauma, research conducted in recent decades supports the notion of trauma as a catalyst for personal development (Didenko, 2020).

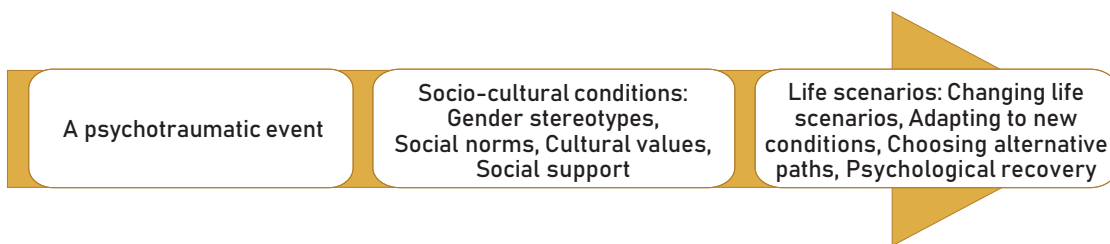


Figure 1. Model of the impact of traumatic situations on the development of life scripts for females
Source: compiled by the author

Chronic depression is very common among women who have experienced violence in their families in their childhood and it can persist into adulthood. This condition is characterised by episodes of anxiety, unexplained desires, feelings of isolation and sleep disorders. As people get older, this can be manifested in unsuccessful suicide attempts. Those who have experienced any form of violence have problems with socialisation; for example, they often maintain disruptive relationships with adults, lack appropriate peer communication skills, as well as the knowledge and erudition to establish credibility in an academic setting. Women who have suffered

from violence in childhood often seek solutions to their problems in criminal and antisocial environments; it is often accompanied by the development of alcohol and drug addiction forcing them to steal and do other illegal activities (Harkavenko, 2020).

The "humiliation" experience or narcissistic trauma resulted from contempt and attacks on a child's self-esteem can cause an inferiority complex. A common key characteristic of all these traumas is the unconscious tendency to reproduce the scenarios of betrayal, humiliation and rejection in subsequent interpersonal relationships, which can lead to a repetition of the original

traumatic conditions and potential retraumatisation. The nature of these events is determined by the type of attachment with the mother that a child developed during her / his breastfeeding, which can be safe, anxiety-resistant, anxiety-avoidant or disorganised (Levendosky & Graham-Bermann, 2018). The peculiarities of disturbed attachment in parent-child relationships, in particular with the mother, contribute to a person's development in a specific compensatory way aimed at eliminating shortcomings of parental relationships. This mechanism maintains a psychological traumatic scenario; its attributes not only impede a woman's ability to be healed, but also lead to the repeated trauma (Lotysh & Volnova, 2023).

According to the study by H. Nievieikina (2024), the traumatic impact of bullying on a child's personality can have long-term consequences affecting the further development of life scenarios. Other authors also confirmed the significant impact of psychological traumatic events on various areas of life. The study by R. Pavelkov (2021) revealed the age peculiarities of displaced children's psychological trauma, which can be a basis for further research in the context of analysing women's life scenarios. Similar results were obtained by M.O. Oksiutovych & V.O. Sabadukha (2023) who studied socialisation of children after traumatic events. Internationally, researchers pay attention to psychological trauma of women suffered from violence. In particular, the study by V.A. Nabilah & C. Kusristanti (2021) considered the issue of violence against women.

After experiencing bullying in childhood and adolescence, a woman receives a significant psychological trauma that will inevitably affect her future life. This trauma can lead to mental disorders; even a single case of bullying can cause a deep emotional wound that requires specialised psychologist's intervention. This is manifested in increased aggressiveness and anxiety, which are often carried over into adulthood. The duration of the bullying experience directly correlates with the severity of the consequences. Women who have been bullied in childhood face a significantly increased risk of mobbing in the professional environment. According to global statistics, adults who have been victims of bullying in their childhood often find themselves isolated throughout their lives and face greater difficulties in their career growth. These women therefore prefer remote or solitary work more often and use social media platforms against face-to-face communication more actively than their peers (Nievieikina, 2024).

Some women being students demonstrate the signs of stress during the first weeks after trauma, although they usually regain normal levels of physical and emotional well-being over time. But even in these cases, however, they may still have some level of emotional distress. Some traumatic events occur only once in a lifetime, such as moving to a new place or parents' divorce; others are more persistent, for example,

living with toxic family members. A lot of female students have suffered from multiple traumatic experiences, including internal migration due to the war, so trauma was a chronic aspect of their existence for many of them (Volnova, 2022). When stress becomes all-consuming and uncontrollable, it can lead to the devastating consequences such as depletion of physical and moral resources, post-traumatic stress disorder (PTSD), depression, anxiety and fear.

Author fully agrees with the statement made by D.S. Peresunko (2024) that women who have experienced psychological trauma may encounter a sense of distortion in their perception of time. In addition to the characteristic symptoms typically associated with PTSD, such as increased arousal, avoidance behaviour, intrusive memories of the traumatic event, sleep disorders, concentration problems, decreased performance and increased symptoms of anxiety or depression, women often experience distortions in their perception of time. This distortion can negatively affect their understanding of the present event, ability to make plans for the future and understanding of past events.

Women can face a detrimental influence in their adulthood; it can be manifested in the following ways. "Negative subjective status" characterised by poor health, increased blood pressure, decreased professional activity, low enthusiasm for new initiatives, resistance to change and mood swings from anger to apathy. Pain syndromes, including emotional distress, result in a significantly decreased ability to work or incapacitation, as well as a lack of energy to perform professional duties even at the beginning of the day, severely impacting one's overall productivity and well-being. Reduced amount and efficiency of functional reserves leads to rapid fatigue, decreased concentration and refusal to be engaged in any activity that requires significant psychophysiological efforts. Negative personal qualities that can be in the form of psychological aggression, in particular self-assertion at the expense of others, outright hostility, persistent criticism of others (Dziuba, 2016).

The situation in Ukraine has forced many families to urgently relocate. Thousands of people have left their permanent places of residence and temporarily settled in different regions of the country. During this relocation, migrants come across numerous social, economic and psychological problems (Dekel *et al.*, 2017). The psychological problems faced by internally displaced persons are inherently complex, rooted in a difficult traumatic history, which is further complicated by the need to adapt to a new social environment. This situation describes the concept of retraumatisation when the initial trauma is reinforced by subsequent experiences. Women, in particular, have faced particularly serious difficulties as they had to change their place of residence. Given their inherent vulnerability, they have been exposed to traumatic and stressful factors that undoubtedly affect their mental state by reinforcing

and actualising previous traumatic experiences. Suffered trauma often affects women's cognitive functions, behavioural reactions, interpersonal relationships, self-perception, and, more broadly, their worldview (Pavelkov, 2021).

The impact of traumatic situations on women's life scenarios is characterised by some essential distinctive features. Women can experience various traumatic events related to gender discrimination, violence or devaluation of their role in society more often than men. This leads to the formation of a certain attitude towards life. Traumatic experiences change women's beliefs about their abilities and future and result in negative life scenarios of helplessness and fear of uncertainty accompanied by a wary attitude towards the world. In addition, psychological trauma affects women's reactions and behavioural styles by causing negative consequences such as anxiety, depression or PTSD.

Learned helplessness manifests as a behavioural trait that arises due to unavoidable systematic negative influences. This leads to the formation of certain beliefs that justify both the woman's actions and those of the abuser. Women may initially protest against the actions of the abuser; however, when these protests are ignored, the woman feels powerless and attempts to escape the situation. She adapts to the circumstances, resulting in changes to her self-perception, the emergence of self-blame, and the development of guilt. Despite the objective reality, there is a belief that her own actions cannot alter the situation, leading to the conviction that change is impossible. This negative and destructive impact significantly undermines the woman's overall ability to solve problems (Kochemyrovskaya, 2020).

Significant contributions were also made by K. Lehavot *et al.* (2018) who studied PTSD prevalence among veteran women compared to civilian ones; they found out that the more types of traumas a person has, the stronger the manifestations of PTSD are. Thus, current research indicated the complex impact of psychological traumatic events on women's life scenarios emphasising the need for the further study of this phenomenon and development of adequate methods of psychological support. At the same time, traumatic events can lead to the development of certain defence mechanisms that influence specific behaviours, for example, avoiding any risky situation or increasing control over life events. This creates a stable environment where a woman will try to avoid repetitive negative experiences, even at the cost of her own personal growth (Cheung Chung *et al.*, 2017).

Women with PTSD typically avoid discussing their trauma and prefer to distance themselves from those who trigger reminders of it. Emotional numbness, detachment from loved ones, and a decreased interest in previously enjoyed activities characterise their experience, closely resembling symptoms of depressive disorder. Panic attacks may accompany PTSD, manifesting as intense fear, shallow breathing, dizziness, nausea,

rapid heartbeat, chronic pain, headaches, diarrhoea, sensations of tightness and burning in the chest, muscle cramps, and discomfort in the lower back. Additionally, women suffering from PTSD often struggle with trust in others and perceive the world as a dangerous place. This condition is frequently associated with persistent difficulties in daily life, including challenges in securing or maintaining employment, strain in personal relationships, and emotional distancing from partners (Druzhbliak & Sirko, 2020).

Despite this, traumatic situations can act as a catalyst for the development of personal resilience and inner strength in some cases. Thus, the impact of psychological traumatic events on a woman's life scenarios is quite complex; it depends on her personal psychological characteristics, as well as on the socio-cultural background and the degree of her involvement in the recovery process (Hopper, 2019). Women build new life scenarios based on the right coping strategies, which lead to emotional flexibility, self-esteem and restoration of social ties. They are capable of a positive shift during and after traumatic experiences.

Structural and functional analysis of changes in women after psychological trauma

According to the structural-functional analysis of psychological changes in women following psychotraumatic events, the following aspects should be highlighted. Changes in the cognitive sphere: a reduced ability to concentrate, memory problems, and time distortion hinder the integration of traumatic experiences into daily life. This subsequently decreases the capacity for decision-making evaluation and analysis, a condition caused by the chronic effects of anxiety. The affective sphere: alterations increase anxiety levels due to emotional instability, feelings of loneliness, and depressive episodes. There is a noticeable projection of violence across all aspects of life, accompanied by self-inflicted pain and blame. Women who remain in environments of domestic sexual violence without seeking help develop specific trauma responses, leading to various psychosomatic illnesses and complications. Notable among these are phenomena such as learned helplessness, "battered woman syndrome" and victimisation (Miloradova, 2021). Women often experience a "subjective negative status", as they feel unprotected, emotionally vulnerable, and deprived of support.

Emotional abuse affects women's emotions and psyche through tactics such as intimidation, insults, blackmail, and exploitation of a partner's resources. Gaslighting is an especially dangerous tool of abuse, representing one of the most insidious forms of psychological manipulation (Titochka, 2021). The motivational-value sphere: a decline in life motivation, passivity, and a reduced drive to achieve goals are common. Motivational impairments are accompanied by difficulties

in goal-setting and future planning, which can negatively affect adaptive capabilities.

Personal changes: in typical circumstances, women who have experienced psychotrauma may develop self-destructive personality patterns, such as hostility, aggression, or self-assertion at the expense of others. The tendency to repeat the traumatic event in interpersonal relationships often arises from an unconscious need to relive the original experience in an attempt to understand it. In relation to the disruption of social function, it is hypothesised that life challenges during the experience of trauma impose a significant burden on an individual, compelling them to adapt by altering established norms of behaviour and markers of social and personal identity, as well as their self-concept through learned behaviour patterns. These conceptual ideas should be regarded as crucial in efforts to mitigate the uncertainty surrounding the current landscape of self-realisation for women undergoing traumatic experiences (Tokareva, 2023). The transformation of various aspects of the lives of women who have experienced sexual violence, including their self-perception and relationships with others, is linked to a crisis of authenticity. This crisis is characterised by criteria such as self-alienation, which reflects an individual's recognition of their dependence on societal constraints and the lack of avenues for self-realisation; deprivation, defined by difficulties in identifying objects for personal identification; and reduced self-control (Zlyvkov *et al.*, 2016). Psychotraumatic events lead to problems with socialisation: women tend to avoid intimate interpersonal relationships, fear trusting others, and have limited opportunities for effective communication. Physiological consequences are manifested by somatic manifestations, including chronic fatigue, headaches, sleep disturbances, and elevated blood pressure, directly impact recovery ability. These symptoms exacerbate the challenges associated with overcoming trauma.

In general, traumatic events can have a long-term impact on women's life scenarios by shaping their social roles and personal self-determination. S.P. Yalanska (2016) highlighted the necessity of psychological preparation for utilising a range of life strategies. This includes the strategy of analogisation, which involves applying familiar patterns of life pathways in new contexts and approaches; a combined strategy characterised by various modifications and rearrangements of life situations; and the reconstruction strategy, which focuses on exploring diverse and novel options. At the same time, the universal strategy allows for relatively consistent use of analogization, combination, and reconstruction, while the strategy of spontaneous actions is executed based on random cues or through trial and error.

N.G. Pylypenko (2022) presented research findings indicating that in the organisation and provision of crisis psychological assistance in traumatic situations, victims and their relatives have an acute need for

information, social, medical, and other types of support. Emphasising a comprehensive approach in delivering such assistance contributes to a faster recovery of the individual's pre-crisis functional state, an improved ability to adequately perceive reality, enhanced self-control in crisis situations, and a reduced likelihood of developing mental disorders and psychosomatic illnesses as a result of traumatic experiences. It is important for women to receive the comprehensive support, including psychological assistance, social support and sometimes vocational rehabilitation.

Conclusions

In the conclusions of this study, it is emphasised that psychological traumatic events significantly influence the life scripts of women, shaping their attitudes, self-awareness, and relationships with their surroundings. For example, women who have experienced violence in childhood often face chronic depression, which manifests in low self-esteem and social isolation. As a result, their relationships with others may be characterised by mistrust, complicating the formation of healthy interpersonal connections and leading to the repetition of traumatic scenarios in adulthood.

It is important to note that women who have suffered trauma due to the loss of loved ones may transform their experiences into motivation for personal growth, but this requires considerable effort in self-awareness and reinterpreting tragic events. This can lead to the creation of new life scripts based on coping strategies that restore social connections and improve emotional resilience. Women who have experienced emigration due to war may acquire skills for adapting to new social conditions, yet they also face the risk of retraumatisation due to unsatisfactory conditions in their new environment.

Furthermore, traumatic experiences can lead to modifications in life attitudes. Women who have experienced violence may develop a sense of helplessness, viewing themselves as victims of circumstance. This affects their motivation to achieve goals and their desire to actively change their lives. In this context, it becomes clear that the individual traumatic experiences of women not only determine their psychological state but also significantly influence their life scripts, shaping both positive and negative survival strategies. Thus, understanding the specifics of traumatic impacts is critically important for developing adequate psychological and social support programmes that will help women restore emotional well-being and social engagement. Conducting individual interviews with women could be an area for further research.

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Conflict of Interest

None.

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Особливості впливу психотравмуючих ситуацій на розвиток життєвих сценаріїв жінок

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Анотація. Актуальність дослідження полягає в зростаючій потребі вивчення впливу психотравмуючих ситуацій на розвиток життєвих сценаріїв жінок, зокрема в контексті сучасних соціальних і культурних викликів. Мета роботи полягала в аналізі внеску науковців і практиків для подальших досліджень впливу психотравмуючих подій на розвиток життєвих сценаріїв жінок. Аналіз впливу психотравмуючих ситуацій на розвиток життєвих сценаріїв жінок здійснено з використанням інтегративного підходу, що поєднує різні методи дослідження (аналіз, синтез, абстрагування та порівняння, структурно-функціональний, діалектичний, конкретно-історичний, системний, соціокультурний) та враховує соціокультурний контекст. У роботі розглянуто вплив травматичних подій на психологічний стан жінок, їхні соціальні ролі та міжособистісні стосунки. Основну увагу приділено структурним змінам у психіці, гендерним аспектам та соціальній нерівності, які посилюють травматичний вплив і формують специфічні життєві сценарії. Використання системного та соціокультурного методів дозволило глибше осмислити багатогранність травматичних переживань жінок та їхній вплив на подальший розвиток особистості. Особливості впливу психотравмуючих ситуацій на розвиток життєвих сценаріїв осіб жіночої статі полягають у складній взаємодії психологічних та соціальних факторів, що значною мірою визначають життєві траєкторії протягом життя. Травматичні події суттєво впливають на їхнє самовизначення, соціальні ролі та здатність до самостійності. Сценарії бувають спрямованими або на уникнення стресових ситуацій у майбутньому, або на відновлення контролю над життям. Практична цінність роботи полягає в розробці рекомендацій для психологів, соціальних працівників та інших фахівців, які працюють із жінками, що зазнали психологічної травми, на основі здійсненого аналізу обраної тематики

Ключові слова: посттравматичний стресовий розлад; емоційна стійкість; травматичний досвід; психосоціальна адаптація; психологічні наслідки

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Criteria for diagnosing cognitive development of preschool children with autism spectrum disorders: A literature review

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Abstract. The relevance of the problem under investigation was determined by the introduction of inclusive education, which ensured the realisation of the right of all children, regardless of their mental and physical health, to receive a general education. The aim of the article was to examine approaches to determining the criteria for the cognitive development of children with autism spectrum disorders, based on which the main diagnostic criteria were identified, enabling a comprehensive characterisation of the cognitive development of preschool children with the studied nosology. The methodology of the study was based on a comprehensive analysis of contemporary scientific literature in the field of cognitive development of children with autism spectrum disorders, particularly focusing on the study of cognitive development criteria. Throughout the research, a detailed analysis of conceptual approaches to defining the term “cognitive development” was conducted, as well as the identification of specific characteristics of cognitive development in children with autism spectrum disorders. Special attention was paid to the challenges faced in diagnosing the cognitive development of such children, as well as to the analysis of complex disorders typically observed in preschool children with autism spectrum disorders. The article outlined the peculiarities of perception, attention, speech, intelligence, control, and planning of activities, among others. A review of the main diagnostic methods for cognitive functions, motor skills, and perceptual abilities was provided, with an emphasis on their potential application in corrective work with children with autism spectrum disorders. The findings obtained can be used to diagnose and correct the cognitive sphere of children with autism spectrum disorders, with the aim of integrating them into the system of inclusive education and ensuring access to quality education in accordance with their individual capabilities and the characteristics of their cognitive development

Keywords: atypical behavioural disorders in autism; inclusive education; cognitive development indicators; development of cognitive functions; cognitive impairment

Introduction

A modern child is forced to grow up in a world that is saturated with information. There are growing demands on a child, especially on their cognitive abilities, ability to perceive, process and transform information, as well as to acquire practical experience. In today's reality, even a child with normal and typical development often has peculiarities in the functioning of the cognitive sphere, and what was considered normal a few years ago is now viewed quite differently. There are completely different requirements for a child, and different criteria for their development are applied.

At the same time, there is a tendency of the frequency increase of mental disorders in children, including

autism spectrum disorders (ASD), in clinical practice. An analysis of statistical data from the Ministry of Health of Ukraine, as reported by the Ukrinform (2023), revealed that by the end of 2023, 20,936 children in Ukraine had been registered with ASD. This was related to the influence of objective factors (environmental, genetic, social), on the one hand, and to the improvement of diagnostics, the establishment of clear diagnostic criteria for distinguishing ASD from other conditions, on the other. Yu. Grechanina (2019) presented data showing that 70-75% of children with autism (particularly those with atypical autism) experienced some degree of intellectual deficiency. The author

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emphasised the uneven development of intellectual functions in individuals with autism. While certain intellectual abilities might surpass age norms, others might significantly lag behind, illustrating the heterogeneous nature of autism's impact on cognitive development.

In addition, ASD was associated with several comorbidities that affect the development of the cognitive sphere (epilepsy, anxiety disorders, neuroinflammation, etc.). Several researchers, as H. Hughes *et al.* (2023) and N. Usui *et al.* (2023) highlighted neuroinflammation as one of the main comorbid conditions associated with ASD. Neuroinflammation was often cited as a key contributor to cognitive impairments in individuals with autism. Studies showed that neuroinflammation, through mechanisms like immune dysfunction and oxidative stress, played a significant role in the cognitive and behavioural challenges faced by children with ASD.

Ukrainian researchers, such as D.I. Shulzhenko & M. Porodko (2020) studying cognitive functions in children with autism, emphasised the specifics of memory, thinking, attention and speech development. Their work analysed how certain cognitive aspects were disrupted by the characteristic features of autism, such as deficits in social interaction and communication, as well as an excessive focus on details. The findings of these studies formed the foundation for creating corrective programmes that addressed the unique needs of children with autism, particularly in adapting educational strategies and employing individualised approaches to learning. European and American scientists drew attention to this aspect.

Scientists have been increasingly interested in studying the cognitive sphere of children with ASD. P. Ampe & E. Rammant (2023) referred to the data from the National Autistic Society and the High Health Council of Belgium, which showed that 0.6-1.1% of the population fell within the autism spectrum. Difficulties in grasping meaning were often associated with intellectual disabilities (in 60% of cases, the IQ of individuals with autism is below 50). However, even among those with average or above-average intelligence, challenges in interpreting and comprehending the meaning of information persisted. According to P. Ampe & E. Rammant (2023), individuals with autism were limited in their ability to interpret information and understand its significance. This limitation highlighted the need for tailored interventions that considered both cognitive and sensory processing difficulties common among autistic individuals. According to the authors, despite these variations, current diagnostic criteria adopted a single autism label. These criteria implicitly emphasised commonalities among individuals, such as core social-communication difficulties and challenges related to restricted, repetitive behaviours. This perspective underscored the need for a nuanced diagnostic approach that accommodated the diverse profiles within the autism spectrum. It called for criteria that not only identify shared

difficulties but also highlighted the unique developmental trajectories and needs of individuals.

G. Russell *et al.* (2019) reported that approximately 50% of the population with ASD also presented with intellectual disability (ID). However, the authors highlighted a significant selection bias in most studies on cognitive development in individuals with autism. This bias stemmed from recruitment challenges, as children and adults with more severe intellectual and functional difficulties were harder to engage and retain in research studies. Consequently, the existing body of research might disproportionately represent individuals with higher intellectual abilities, leading to an incomplete understanding of the full spectrum of cognitive profiles in ASD. This underscored the need for more inclusive research methodologies that better account for the heterogeneity of cognitive and intellectual abilities within the autism spectrum.

Numerous studies of the development of children with ASD do not solve the whole range of problems related to the diagnosis and correction of their cognitive disorders. The issue of defining clear criteria for the diagnosis of cognitive development remains problematic, which would allow to distinguish autism from other diseases and develop appropriate recommendations for the correction of the identified disorders. Thus, the purpose of the article was to study defining criteria for the cognitive development of children with ASD.

The research involved analysing contemporary scientific studies. Specific inclusion and exclusion criteria were established: studies focused on the cognitive development of children diagnosed with ASD; peer-reviewed articles published in reputable journals; and research emphasising the use of validated tools or criteria for assessing cognitive development. Excluded were studies without clear diagnostic criteria for ASD, those focusing solely on interventions without considering cognitive development characteristics, and non-empirical research. For the analysis, scientific databases such as PubMed, Scopus, Web of Science, Google Scholar, and specialised repositories like SpringerLink, ScienceDirect were utilised. The literature search employed keywords such as: "autism spectrum disorder", "cognitive functions", "intellectual development disorders", "cognitive development in autism", "praxis development", "motor skills assessment", and "sensory-motor integration". Searches were conducted in both English and Ukrainian. Search queries were constructed using logical operators to refine results, for instance: "autism spectrum disorder" AND "praxis assessment"; "motor coordination" OR "dynamic balance" AND "children with developmental disorders". The analysis included studies published from 2010 to 2023.

Various text analysis methods were applied for synthesising and interpreting the included studies: content analysis, comparative analysis (examining differences in criteria, methodologies, and conclusions across

studies to identify trends and gaps), and categorisation (grouping studies by variables such as age groups, assessment methods, and intervention strategies). In the initial phase of the search, 345 sources were identified. After analysing titles, abstracts, and full texts, 76 relevant studies met the inclusion criteria. The final analysis included 58 publications that satisfied the following criteria: clear methodology, presence of a control group, and a focus on the development of cognitive functions in children with ASD.

Definition of cognitive development and its features in children with ASD

Theoretical aspects of a child's cognitive development were covered by J. Piaget (1990). His works were foundational in the study of cognitive development and had significant implications for understanding and supporting children with ASD. His theories of developmental stages—sensorimotor, preoperational, concrete operational, and formal operational—highlighted the progressive nature of cognitive growth and provided a framework for assessing the unique developmental trajectories of children with ASD (Chekster, 2008). It was necessary to define the concept of cognitive development in order to determine qualitative diagnostic criteria. Some scientists associated cognitive development exclusively with the development of thinking (Cole *et al.*, 2005). J.S. Bruner (2015) focused on narrative thought and the use of symbolic systems (e.g., language, storytelling) further supported strategies for enhancing communication and cognitive skills in children with ASD. His research on language acquisition and its interaction with cognition provided valuable insights for addressing the linguistic and cognitive challenges faced by children with ASD. His work on semantic development and the mechanisms through which children acquired meaning contributed to understanding how children with ASD processed language differently. This understanding helped in creating tailored interventions to support their linguistic and cognitive development, emphasising the interplay between language and thought. In cognitive psychology (Schopler *et al.*, 1980), development was described as “complex result of the development of thinking, which begins from the very moment of birth”. S.D. Odermatt *et al.* (2022) emphasised that individuals with autism often exhibited cognitive and developmental impairments, in addition to the core symptoms of limited social communication skills and repetitive behaviours. Based on research in this area, the concept of uneven cognitive profiles in autism was developed. This concept suggested that individuals with autism might show strengths in certain cognitive areas while struggling in others. For example, many people with autism performed better on non-verbal tasks such as abstract reasoning and spatial abilities. The findings of these researchers highlighted that individuals with autism experienced difficulties, particularly in motor

and language skills, which should be considered in autism treatment alongside the core symptoms and intellectual functioning. Moreover, the authors pointed out that motor skills were often overlooked in autism diagnostics, and they might deserve more attention. Minor group differences in social-emotional skills could result from compensatory effects in individuals with average cognitive abilities within the autism sample. This emphasised the importance of a nuanced approach to both, diagnosis and treatment. Researchers also compared the cognitive development of children with ASD and their typically developing peers. These studies aimed at understanding the differences and identifying specific areas of cognitive strengths and challenges.

D.G. Amaral (2017) and colleagues at the UC Davis MIND Institute studied cognitive variations in children with ASD, highlighting how certain cognitive skills, such as problem-solving, differed between children with ASD and those with typical development. This work emphasised variability in cognitive skills within the ASD population. L. Kenworthy (2009) and her team investigated executive functioning and cognitive flexibility in children with ASD compared to typical peers. Their work explored how deficits in these areas impacted everyday functioning and learning. Research published by the Society for Research in Child Development (Pellicano, 2010) suggested that cognitive skills in children with ASD were not static but could improve with targeted interventions. This highlighted the developmental trajectories of children with ASD versus typically developing children.

Traditionally, the main criteria for cognitive development were the development of all types of cognitive processes, such as perception, thinking, memory, imagination and attention in accordance with age-related norms. Proponents of test-based concepts saw IQ as a criterion of cognitive development, which was also defined differentially based on age. However, it was difficult to trace the dynamics of all components of the cognitive sphere on the basis of intelligence tests (Wexler, Guilford, Stanford-Binet) (Peeters, 1997).

The analysis of existing publications demonstrated the heterogeneity of approaches to the definition of “cognitive development”. While some authors as M.I. Porodko (2017) and L.I. Prokhorenko *et al.* (2020) focused more on the development of cognitive processes (competence approach), other authors (Mohammadzaheri *et al.*, 2021) considered cognitive development as a more extensive process that included all possible components of development – from sensory (sensation and perception) through motor to intellectual and communicative ones.

When analysing the data presented in the scientific literature, it was notable that the correlation between ASD and cognitive development was uncertain. For example, psychiatrist E. Bleuler (2022), who was considered to be the author of the term “autism”, called the

restructuring of all mental activity, profound changes in thinking and the affective and volitional sphere an important symptom of autism. E. Bleuler contrasted autistic thinking with real, normative thinking. According to him, it was not guided by the laws of logic or the realities of objectively existing reality, but by one's own internal needs and affective drives. L. Yau (2019) analysing Brewer's (William F. Brewer) works concluded that his insights on cognitive processes contributed significantly to understanding the dynamics of information encoding and retrieval. She emphasised how predecessor's research highlighted the interplay between memory structure and individual contextual experiences, which was particularly relevant in cognitive developmental studies and adaptive learning strategies. This conclusion reflected Brewer's foundational work on the schema theory and its implications for cognitive flexibility and developmental adaptations in diverse learning contexts. For example, exploration of how schemata influence memory and comprehension informed broader theories of cognitive development, particularly when applied to populations with atypical development such as ASD.

Some authors, such as D. Spain *et al.* (2015) suggested, based on their own research, that children with autism showed a general deficit in cognitive skills, especially when it came to the processes of multilevel planning and behaviour regulation. Thus, the presence of cognitive development deficits in children with ASD became evident and had different degrees of severity and different forms of manifestation.

The peculiarities of cognitive development of children with autistic disorders have been actively studied in worldwide science. T. Attwood (2004) studying Asperger's syndrome drew attention to the impairment of certain cognitive functions and social intelligence. K.D. Tsatsanis & K. Powell (2014) studied the neuropsychological characteristics of children with autism. Among Ukrainian researchers, special attention should be paid to the works of K. Ostrovska *et al.* (2018), T.V. Skrypnik (2019), who described the symptoms of autism and approaches to correcting behaviour and cognitive functions. Kh.V. Kachmaryk (2017) paid special attention to the development of communication and cognitive skills. Certain aspects of diagnostics and correction of intellectual development, formation of social competences, and development of the communicative sphere of children with ASD were presented by the scientific school of V.M. Syniov & V.Ye. Kovalenko (2019).

K. Denisova & Z. Lin (2023), in their research on cognitive functions in autism, emphasised the importance of understanding atypical neural connectivity and processing patterns, particularly in relation to sensory integration, memory, and executive functions. Their studies suggested that disruptions in these areas could lead to challenges in adaptive functioning and learning. They also highlighted the variability in

cognitive profiles among individuals with autism, which necessitated personalised approaches in assessment and intervention strategies. In many cases, such as mental retardation, hearing or visual impairment, and speech disorders (sensory allergy, childhood aphasia, complex forms of dysarthria), secondary autism could be observed, which often led to misdiagnosis. This was emphasised by M.F. Casanova *et al.* (2020). The work discussed the distinction between secondary autism, which known causes (such as genetic syndromes or metabolic disorders), and idiopathic autism, which causes remained unknown. According to the authors, clarifying these forms was essential as it affected approaches to diagnosis, treatment, and rehabilitation. They also emphasised a nuanced understanding of autism, focusing on the interplay between neurodiversity, autonomy and human dignity. This perspective challenged traditional deficit-based systems and explored how people with ASD could thrive through personalised approaches to their cognitive and social needs.

V. Mandelli *et al.* (2024) emphasised the heterogeneity of early linguistic, intellectual, motor, and adaptive features (LIMA), which stood out as some of the most distinguishing characteristics of different types of autism. K.M. Antshel & N. Russo (2019) explored the parallels between the mechanisms of ASD and Attention Deficit Hyperactivity Disorder (ADHD), emphasising the shared cognitive impairments. They identified issues with attention, perception, and motor control as central challenges in both conditions. These impairments hindered the acquisition of information, social experiences, and practical skills. Moreover, they were significant contributors to behavioural disorders, including impulsivity and difficulty adapting to changes or interacting with others. The authors argued that these cognitive difficulties were primary obstacles to learning and skill development. Their findings highlighted the importance of designing programmes that addressed the unique cognitive needs of individuals with ASD and ADHD, aiming to improve educational and therapeutic outcomes. This perspective underscored the necessity for interdisciplinary approaches combining psychological, educational, and neurological interventions to effectively support individuals with these conditions. Qualitative diagnostics of the cognitive sphere allowed not only to determine the child's readiness for school, the level of support and the content of education, but also to develop an appropriate correctional route, which was important for the implementation of corrective measures (Bleuler, 2022).

The dynamics of the development of the cognitive sphere was the subject of consideration by representatives of various scientific concepts, however, they all agreed that cognitive development was determined by the maturation of brain areas associated with the implementation of certain cognitive functions. In a child, the development of these processes occurred in

accordance with scientifically defined stages of ontogenetic development and in parallel with the development of other body and mental functions.

The brain structures responsible for the implementation of higher mental functions were highly differentiated areas that created various interacting systems that united both cortical and subcortical levels of the brain. Therefore, the development of the relevant functions was determined not only by ontogenetic factors but also by individual characteristics (the speed and quality of maturation of the relevant brain structures, the presence of functional disorders, and social factors).

The classic of cognitive development research, the author of the constructivist theory of cognitive development, associated this process with the stage-by-stage transition of the human psyche to a higher level with the involvement of newly formed structures. J. Piaget (1990) believed that the basis of the ontogeny of the human psyche was the development of its intellect, and the stages of mental development, according to his theory, were the stages of intellectual development. The author associated development with the process of human adaptation to the environment. According to her, intelligence was the core of mental development because it ensured adaptation to the world through understanding internal and external processes. Adaptation was always an active interaction of an individual with the environment, not a passive process. Activity was a necessary condition for development, as the scheme of the world was not given to a child in a ready-made form at birth, but was developed in the process of active interaction between a person and the environment. Intelligence helped to analyse environmental influences, formed appropriate responses to these influences, and adjusted reactions in accordance with the changes that occurred in the environment.

A child with ASD often had a disruption of the adaptation process, which was associated with detachment from the world, impaired perception and processing of information from the outside, and limited communication (communication problems interfered with learning from the experience of others and communicating to coordinate actions with other people).

It was widely believed that autism was a problem of involving different areas of the brain in communication with each other, so brain development followed a different path from the norm. I. Sukhina *et al.* (2017) suggested that “certain disorders of the nervous system cause incorrect mental reflection at the level of sensations, which in turn causes disruptions in many mental functions and processes, including social cognition”.

Thus, in normal and typical development, during the first stage (sensorimotor stage according to J. Piaget (1990)), a child learnt about the world through their own sensations and primitive actions (looking, listening, touching, smelling and tasting, crushing, throwing, pulling, etc. Initially, innate reflexes became

the basis for the child’s exploration of the environment, on the basis of which new schemes of cognition of the world were gradually formed. However, in the case of children with ASD, new schemes of cognition of the world and reactions to stimuli were not formed or were formed with significant delays. The child continued to use primitive reflexes, which sometimes made their behaviour strange and their reactions inadequate to the situation. In addition, researchers L. Balasco *et al.* (2020) reported impaired auditory, visuospatial and tactile perception (distinguishing tactile stimuli and processing tactile information) in children with ASD. At the sensory level, a child with ASD might have specific problems in the functioning of analysers. Many visual images, sounds, smells, and tactile sensations could be perceived as unpleasant and even painful for children with autism. A human voice could be perceived by a child with ASD as a piercing scream, and a light touch as a sharp pain. Sensory deficits were very common among children with ASD. Hyper- and hyposensitivity to certain stimuli, excessively selective attention and impaired attention shifting between different sensory signals, as well as disorders related to the coordination of different sensory modalities were problems that almost every child with ASD faced.

Some authors, such as B.F. Pennington & S. Ozonoff (1996), suggested that children with autism showed a general deficit in cognitive skills in the processes of multi-level planning and in regulating their behaviour. These processes, called regulation and control functions, provided effective solutions to cognitive tasks. These functions allowed to block inappropriate behaviours, perform meaningful actions, continuously maintain the process of performing a task, conduct self-monitoring, establish feedback, and smoothly transition from one task to another. The existence of a general deficit in cognitive skills in leadership roles for people with autism was evidenced by the difficulties they experience in some cognitive activities. These included: organising, planning, changing cognitive attitudes, releasing distracting stimuli, processing information in changing, non-trivial conditions, and generalising previously learnt information to analyse new situations (Ozonoff *et al.*, 2011).

V.Y. Bocheliuk *et al.* (2023) noted that from the point of view of neuropsychology, children with autism were characterised by the following disorders: reduced ability to receive, process, store and use information; difficulties in verbal mediation; slowed formation of concepts; difficulty in forming the motive-goal-task triad. According to the authors, due to such neurobiological features of the brain as impaired formation of connections between brain areas that would ensure the integration of different types of information and the formation of a holistic perception of the world, autistic children processed information mainly as monochannel, that is, the child’s attention could be focused on only

one sensory channel (mainly visual) at a time, while information from other perception channels was ignored.

According to the works of authors, such as S.H. Baum *et al.* (2015), autism could be characterised by sensory dominance and excessive selectivity in the perception of certain stimuli. The concept of sensory dominance and selectivity in autism was discussed in research related to sensory processing difficulties, which were common in individuals with ASD. For example, children with ASD often demonstrated food selectivity linked to sensory sensitivities, such as texture, smell, or temperature of food. Researchers like A. Alibrandi *et al.* (2023) highlighted that sensory issues, such as heightened or diminished responses to sensory stimuli, contributed to behaviours like food refusal or preference for certain foods. Sensory dominance was the tendency to focus attention on stimuli of a certain type while reducing the perception of other stimuli. Excessive stimulus selectivity was a tendency to focus attention on certain characteristics of objects or the environment while ignoring other, equally important characteristics. With such peculiarities of perception, it often seemed that a child with ASD had tunnel vision or hearing, which interfered with the holistic perception of objects and phenomena around them and made it very difficult for them to explore the world around them. As a result, certain properties of perception (objecthood, integrity, structure, constancy and meaningfulness) might be impaired or agnosia-like states might occur.

The next stage was characterised by the acquisition of speech. Unlike the previous stage, where a child had the opportunity to reflect the surrounding reality with the help of specific visual, auditory, olfactory and other signals, at the operational stage (normally from 2 to 7 years), the child began to perceive the surrounding reality with the help of generalised abstract concepts expressed in words: through understanding the meaning of words spoken by the child or others, and visible words, written or printed ones. This contributed to the expansion of experience and the acquisition of the first mental operations. These actions, however, were limited to the child's immediate experience and were therefore local, specific and egocentric. Speech was a way of interacting with the world and a manifestation of intellectual activity, and in case of communication disorders, observed both a delay in speech activity and impaired development of the cognitive sphere.

According to the age periodisation of cognitive development proposed by J. Piaget (1990), the first two stages corresponded to the period of preschool childhood. The formation of more complex forms of thinking, arbitrariness of mental processes fell on later periods of child development and was not the subject of this article. Although, it was quite obvious that the foundation for the development of complex forms of thinking and methods of self-regulation was laid in the first two stages. It was worth noting that preschool age laid the

foundation for the further development of all mental structures: cognitive, emotional and volitional, motivational spheres and the social component of personality development (Pierce *et al.*, 2011). Therefore, the problems of passing through the previous stages affected the development of not only the cognitive sphere, but also the psyche as a whole. For example, non-integrated reflexes and underdevelopment of the sensorimotor sphere hindered the formation of conscious actions, and speech disorders interfered with communication and the development of intelligence and higher forms of thinking. Unformed basic thought operations did not allow a child to adequately perceive the surrounding reality, analyse and abstract what is happening around them.

Criteria for cognitive development in ASD and problems of cognitive function assessment

The problems of determining diagnostic criteria for cognitive development and finding appropriate diagnostic methods were covered in the works of S. Baron-Cohen & A.M. Leslie (1985). This hindered the development of new skills and new forms of interaction with the world. Diagnostics of ASD was based on the diagnostic criteria of ICD-10 and DSM-IV, which considered ASD as not a disease with a specific aetiology and pathogenesis, but as a syndrome with atypical behavioural disorders and signs of deformed general development. R. Lordan *et al.* (2021) provided a comprehensive analysis of diagnostic criteria and tools used for ASD. They emphasised that current diagnostic practices relied heavily on observational screening instruments designed to measure the social and cognitive abilities of children. Two key tools widely used in ASD diagnostics were the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition) and M-CHAT (Modified Checklist for Autism in Toddlers). These tools focused on identifying persistent deficits in social interaction and communication. The DSM-5 outlined specific behavioural and developmental domains, providing a structured framework for diagnosing ASD. M-CHAT was particularly effective for early detection in toddlers, using a checklist format to screen for risk factors and developmental delays in social engagement and communication. Both tools were aimed to ensure a holistic understanding of a child's developmental profile, which was crucial for forming accurate diagnoses and tailoring interventions.

In children with ASD, there were usually two types of cognitive skills deficits or cognitive deficits (Happé & Frith, 2020): specific cognitive deficits associated with a lack of skills in processing socially significant emotional information; general cognitive deficits associated with a lack of information processing, planning and concentration skills. However, while deficits in the processing of socially relevant emotional information were mostly considered as a specific diagnostic criterion for ASD, general cognitive deficits could be a sign of other

disorders, including those associated with trauma and organic brain disorders.

M. Williams & S. Schellenberg (1996), in their modification of the learning pyramid (Fig. 1) reflected the importance of sensorimotor and perceptual-motor spheres for the success of cognitive (learning) skills.

The pyramid demonstrated that cognitive and learning abilities were at the top of the pyramid and were the result of progressive development, with each previous stage serving as a basis for the next. Violations that were detected on one "layers" of the pyramid caused problems further.

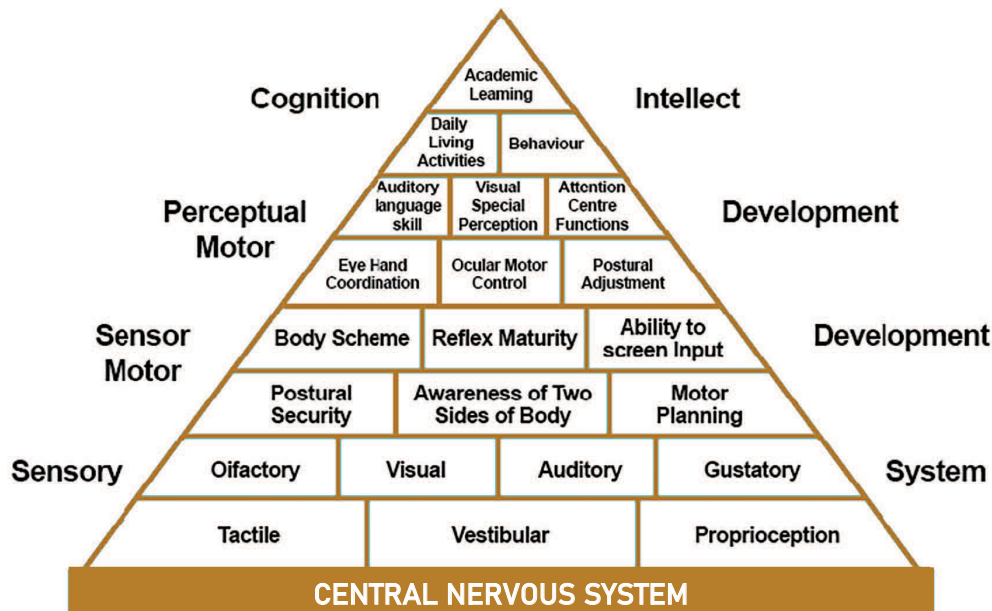


Figure 1. The Pyramid of Learning

Source: M. Williams & S. Schellenberg (1996)

At the bottom of the pyramid was the development of analysers and, accordingly, basic structures: tactile, proprioceptive sensations and the vestibular system. According to such researchers as T. Peeters (1997) and K. Gilbert *et al.* (2020) a large number of children with ASD impaired analyses (vision, hearing) and vestibular disorders associated with comorbid conditions (hormonal imbalance, neuroinflammation, epilepsy, etc.). The formation of the lower layer determined the development of the sensorimotor component (body sensation, spatial orientation, perception). The perceptual-motor level was, in fact, the level that allowed to talk about the formation of basic cognitive functions. The cognitive functions of the brain were the ability to understand, recognise, learn, realise, perceive and process external information.

Thus, it could be argued that cognitive development was not limited to the development of cognitive processes (attention, memory, thinking), but it was a process that included a wider range of processes that led to the development of cognitive functions. This fact should be taken into account in the process of diagnosing cognitive development, especially when it came to children with ASD or other mental disorders.

Disorders in ASD were mostly complex, and disorders of one function could cause changes in the functioning of the entire system (Bazyra *et al.*, 2022).

Symptoms of ASD in children often looked ambiguous, which complicated diagnosis. The reason for this was the high variability of clinical manifestations and free interpretation of the child's symptoms. According to K. Gilbert *et al.* (2017), the development of the cognitive sphere was not considered a diagnostic criterion for ASD, as people on the spectrum could demonstrate a full range of intellectual functioning and speech abilities, varying degrees of sensory system development, and the formation of perceptual abilities (i.e. from profound impairment of these individual cognitive functions to the absence of any problems in these areas). The University College London (UCL) considered autism in terms of the following cognitive paradox: people with autism could process information about the physical world competently, but they had great difficulty processing information about the social world (Peeters, 1997).

A general description of cognitive functions allowed to identify problematic aspects that could serve as diagnostic indicators for ASD: attention, gnosis (perception), memory, psychomotor function (praxis), speech, function of control, social intelligence (Denisova, 2024). Attention was regarded as the ability to maintain the level of mental activity necessary for cognition, to respond promptly to signals from the senses, to concentrate and maintain mental performance for the required time, and to separate information flows.

Gnosis (perception) was considered as the ability to build holistic images based on information received from the senses. Memory was seen as the ability to memorise, store and repeatedly reproduce the information received. Psychomotor function (praxis) comprised the ability to make, store and execute motor programmes. Speech was defined as the ability to communicate verbally, including understanding of addressed speech, building own statements, reading, and writing. The function of control was identified as the ability to plan and control cognitive activity and behaviour, including choosing a goal (goal setting), building a programme (programming), moving from one stage of the programme to another (switching, intellectual flexibility) and comparing the result with the goal (control). T. Atwood (2004) argued that social intelligence was the ability to understand other people’s emotions and logic.

In the course of the research on children with ASD and other disorders (including cognitive developmental disorders) Ukrainian researcher Kh.V. Kachmaryk (2017) established several correlations between the development of sensorimotor and motor-perceptual spheres and other mental functions. In particular, the author noted that sensory integration disorders had a high level of correlation with all components of the cognitive sphere: “movements and actions” (praxis), gnosis, speech functions, memory, intelligence, and the ability to navigate in space. Among the problems that the author associated with a low level of development or disorders of the sensorimotor sphere were insufficient orientation of the child in space and situation, in their personal data (name, age, parents’ names, address of residence), inadequate behaviour (distractibility, field behaviour, refusal to follow instructions and communicate, inadequate emotional reactions, symptoms of aggression and auto-aggression, etc); low level of functioning in the field of gnosis, which was manifested in errors or inability to recognise real images, crossed and superimposed images, inability to correctly assess the rhythmic structures perceived by ear, low acoustic attention, inability to recognise spatially oriented figures, inability to recognise and qualitatively identify emotions; low level of speech functions, which revealed in the absence of extended speech, characterised by speech spontaneity, the presence of echolalia, difficulties in naming images, as well as comprehension, i.e.

correlation of words with pictures, understanding of logical and grammatical structures and low memory development, namely, the ability to memorise unrelated words, poor motor memory, which manifested itself in the inability to memorise and reproduce movements, as well as poor visual memory, which became noticeable in the low ability to memorise and recognise images; low level of intelligence, which proved to be evident in the inability to understand the meaning of the story and plot pictures, low ability to draw analogies and reject concepts; low level of ability to spatially organise stimulus material, which appeared in the inability to copy shapes correctly.

A study published in the journal *iScience* (Gardner *et al.*, 2024) revealed important findings related to the early sensorimotor characteristics and cognitive abilities of toddlers later diagnosed with ASD. The results showed that children with ASD and low IQ significantly altered sensorimotor features compared to children with ASD and high IQ. It was interesting that the sensorimotor characteristics of children with ASD and high IQ were hardly different from those of children with typical development. This indicated that high IQ might provide resistance to atypical sensorimotor manifestations, and poor sensorimotor function might be a key marker of low IQ in childhood autism (Denisova & Lin, 2023).

U. Frith & C. Frith (2024), describing the cognitive sphere of children with ASD, emphasised that even without significant deviations in the development of cognitive processes, some children demonstrated certain features, such as the absence of pretend play with a single, limited cognitive deficit, a tendency to local stimulus processing and ignoring global signals. F. Happé & U. Frith (2020) proposed the idea that autistic cognition was characterised by a detailed style of processing stimuli entering the brain. The authors put forward a theory (the EF theory) that offered a clear description of cognition in ASD, defining a set of mental abilities that coordinated and controlled other cognitive processes. They include planning, inhibition, mental flexibility, generativity, initiation and self-control and were necessary for performing purposeful, effective, non-standard actions. Thus, based on the analysis of theoretical and empirical studies, the following criteria for the cognitive development of a child with ASD could be identified (Table 1).

Table 1. Criteria for the cognitive development of a child with ASD

Criterion	General characteristics	Diagnostic possibilities
Attention	Ability to maintain the level of mental activity necessary for cognition, to concentrate on the task	Observation
	Distribution, concentration, switching of attention	Correctional tests for children
Gnosis (perception)	Recognition of objects by contours, colour recognition, recognition of objects by individual elements	Gnostic tests
Memory	Memorising unrelated words, numbers, images, the location of objects	Mnemonic tests

Table 1. Continued

Criterion	General characteristics	Diagnostic possibilities
Psychomotor function (practice)	Development of psychomotor skills (static and dynamic coordination of movements, speed, rhythmicity, fine motor skills) Kinesthetic and kinetic finger praxis (development of kinesthetic and kinetic oral praxis in children) Dynamic practice	Fist-rib-palm test, Vaizman test, Kulikova test Motor tests
Speech	Verbal imitation Understanding of the addressed speech Pronunciation Vocabulary Development of coherent speech	Speech therapy examination
Controlling functions	Goal setting and control	Observation
Social intelligence	Ability to recognise emotions	Story pictures Mimicry tests
General intelligence	General awareness Formation of thinking operations	Tests of intelligence, "Classification", "Choose the odd out" tests

Source: compiled by the author

Most studies of cognitive functioning in ASD focused on phenomena that were assessed at the group level. This obscured the fact that even the most commonly accepted cognitive characteristics of ASD were by no means universal and specific to ASD. F. Mohammadzaheri *et al.* (2021) warned against a unified approach to assessing cognitive function in ASD, as the use of group mean comparisons, in their view, did not take into account important characteristics of cognitive profiles, i.e. that their strengths and difficulties were relative rather than absolute. For example, if there were two children with ASD, one of whom had an IQ of 140, was very verbal and performed well on tests, and the other showed a high degree of executive dysfunction and had an intelligence in the low average range, they both scored in the average range for the general population on the indicator. That was why it was necessary to take into account as many indicators as possible, which would help not only to determine which of the cognitive functions is most impaired, but also to establish a connection between the dysfunctions of the cognitive sphere.

Given the diversity of symptoms of the autism spectrum, individual characteristics, and the possibility of combining sometimes completely opposite manifestations, the described criteria did not provide an exhaustive picture of the cognitive development of a child with ASD, however, the identified criteria allowed to identify priority areas of development of the child's cognitive sphere, which should be targeted by means of psychological and pedagogical correction. The progress made in these areas in the course of correctional work was a factor in the effectiveness of psychological support for a child with ASD.

Conclusions

The analysis of available research in the field of cognitive development allowed to determine its main

criteria and specificity in children with ASD. It was established that the basis of cognitive development was the development of the sensory and motor-perceptual spheres. They mostly determined the development of other cognitive functions. The research available in modern science confirmed that in preschool children with ASD, sensory integration disorders had a high level of correlation with all components of the cognitive sphere and cause disorders of attention, memory, perception, goal setting and control, speech and communication disorders, and intellectual disability. The cognitive functions studied in the article were considered to be the main criteria for cognitive development and allowed to identify priority areas of development of the child's cognitive sphere, which should be targeted by means of psychological and pedagogical correction. It was established that there were significant individual differences in the cognitive profiles of children with ASD, making the diagnosis of cognitive functions crucial for developing intervention programs. However, existing tests and diagnostic methods might be insufficient to fully understand the cognitive development of these children. The criteria for cognitive development identified in this study could serve as a foundation for creating corrective programs aimed at supporting the development of those aspects of the cognitive domain that were most vulnerable in children with ASD. Following this, the research focused on systematising existing diagnostic tools and developing a diagnostic programme in accordance with the defined criteria.

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Conflict of Interest

None.

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Критерії діагностики когнітивного розвитку дітей дошкільного віку з розладами аутистичного спектру: огляд літератури

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Анотація. Актуальність досліджуваної проблеми обумовлена впровадженням інклюзивного навчання, яке передбачає реалізацію права всіх дітей, незалежно від стану їх психічного та фізичного здоров'я, на отримання загальної освіти. Метою статті було дослідження підходів до визначення критеріїв когнітивного розвитку дітей з розладами аутистичного спектру, на основі аналізу яких визначаються основні діагностичні критерії, які дозволяють максимально повно охарактеризувати когнітивний розвиток дітей дошкільного віку з досліджуваною нозологією. Методологія дослідження базувалася на комплексному аналізі сучасних наукових джерел у галузі когнітивного розвитку дітей з розладом аутистичного спектру, зокрема на вивченні критеріїв когнітивного розвитку. У процесі дослідження було проведено детальний аналіз концептуальних підходів до визначення терміну «когнітивний розвиток», а також виокремлення специфічних характеристик когнітивного розвитку дітей із розладами аутистичного спектру. Особливу увагу приділено труднощам, що виникають при діагностиці когнітивного розвитку таких дітей, а також аналізу комплексних порушень, які є типовими для дітей дошкільного віку з розладами аутистичного спектру. В статті описано особливості сприймання, уваги, мовлення, особливості інтелекту, контролю і планування діяльності тощо. Здійснювався огляд основних методик діагностики когнітивної сфери, моторних та перцептивних функцій з акцентом на можливості їхнього застосування в практиці корекційної роботи з дітьми з розладами аутистичного спектру. Отримані результати можуть бути використані для діагностики та корекції когнітивної сфери дітей з розладами аутистичного спектру з метою їхнього включення в систему інклюзивного навчання і отримання якісної освіти відповідно до їх індивідуальних можливостей та особливостей розвитку когнітивної сфери

Ключові слова: атипові розлади поведінки при аутизмі; інклюзивна освіта; показники когнітивного розвитку; розвиток когнітивних функцій; когнітивні порушення

Sociability and psychoticism as predictors of interaction types in students' youth

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Abstract. The relevance of this research lies in its contribution to understanding how different interaction types, constructed by the balance of sociability and psychoticism, influence students' adaptation to the educational environment. As higher education institutions increasingly emphasise student well-being and academic success, identifying favourable and unfavourable interaction patterns is crucial for fostering a supportive learning atmosphere. The purpose of this study was to construct a typology of students according to the ratio of sociability and psychoticism, which ensures the interaction of the student with the educational environment, and the identification of favourable and unfavourable forms of such interaction for the student's personality on its basis. The empirical data collection employed V. M. Melnikov & L.T. Yampolsky's "Psychodiagnostic test" and F.E. Williams' Creativity Assessment Packet. Dispersion analysis and the Mann-Whitney U-test were used to identify differences in psychological traits among the four types of student interaction. Based on the ratio of sociability and psychoticism, four types of student interaction were identified: competing: a high level of curiosity, creative curiosity, creativity, depression, neuroticism, imagination, general activity, sociability, low level of shyness, introversion; manipulative: a high level of curiosity, creative curiosity, creativity, mental imbalance, tendency to dominance, depression, asociality, neuroticism, shyness, imagination, introversion; hermits (hikikomori): a low level of curiosity, creative curiosity, creativity, disinhibition, asociality, imagination, general activity, a high level of shyness and introversion; cooperative: a low level of mental imbalance, a tendency to dominance, depression, neuroticism, shyness, introversion, general activity, and a high level of sociability. The practical significance of this research lies in its potential applications for improving educational environments and student support strategies, emphasising the need for promoting cooperation rather than competition, thereby enhancing students' psychological well-being and overall academic engagement

Keywords: personality; typological properties; cooperation; competition; manipulation; social withdrawal; educational environment

Introduction

The educational environment can both constructively and destructively affect the student's personality. An increase in the pressure of the academic environment on the student's personality forces him/her to switch from energy-saving learning methods to energy-consuming ones. Prolonged forced social isolation caused by quarantine restrictions, distance learning, forced change of place of study, etc., does not facilitate the improvement of the situation. Loneliness, prolonged stress, and permanent uncertainty affect the mental health of students during difficult conditions.

The researchers F.J. Araújo *et al.* (2020) analysed how the global educational environment has been disrupted by the COVID-19 pandemic, focusing on challenges such as the transition to online learning, social isolation, and the psychological effects of these changes on students, faculty, and staff. They revealed the rise in anxiety and depression levels during quarantine, exacerbated by uncertainty and an overload of information, and the adverse effects of solitude on students' educational and psychological well-being.

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M.M. Husky *et al.* (2020) examined the mental health impact of the COVID-19 pandemic, explicitly focusing on stress and anxiety levels among university students in France during the mandatory confinement period. The researchers explored how social isolation, changes in academic routines, and uncertainty caused by the pandemic contributed to increased stress and anxiety in this population. They discussed the significant psychological challenges faced by students, including disruptions to their education, concerns about their health and the health of loved ones, and the general feeling of uncertainty. The results revealed a noted increase in anxiety and stress, particularly among students who stayed away from their parental homes during isolation.

Researcher C. Karing (2021) investigated the mental health impact of the first COVID-19 lockdown on university students in Germany. According to the research results, mindfulness and optimism stand out as key protective factors against anxiety, depression, and stress, whereas current situational stressors (like concerns over academics and finances, stress from the pandemic and media coverage, and quarantine measures) along with personal traits (such as neuroticism, being older, and female gender) were identified as risk factors for mental health issues and stress.

G. Letiogo *et al.* (2024) examined the development of risky behaviours among student youth during the prolonged social isolation caused by quarantine measures. The paper explored the relationships between these risky behaviours and the overall health of students during the quarantine period. An uptick in risky behaviours (unhealthy eating, smoking, alcohol use, neglect of studies and personal appearance) during extended social isolation has been observed.

W.D. Killgore *et al.* (2020) discussed the significant mental health issue of loneliness during the COVID-19 pandemic. The researchers highlighted how social isolation and physical distancing measures have led to increased feelings of loneliness. They explored the psychological and emotional impact of loneliness during this period and discussed its potential long-term consequences for mental health. A significant correlation between loneliness during the pandemic and depression and suicidal ideation has been identified.

C. Stevens *et al.* (2020) investigated the prevalence of problematic internet use and computer gaming among university students in the United States. The researchers examined how excessive use of the internet and video games may correlate with negative psychological outcomes and the potential for developing mental health issues. It was found that excessive Internet use, a common aspect of social isolation, has been linked to problematic behaviours like Internet and gaming addiction that interfere with academic performance and heightened symptoms of mental health disorders. T. Kato *et al.* (2020) examined the relationship between

Internet addiction, excessive use of online platforms, and social withdrawal behaviours. The Internet and the development of internet societies have contributed to the rise of internet addiction, which can lead to pathological social withdrawal, a condition often referred to as “hikikomori”. The association between Internet addiction and severe social withdrawal (the “hikikomori” phenomenon) has been noted.

Thus, O. Kovalenko (2024) in his study determined that prolonged enforced social isolation due to quarantine measures, remote learning, and excessive Internet use can negatively affect students’ emotional well-being and their social interaction capabilities. This could lead to a shift from enforced to voluntary isolation, supported by the lack of necessity for active social engagement (for instance, the option to continue education and work remotely). However, insufficient attention is paid to investigating various personality properties as psychological predictors of students’ interaction with the educational environment in difficult conditions, which led to the choice of the research topic.

This purpose of this study was to develop a classification of student interaction based on the balance between sociability and psychoticism, which facilitates the student’s engagement with the educational environment, and to determine which forms of this interaction are beneficial or detrimental to the student’s personality development.

Materials and Methods

Participants. The empirical psychological research sample consisted of 280 university students (Kyiv and Zhytomyr) of the 1st-4th years of study and different educational programmes (“Preschool education”, “Primary education”, “Choreography”, “Fine arts”, “Social work”, “Psychology”), with a mean age of 20.

Procedure. The empirical psychological research, including V.M. Melnikov & L.T. Yampolsky (1985) PDT and F.E. Williams’ Creativity Assessment Packet (Bielska *et al.*, 2021) was proposed for students of Borys Grinchenko Kyiv University, Ivan Franko Zhytomyr State University, V.I. Vernadsky Taurida National University over the period 2020-2023 using Google Forms online. The responses were transferred from Google Forms into Excel and SPSS Statistics 27 for analysis. The testing was voluntary and anonymous. Data collection was performed online via Google Forms. Reporting on human studies, the testing was conducted according to the American Psychological Association’s Ethical Principles of Psychologists and Code of Conduct (2017). Upon completion of the study, all participants were provided with individualised reports of the results, including a comprehensive interpretation.

In defining interaction types, the “Sociability” and “Psychoticism” scales were employed. Through the correlation of sociability and psychoticism, four distinct interaction types were defined: Type 1 “+ +” encom-

passed individuals showing high levels of sociability alongside high levels of psychoticism; Type 2 “- +” was characterised by individuals with low sociability levels and high levels of psychoticism; Type 3 “- -” included individuals with low levels of both sociability and psychoticism; Type 4 “+ -” was comprised of individuals demonstrating high levels of sociability coupled with low levels of psychoticism.

The study explored how psychological traits manifest differently, focusing on the following aspects: mental stability versus mental imbalance – evaluated the overall mental resilience of an individual (comprising three sub-scales: “neuroticism”, “psychoticism”, “depression”), social adaptability versus asociality – assessed a person’s ability to adapt socially (including two sub-scales: “conscientiousness” and “disinhibition”), sociability versus introversion – evaluated how sociable an individual is (encompassing three sub-scales: “general activity”, “shyness”, “friendliness”), and emotional insensitivity versus sensitivity – evaluated the depth of emotional responses (with two sub-scales: “aesthetic sensitivity”, “femininity”); personality’s creative traits such as risk-taking, curiosity, complexity, and imagination.

In categorising students’ interaction types based on their levels of sociability and psychoticism, a method to analyse the nonlinear relationships among psychological parameters was employed. This typology construction method presupposed that the connections between the variables under study were nonlinear and orthogonal to each other. This was empirically observed when the correlation among psychologically related variables was negligible ($r \pm 0.25$).

Thus, the orthogonal, or quadripolar nature of the ratio of two indicators (when two indicators were located in an orthogonal coordinate system, for example, psychoticism was deposited on the x-axis, and social contact is deposited on the y-axis) acts as a criterion for building a personality typology. Subsequently, the analysis delineated four distinct personality types, defined by both indicators’ intensity levels (high/high,

high/low, low/high, and low/low). Further, to the study determined the statistical significance of the identified differences between types in the level of manifestation of other psychological characteristics of the personality. This stage was carried out using dispersion analysis and/or the Mann-Whitney U-test. To confirm the assumption of the presence of a nonlinear relationship, it was necessary to have statistically significant differences in the predominant number of psychological characteristics (De Castella, 2013; Podshyvailov *et al.*, 2020a).

Statistical Analyses. The analysis employed descriptive statistics, dispersion analysis, and the Mann-Whitney U-test (Jamil, 2024) to identify differences across four interaction types in the expression of students’ psychological characteristics.

Results and Discussion

Based on the balance between sociability and psychoticism, 4 interaction types were delineated: Type 1 (“+ +”) comprises students with high levels of both sociability and psychoticism (10.0% of the sample); Type 2 (“- +”) consists of students with low sociability yet high psychoticism (34.4% of the sample); Type 3 (“- -”) includes students with low levels of both sociability and psychoticism (27.5% of the participants); Type 4 (“+ -”) encompasses students with high sociability and low psychoticism (28.6% of the sample).

The next step was to define differences among the delineated 4 interaction types in the manifestation of psychological traits using dispersion analysis and Mann-Whitney U-test calculations. Differences in the following parameters were examined: curiosity, creative curiosity, aesthetic sensitivity, creativity, sensitivity, consciousness, mental imbalance, disinhibition, dominance tendency, depression, risk, emotional insensitivity, asociality, neuroticism, shyness, femininity, imagination, introversion, general activity, friendliness, complexity. Table 1 displays the differences between interaction types according to the assessed psychological measures, as determined through a dispersion analysis of the empirical data.

Table 1. Differences between interaction types according to the assessed psychological measures (dispersion analysis results)

Indicator	Type 1 “+ +”	Type 2 “- +”	Type 3 “- -”	Type 4 “+ -”	F
	\bar{x}	\bar{x}	\bar{x}	\bar{x}	
Curiosity	6.3	6.3	4.8	5.2	5.09**
Creative curiosity	6.4	6.3	4.9	5.4	4.69**
Aesthetic sensitivity	5.8	6.6	6.5	6.6	2.22
Creativity	6.4	6.3	4.9	5.7	3.73**
Sensitivity	5.6	6.2	6.5	6.4	1.89
Consciousness	6.2	6.2	5.9	5.3	1.98
Mental imbalance	6.3	8.3	5.6	4.0	26.51**
Disinhibition	5.3	5.5	4.2	4.8	3.51**
Dominance tendency	5.9	6.5	5.0	4.3	19.23**
Depression	6.8	8.1	5.8	4.2	30.90**

Table 1. Continued

Indicator	Type 1 "+ +"	Type 2 "- +"	Type 3 "- -"	Type 4 "+ -"	F
	\bar{x}	\bar{x}	\bar{x}	\bar{x}	
Risk	6.2	5.7	5.4	6.0	0.74
Emotional insensitivity	4.4	3.8	3.5	3.6	1.89
Asociality	4.2	4.8	3.1	4.0	3.51**
Neuroticism	7.0	8.1	5.5	5.3	14.13**
Shyness	3.3	6.8	6.8	3.1	50.16**
Femininity	7.3	7.5	7.6	7.4	0.30
Imagination	6.3	6.3	4.4	5.3	6.74**
Introversion	3.3	7.4	7.5	3.4	86.71**
General activity	5.7	5.3	4.5	4.6	4.88**
Friendliness	7.1	4.9	4.8	7.4	4.12**
Complexity	6.2	6.1	5.5	6.2	1.12

Note: \bar{x} - Average value of the indicator; F - Dispersion coefficient; ** - $p \leq 0.01$; * - $p \leq 0.05$

Source: developed by the author

Consequently, observed statistically significant distinctions between the types on the following dimensions were observed: curiosity, creative curiosity, creativity, mental instability, disinhibition, dominance tendency, depression, asociality, neuroticism, shyness, imagination, introversion, general activity, and friendliness ($p \leq 0.01$).

Type 1 is characterised by: high levels of curiosity, creative curiosity, creativity, depression, neuroticism, imagination, general activity, friendliness, and low levels of shyness and introversion; Type 2: high levels of curiosity, creative curiosity, creativity, mental instability, dominance tendency, depression, asocial behaviour, neuroticism, shyness, imagination and introversion; Type 3: low levels of curiosity, creative curiosity, creativity, disinhibition, asocial behaviour, imagination, overall activity, and high levels of shyness and introversion;

Type 4: low levels of mental instability, dominance tendency, depression, neuroticism, shyness, introversion, general activity, and high levels of friendliness.

Students with high psychoticism (Types 1 and 2) are more prone to emotional instability, impulsivity, and depressive symptoms, especially when combined with low sociability (Type 2). Type 3 students are stable yet passive individuals, with limited emotional expressiveness and reduced social initiative. Type 4 students are socially active and emotionally stable, display the healthiest psychological profile. They are psychologically well-adjusted students who combine sociability with emotional stability and cognitive flexibility. Table 2 illustrates the outcomes of the Mann-Whitney U-test calculations, facilitating the pairwise comparison of the identified types across the researched indicators.

Table 2. Pairwise comparison of the identified types across the researched indicators (Mann-Whitney U-test)

Indicator	Type 1/2		Type 1/3		Type 1/4		Type 2/3		Type 2/3		Type 3/4	
	U	p	U	p	U	p	U	p	U	p	U	p
Curiosity	1,105.00	0.15	717.00	0.01	865.00	0.07	3,165.00	0.10	3,817.00	0.95	2,630.50	0.11
Creative curiosity	1,098.50	0.14	692.50	0.01	821.00	0.04	3,135.50	0.09	3,823.00	0.96	2,612.00	0.10
Aesthetic sensitivity	1,002.00	0.03	864.00	0.11	880.00	0.09	3,481.50	0.50	3,734.50	0.76	2,993.50	0.76
Creativity	1,083.50	0.12	677.50	0.00	831.50	0.04	3,129.00	0.08	3,825.00	0.97	2,587.00	0.08
Sensitivity	1,004.00	0.04	810.00	0.05	928.00	0.18	3,669.00	0.93	3,627.00	0.53	2,890.50	0.50
Consciousness	1,160.50	0.27	843.50	0.08	1,007.50	0.43	3,487.00	0.52	3,670.00	0.61	2,739.50	0.22
Mental imbalance	777.50	0.00	960.00	0.39	658.50	0.00	1,695.00	0.00	932.50	0.00	1,989.00	0.00
Disinhibition	1,331.50	0.94	841.00	0.08	1,038.50	0.57	2,918.00	0.02	3,586.00	0.45	2,653.00	0.13
Dominance tendency	1,081.50	0.11	852.00	0.10	657.50	0.00	2,174.00	0.00	1,519.00	0.00	2,354.00	0.01
Depression	963.00	0.02	915.00	0.23	574.50	0.00	2,172.00	0.00	1,264.50	0.00	1,919.50	0.00
Risk	1,062.50	0.09	867.50	0.13	1,013.50	0.46	3,692.50	0.99	3,512.00	0.33	2,836.00	0.39
Emotional insensitivity	1,004.00	0.04	810.00	0.05	928.00	0.18	3,669.00	0.93	3,627.00	0.53	2,890.50	0.50

Table 2. Continued

Indicator	Type 1/2		Type 1/3		Type 1/4		Type 2/3		Type 2/3		Type 3/4	
	U	p	U	p	U	p	U	p	U	p	U	p
Asociality	1,176.00	0.30	950.00	0.34	1,089.50	0.83	2,850.00	0.01	3,299.50	0.11	2,807.00	0.33
Neuroticism	1,032.00	0.06	767.50	0.02	659.00	0.00	1,638.00	0.00	1,365.50	0.00	2,546.50	0.06
Shyness	107.00	0.00	122.00	0.00	989.00	0.36	3,114.50	0.07	286.50	0.00	342.00	0.00
Femininity	1,139.50	0.21	889.50	0.15	1,068.50	0.72	3,677.50	0.95	3,167.00	0.05	2,495.00	0.03
Imagination	1,286.00	0.73	706.50	0.01	799.00	0.02	2,639.50	0.00	3,016.00	0.01	2,772.50	0.28
General activity	1,008.00	0.04	709.50	0.01	779.50	0.02	3,385.00	0.33	3,682.00	0.64	2,940.50	0.62
Friendliness	551.50	0.00	515.50	0.00	1,027.00	0.52	3,382.50	0.31	1,188.00	0.00	1,175.50	0.00
Complexity	983.00	0.03	782.50	0.03	1,017.50	0.47	3,663.00	0.92	3,078.00	0.02	2,441.00	0.02

Note: U – Mann-Whitney U-test calculations; p – statistical significance level

Source: developed by the author

Types 1 and 2 differ significantly across 9 indicators, including aesthetic sensitivity, sensitivity, mental imbalance, depression, emotional insensitivity, shyness, general activity, friendliness, and complexity. Types 1 and 3 (12 indicators): curiosity, creative curiosity, creativity, sensitivity, emotional insensitivity, neuroticism, shyness, imagination, general activity, friendliness, and complexity. Types 1 and 4 (7 indicators): creative curiosity, creativity, mental imbalance, dominance tendency, depression, imagination, and general activity. Types 2 and 3 (7 indicators): mental imbalance, disinhibition, dominance tendency, depression, asociality, neuroticism, and imagination. Types 2 and 4 (8 indicators): mental imbalance, dominance tendency, depression, neuroticism, shyness, femininity, imagination, and complexity. Types 3 and 4 (7 indicators): mental imbalance, dominance tendency, depression, shyness, femininity, friendliness, and complexity.

Mental imbalance and depression show the largest number of significant differences, highlighting the

importance of emotional stability across types. Shyness and friendliness reflect varying levels of social adaptation and interpersonal interaction. Additionally, imagination, dominance tendency, and complexity distinguish types based on creative and cognitive traits. These findings suggest that the most notable differences between types are related to emotional instability, social behaviour, and cognitive abilities.

The next step of typology construction was to fill distinguished types of interaction with psychological content. Those psychological traits for which significant differences were identified through analysis of variance and the Mann-Whitney U-test were deemed typological. The following is a characteristic of the interaction types based on the degree of manifestation of the selected typological characteristics “high”, “average”, and “low” (relative to other types, rather than the absolute expression of a specific psychological trait within the research sample). Figure 1 shows the psychological attributes identified as typological for each of the four interaction types defined.

<ul style="list-style-type: none"> 1. Low level of mental imbalance 2. Low level of dominance tendency 3. Low level of depression 4. Low level of neuroticism 5. Low level of shyness 6. Low level of introversion 7. Low level of general activity 8. High level of friendliness <p>Low psychoticism</p>	<p>High sociability</p> <p>Type 4</p> <p>“+ -”</p> <p>“Cooperative”</p>	<p>Type 1</p> <p>“+ +”</p> <p>“Competitive”</p>	<ul style="list-style-type: none"> 1. High level of curiosity 2. High level of creative curiosity 3. High level of creativity 4. High level of depression 5. High level of neuroticism 6. Low level of shyness 7. High level of imagination 8. Low level of introversion 9. High level of general activity 10. High level of friendliness
<ul style="list-style-type: none"> 1. Low level of curiosity 2. Low level of creative curiosity 3. Low level of creativity 4. Low level of disinhibition 5. Low level of asociality 6. High level of shyness 7. Low level of imagination 8. High level of introversion 9. Low level of general activity 	<p>Type 3</p> <p>“- -”</p> <p>Hermits</p> <p>(Hikikomori)</p>	<p>Type 2</p> <p>“- +”</p> <p>“Manipulative”</p> <p>Low sociability</p>	<p style="text-align: right;">High psychoticism</p> <ul style="list-style-type: none"> 1. High level of curiosity 2. High level of creative curiosity 3. High level of creativity 4. High level of mental imbalance 5. High level of dominance tendency 6. High level of depression 7. High level of asociality 8. High level of neuroticism 9. High level of shyness 10. High level of imagination 11. High level of introversion

Figure 1. Psychological attributes identified as typological for each of the four interaction types defined

Source: developed by the author

Type 1 can be described as highly active and socially engaged, with a strong inclination toward exploration and creativity. Individuals of this Type demonstrate intellectual curiosity and innovative thinking while maintaining a friendly and outgoing nature. Their low shyness and introversion suggest confidence in social interactions, making them more adaptable and expressive in dynamic environments. However, their heightened neuroticism and susceptibility to depression may indicate emotional sensitivity and psychological vulnerability. High levels of depression and psychoticism in this Type may be indicators of a tendency toward competition because of the desire for self-affirmation – high creativity, activity, and friendliness may contribute to engagement in competitive environments, where they seek to prove their uniqueness and abilities; non-conformity and individualism – high psychoticism might manifest in a tendency to act against conventional rules, making them competitors who do not follow standard norms. They might intentionally deviate from group norms, demonstrating alternative approaches. This Type may be characterised by contradictory social behaviour – they could be friendly but at the same time competitive, striving to stand out, sometimes even manipulatively or aggressively competing. Thus, competition is important to this type, but simultaneously, it can be draining and emotionally unstable, making them participants in a competitive environment with high risks of psychological burnout. High depression could suggest that competition causes them significant stress, feelings of inadequacy, or fear of failure.

Type 2 can be described as intellectually driven due to a strong drive for knowledge (curiosity) and creative exploration, making them innovative thinkers. They often have a deep interest in new ideas but may struggle with how to implement them due to mental instability. The combination of depression, neuroticism, and mental instability suggests that individuals in this Type may be prone to emotional turmoil. They might experience intense mood swings, anxiety, and difficulty managing stress, affecting their overall well-being. The dominance tendency reflects a desire for control over their environment, relationships, or situations. However, this can be challenging, especially when paired with asocial behaviour and introversion, leading them to prefer working alone or in solitary settings. Despite having imagination and creativity, these individuals often experience social isolation or difficulty connecting with others. Asocial behaviour and introversion may make them less likely to engage in social interactions or group activities, as they may find social environments overwhelming or draining. Shyness and asocial behaviour may prevent them from asserting themselves socially, yet their dominance tendency suggests they want to assert control when they do engage. This can create tension between their desire for social interaction and their avoidance

or discomfort with it. Individuals of Type 2, with characteristics such as dominance tendency, mental instability, asocial behaviour, and neuroticism, could be prone to manipulative behaviours. The desire for control and influence, paired with emotional vulnerability, might lead them to manipulate others to gain a sense of power or stability in social interactions. The dominance tendency might drive them to manipulate situations or people to assert control, especially when they feel emotionally insecure or threatened. The mental instability and neuroticism might lead them to manipulate others' emotions to serve their own needs, using tactics like guilt-tripping or playing on others' emotions to maintain power or influence. Their asocial behaviour, combined with shyness, might make it difficult for them to openly communicate or express needs. Instead, they might resort to indirect strategies to influence others without directly confronting or engaging in healthy interpersonal communication. Due to their introversion and shyness, they may prefer subtle, less overt tactics for manipulating others, using indirect actions like withdrawing or acting distant to achieve their goals.

Type 3 can be characterised as socially withdrawn and passive. Individuals of this Type tend to be reserved, introspective, and hesitant in social interactions. Their low curiosity and creativity suggest a lack of intrinsic motivation to explore new experiences or engage in dynamic activities. The high levels of shyness and introversion indicate discomfort in social situations, leading to self-isolation and minimal engagement with others. Additionally, their low overall activity and disinhibition imply a preference for structured, predictable environments, avoiding risks or spontaneous actions. The low level of asocial behaviour suggests that while they do not actively reject social norms, they may struggle to initiate or maintain connections due to their introverted tendencies. This Type closely resembles social withdrawal patterns, such as hikikomori tendencies, where individuals disengage from external social life, preferring solitude over social interaction.

Type 4 can be described as: stable and emotionally balanced – with low mental instability, low levels of depression, and low neuroticism, these individuals tend to maintain a calm, balanced emotional state, and are less likely to experience mood swings or emotional extremes; non-dominant and cooperative – the low tendency towards dominance suggests that these individuals are not inclined to assert control over others or engage in power struggles, they are more likely to be cooperative, seeking mutual understanding rather than competition or conflict; socially comfortable and friendly – low shyness and low introversion indicate that these individuals are socially comfortable, open to interacting with others, and may thrive in group settings, their high level of friendliness shows that they are approachable, easy-going, and enjoy socialising.

Despite their high sociability and emotional stability, the low overall activity could suggest that they may not be highly motivated to engage in vigorous or competitive activities, preferring instead more relaxed and harmonious environments. With low levels of mental instability, low levels of neuroticism, and high levels of friendliness, these individuals tend to be peaceful and non-confrontational, and they are likely to prioritise maintaining harmonious relationships over seeking attention or being the centre of social events. The attributes of the delineated interaction modalities, as per the sociability and psychoticism quotient, are corroborated through the scrutinised research, alongside the theoretical frameworks posited and extensive empirical observations during direct engagements with students within the educational process.

Type 1 (students showing high levels of sociability coupled with high psychoticism) is provisionally termed “Competitive”. Sociability is described as the “inclination and skills necessary for seeking out social interactions, engaging in relationships with others, and participating in group events” (American Psychological Association, n.d.). Originating from the Latin word *socius*, meaning “companion” (companion, partner), the term emphasises the importance of social bonds (Stevenson, 2010). Thus, sociability is an aspect of personality focused on forming connections with others and fostering interpersonal relationships.

The inclination of this Type towards competitive conduct is perceived as the aspiration to prevail in interpersonal scenarios (Fletcher & Nusbaum, 2008). The concept of this attribute is encapsulated by the term “competitiveness,” defined as “the propensity to seek out objectively competitive situations and to benchmark one’s performance against a standard or another individual of comparable capabilities” (American Psychological Association, n.d.). Competition is characterised as “any achievement-oriented scenario structured in such a manner that success is contingent upon an individual’s ability to outperform others” (American Psychological Association, n.d.). Within the realm of interpersonal competition, adversaries strive to surpass one another, frequently through actions that detrimentally impact the outcomes of competitors, potentially leading to conflict (American Psychological Association, n.d.).

Exploring the impact of personal attributes on the predisposition towards competitive conduct, sociability, conscientiousness, and perseverance were identified by M. Fong *et al.* (2021) as positive predictors of competitive behaviour. Conversely, traits such as benevolence, politeness, and empathy were associated with a low propensity for competitive conduct. These traits are indicative of individuals with lower levels of psychoticism (and the “cooperating” Type according to the proposed classification). Further research findings, such as by D. Urbig *et al.* (2021), indicate that a

heightened propensity for competitive behaviour correlates with reduced honesty-modesty and diminished benevolence, alongside increased extraversion and heightened conscientiousness. Investigations into the influence of external and internal determinants on competitive conduct, namely by Z.A Reese *et al.* (2022), have revealed that individuals with a minimal inherent competitive inclination exhibit competitive behaviour solely in contexts that explicitly necessitate it, whereas individuals with a pronounced manifestation of this trait identify competitive opportunities even in minimal competitive contexts.

Type 2 (students characterised by a low level of sociability and a high level of psychoticism) is conditionally termed “Manipulative”. Manipulative behaviour is delineated as conduct aimed at exploiting, controlling, or otherwise exerting influence over others for personal gain (American Psychological Association, n.d.). A personality trait inclined towards manipulation is referred to as “Machiavellianism,” characterised by a self-serving approach to interpersonal relationships and the conviction that the end justifies the means, irrespective of the ruthlessness of those means. Machiavellians regard others as tools to be manipulated to achieve their objectives, if necessary, through deliberate deceit (American Psychological Association, n.d.).

It is imperative to note that representatives of types I and II, unified by a high level of psychoticism, are characterised by high levels of creativity, curiosity, and creative curiosity. The correlation between psychoticism and creativity (notably, divergent thinking and originality) has been highlighted by M.A. Runco (2023), referencing empirical studies.

Proceeding to the delineation of Type 3 (characterised by individuals with low sociability and low psychoticism levels), this category is conditionally termed “Hermits”, or “Hikikomori”, indicative of a pronounced disinterest in initiating social interactions. As researchers T. Kato *et al.* (2019) noted, the “hikikomori” phenomenon, initially identified in Japan, is now recognised globally. It coincides with characteristics of Type 3 with elevated shyness and introversion, suggesting unease in social settings, resulting in self-imposed isolation and limited interaction. This behaviour aligns with social withdrawal tendencies, like hikikomori, where individuals retreat from society and favour solitude over social engagement.

P. Muris & T. Ollendick (2023) described it as “excessive social withdrawal”. Predominantly affecting the youth, characteristics of these “socially withdrawn individuals” include solitude, absenteeism from educational institutions leading to potential expulsion, engagement in remote or freelance employment (freelancing), or a complete lack of employment or educational pursuits. The researchers found that contributing factors to this condition encompass certain temperamental traits, psychological states,

unfavourable family processes, including parenting styles, negative peer interactions, societal pressures, and an over-reliance on the Internet and digital platforms, constituting a complex developmental psychopathology framework. J.Y.K. Yung *et al.* (2021) made a comprehensive review of the aetiology of excessive social withdrawal, that identified commonalities among those experiencing hikikomori, such as adverse childhood events, peer victimisation, familial discord, diminished social bonds, excessive parental dependency, labour market shifts, overprotective parenting styles, psychological conditions, introversion, timidity, low academic achievements juxtaposed with lofty expectations, and the Internet usage. The occurrence of such a condition in students can be facilitated by forced social isolation. Research by M.K. Alshammari *et al.* (2023) showed that various forms of social isolation negatively affect the mental health of students, which manifests through increased levels of stress, anxiety, depression, and emotional burnout. Z. Liang *et al.* (2021) analysed factors such as anxiety, depression, and stress levels, identifying key contributors to psychological distress during the pandemic, including academic pressure, financial difficulties, and social isolation. O.S. Avramchuk (2021) studied students' social anxiety during COVID-19 and highlighted how quarantine measures, by enabling avoidance of social correction experiences, may reinforce avoidant behaviour and cognitive strategies as significant.

Type 4 (encompassing students with high sociability coupled with low psychoticism) is called "Cooperating". The low psychoticism trait, characteristic for Type 4 according to the author's findings, among these individuals is evident in their propensity for empathy, altruism, collaboration, and engagement with their surroundings. Cooperation is elucidated as a "process wherein multiple individuals collaborate towards shared or complementary objectives" (American Psychological Association, n.d.). Such points coincide with the features of Type 4, which are likely to be easy-going, friendly, and emotionally stable, preferring cooperative and harmonious interactions. They are characterised by low levels of anxiety and stress, social comfort, and overall positive and agreeable dispositions, although they might not be driven by competitive motivations. This is in stark contrast to competitiveness, wherein one individual's pursuit of a goal diminishes the likelihood of success for others. Analogous to the animal kingdom, cooperation facilitates outcomes such as enhanced food acquisition, predator evasion, or kin survival, rendering this behaviour more adaptive (American Psychological Association, n.d.).

Empirical studies by F.M. Podshyvailov *et al.* (2020b) indicated an increase in the pressure of the academic environment on the student's personality, which forces him/her to switch from energy-saving learning methods to energy-consuming ones.

The analysis of the results showed that a highly competitive educational environment has a harmful effect on personality, causing instability and requiring significant effort to meet the demands of the environment. Individuals of the "Competitive" Type tend to have elevated levels of various negative personality traits. A competitive educational environment demands high levels of engagement, resource mobilisation, and constant adaptation to competitive pressure. This dynamic may initially be stimulating, but in the long run, it leads to exhaustion. Thus, creating a more cooperative environment where students can interact, support each other, and work toward common goals is the optimal approach for healthy personality development.

The constant depletion of personal resources forces them to rely on the resources of others through manipulative behaviour (as observed in Type 2 individuals). In addition, a high level of psychoticism is associated with a lack of empathy and increased impulsivity, which may push individuals toward manipulative strategies to achieve success. A competitive environment does not provide equal opportunities for everyone: some students adapt quickly, while others experience constant pressure. Those who struggle to maintain a high level of competitiveness may feel compelled to seek alternative ways to achieve their goals. Type 2 ("Manipulative") students resort to social and psychological mechanisms to achieve results without direct competition.

Manipulative behaviour is not always successful; when these strategies fail, students may experience frustration, a loss of control, and a decline in self-esteem. The inability to achieve desired outcomes leads to a loss of initiative and gradual disengagement from the environment. This corresponds to the characteristics of Type 3 ("Hermits"), who avoid competition, abandon personal ambitions, and transition into social withdrawal. Consequently, when manipulative strategies fail to lead to success, these individuals may withdraw from their goals, initiative, and active participation, transitioning into Type 3, which is marked by a retreat from personal aspirations and disengagement from the environment. Type 4 ("Cooperating") demonstrates a healthier form of interaction with the environment. This Type has low psychoticism, high sociability, and is focused on cooperation and collaboration. This orientation allows individuals to conserve resources and thrive in a healthy environment, where success depends on interaction with others rather than competition.

Considering the above, the educational environment should be oriented towards cooperation rather than competition, as it allows students to conserve emotional and psychological resources, fostering their development without unnecessary stress and conflict, especially in conditions of prolonged stress and permanent uncertainty. The validity of this statement is also confirmed by other studies. O.Y. Sarkisova (2009)

emphasised that among the most effective forms of student education are group, cooperative, and interactive learning strategies, which promote engagement and the development of social skills beyond formal education. Research shows that incorporating group-based cognitive activities and active interaction is key to fostering cooperation and humane relationships. Properly organised cooperation enhances personal development and academic achievement. The ability to interact and cooperate is crucial for a democratic society and for overcoming the dominance of competitive strategies.

D.W. Johnson *et al.* (2014) have conducted extensive research on the effects of cooperative, competitive, and individualistic efforts in educational settings. Their studies have demonstrated that cooperative learning environments enhance various outcomes, including achievement, motivation, and social development, while competitive settings may lead to increased anxiety and reduced collaboration. The researchers emphasised that cooperative learning is a research-supported instructional strategy that significantly improves university teaching and student outcomes.

Recent studies continue to support the positive impact of cooperative learning on student outcomes. For example, B. Öztürk (2023) examined the impact of cooperative learning on students' academic performance. The study synthesised findings from 23 meta-analyses between 2010-2021, using second-order meta-analysis. It suggests that cooperative learning is a crucial factor in enhancing student outcomes. S. Mendo-Lázaro *et al.* (2022) demonstrated that cooperative learning programmes in university settings enhanced academic goal achievement through techniques promoting high levels of responsibility and interdependence among students. F-F. Cheng *et al.* (2021) explored the impact of collaborative learning and personality traits on learning satisfaction in flipped classrooms. The researcher examined how group collaboration in flipped learning environments, where students engage in self-study outside class and interactive activities inside, influences their learning satisfaction. The study also looked at how personality traits, such as extraversion or introversion, affect students' willingness to participate in collaborative activities and, consequently, their satisfaction with the learning process. The findings highlighted the importance of both collaboration and individual personality characteristics in enhancing students' learning experiences in flipped classrooms.

The proposed study has both strengths and certain limitations. This investigation examined the types of interaction in an academic environment, delineating them through the prism of sociability versus psychoticism ratios. The research stands out for its foundation on the quadripolar model, diverging from the conventional approach of correlating individual personality traits with the observed phenomena. While the psychodiagnostic test scales serve as a viable measure for sociability,

psychoticism, and other psychological indicators, their direct comparison with findings from studies employing the Big Five personality model presents challenges. An exploration into the correlations between PDT scales and the Big Five factors, particularly Openness and its six facets – Fantasy, Aesthetics, Feelings, Actions, Ideas, and Values – would enrich the discourse. Additionally, insights into variations across age and gender, and a comparative analysis involving students, graduates, and professionals, would contribute valuable perspectives.

Conclusions

Based on an in-depth analysis of empirical data, this study proposes a typology of student interaction in the educational environment, classified by the balance between sociability and psychoticism. Four types of interaction were identified. Type 1 – “Competitive” students are highly active, socially engaged and intellectually curious. They demonstrate adaptability and creativity, low introversion and shyness, which indicates social confidence. However, their increased neuroticism and emotional sensitivity indicate vulnerability. The desire for self-assertion and non-conformity pushes them to high achievement, but prolonged exposure to competitive environments can lead to emotional exhaustion, instability, and burnout due to the constant need to succeed. Type 2 – “Manipulative” – combines creativity and intellectual drive with neuroticism, introversion, and emotional instability. Despite being innovative, they struggle with stress and mood regulation. Their shyness and antisocial tendencies contrast with their desire to control social interaction. As a result, they may resort to indirect, manipulative strategies to assert influence, seeking stability through covert dominance rather than open communication.

Type 3 – “Hermits” or “Hikikomori” prefer solitude, demonstrate low curiosity and activity, and are characterised by high introversion and shyness. Their avoidance of social interaction is related to passive withdrawal rather than active rejection. They seek predictable environments and withdraw from social life, displaying patterns similar to hikikomori behaviour, where social isolation becomes a coping mechanism. Type 4 – “Cooperative” students demonstrate emotional balance, sociability and a tendency to cooperate. With a low level of neuroticism, shyness and dominance, they form stable interpersonal relationships and are resistant to stress. Although they are less active than Type 1, they thrive in groups and prefer mutual understanding over competition, preferring a supportive and harmonious environment.

The research findings indicate that a competitive educational climate can destabilise personal development, especially for Type 1 people who face unbearable pressure. This can lead to manipulative behaviour (Type 2) or, ultimately, to withdrawal from education (Type 3). In contrast, Type 4 is the most favourable,

as it supports healthy development without depleting the individual's internal resources. Thus, educational systems should emphasise cooperation rather than competition, fostering an environment that promotes emotional well-being and mutual support.

Future research should focus on the development of psychological support programmes for higher education institutions to create a supportive and sustainable academic environment, especially in the face of constant stress and uncertainty.

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Conflict of Interest

None.

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Соціальна контактність та психотизм як предиктори типів взаємодії студентської молоді

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Анотація. Актуальність дослідження полягає в висвітленні впливу різних типів взаємодії за співвідношенням соціальної контактності та психотизму на здатність студентів адаптуватися до освітнього середовища. Оскільки заклади вищої освіти все більше зосереджуються на психологічному благополуччі та академічних досягненнях студентів, визначення сприятливих і несприятливих моделей взаємодії є важливим для створення підтримуючої навчальної атмосфери. Метою написання статті була побудова типології студентів за співвідношенням соціальної контактності та психотизму, що забезпечує взаємодію студентів з освітнім середовищем, а також визначення на її основі сприятливих та несприятливих форм такої взаємодії для особистості студента. Для збору емпіричних даних було застосовано «Психодіагностичний тест» В. М. Мельникова та Л. Т. Ямпольського та опитувальник особистісних творчих характеристик Ф. Е. Вільямса. Статистична обробка емпіричних даних здійснювалася за допомогою дисперсійного аналізу та U-критерію Манна-Уїтні для виявлення відмінностей між чотирма типами взаємодії у вираженні психологічних характеристик студентів. За співвідношенням соціальної контактності та психотизму виокремлено 4 типи взаємодії студентів: конкуруючий: високий рівень допитливості, творчої допитливості, творчості, депресії, невротизму, уяви, загальної активності, товариськості, низький рівень сором'язливості, інтроверсії; маніпулюючий: високий рівень допитливості, творчої допитливості, творчості, психічної неврівноваженості, схильності до домінування, депресії, асоціальності, невротизму, сором'язливості, уяви, інтроверсії; відлюдники (хікікоморі): низький рівень допитливості, творчої допитливості, творчості, розгальмованості, асоціальності, уяви, загальної активності, високий рівень сором'язливості та інтроверсії. співпрацюючий: низький рівень психічної неврівноваженості, схильності до домінування, депресії, невротизму, сором'язливості, інтроверсії, загальної активності, високий рівень товариськості. Практичне значення дослідження полягає в можливості застосування його результатів для вдосконалення освітнього середовища та стратегій підтримки студентів, підкреслюючи необхідність сприяння співпраці, а не конкуренції, що матиме позитивний вплив на психологічне благополуччя студентів та загальну академічну залученість

Ключові слова: особистість; типологічні властивості; співпраця; конкуренція; маніпуляція; соціальна ізоляція; освітнє середовище

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The social and psychological adaptation of a pedagogue to global world changes in conditions of long-term stress

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Abstract. Global transformations (biological, ecological, social, economic, technical, cultural, etc.) take place very clearly in the modern world. All this determines the relevance of solving the problem of development of socio-psychological adaptation of modern person, in particular, teachers to the new conditions of existence. The purpose of the presented article was to highlight the results of research of peculiarities of socio-psychological adaptation of Ukrainian pedagogical workers in conditions of long-term stress. The study used such methods of empirical data analysis as questionnaires, psychodiagnostic testing, content analysis of percentage and average indicators. The article presents an analysis and generalisation of the results of empirical research of the state of socio-psychological adaptability of Ukrainian pedagogical workers to global changes in conditions of long-term stress (Covid-19 pandemic, war). The study showed that modern pedagogues demonstrate an insufficient level of adaptability to global changes: only 22% of teachers are well adapted to modern conditions and are ready to teach the worldview material to pupils, and 27.5% of teachers have features of intense psychological disadaptation and need of psychological support and psychological assistance for their professional activities. The study showed, that modern teachers are quite morally normative and communicatively competent, but their behavioral self-regulation is developed not sufficiently. The author distinguished the peculiarities of the manifestation of the adaptive potential of the personality of modern teachers of different age categories. Pedagogues aged 25-39 years, comparing to young (19-24 years) and more experienced teachers (40-66 years), are the most adaptive part of the pedagogical community. The indicator of their adaptive potential exceeds similar indicators of teachers of other age categories significantly due to the ability for behavioral self-regulation, which is more developed. Pedagogues aged 40-66 years demonstrate high moral normativity most of all. Social and psychological adaptation is quite difficult for young teachers aged 19-24, because this age category is the most vulnerable in terms of behavioral self-regulation. The practical significance of the research is that determining the peculiarities of the socio-psychological adaptation of teachers to modern conditions made it possible to determine the directions of psychological support for professional and pedagogical activities in educational institutions, aimed at the development of adaptive abilities, mental stability and behavioral self-regulation of the teachers

Keywords: global transformations in society; pedagogical workers; psychological adaptability of the personality; behavioral regulation; communicative competence; moral normativity

Introduction

The problem of development of pedagogue's adaptive abilities in the new conditions of professional activity is one of the most relevant among the problems of successful teacher's professionalisation. The pedagogue should provide his or her pupils with worldview knowledge, promote their constructive social and

psychological adaptation to global world transformations, as he or she is responsible for the personal development of future generations. The most important tool of professional and pedagogical activity is the teacher's personality itself, which enables him or her to transmit certain attitudes to pupils on a subconscious and

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emotional level. This requires a high level of social and psychological adaptability to global changes from the teacher. In this regard, modern pedagogues are faced with the task of an adequate picture of the world creation and developing the socio-psychological adaptability in the context of new world realities.

The socio-psychological and professional adaptation of teacher, as an essential component of his or her professionalisation, is the subject of research of many Ukrainian and foreign researchers. The problem of teacher's adaptive capabilities development is studied in the work of D. Astanova (2022). The researcher studied the teacher's ability to psychological adaptation, which was understood as the ability to adapt to the teaching processes, to perceive changes in education constructively, and to play the role of a leader in the team. The scientist noted that the development of a teacher's adaptive abilities is primarily caused with his or her responsibility, i.e. a high level of self-consciousness. However, the author did not mention the psychological mechanisms of long-term stress overcoming and the adaptation to war conditions. The author A. Rizquha (2023) identifies social (interpersonal) abilities as an adaptive psychological mechanism, which are also conditioned with the teacher's self-consciousness and contribute to the development of leadership skills. Other Western researchers argue that most teachers are ready to adapt to innovations through active self-learning and professional competence development (Nguyen & Duong, 2022). However, it should be noted that the studies mentioned above do not highlight the age-specific peculiarities of pedagogues' psychological adaptation to long-term stress.

The social and psychological adaptation of teachers is characterised with a number of specific peculiarities due to the particularity of pedagogical activity. Mental regulation of pedagogical activity is a complex act that presupposes not only professional knowledge and skills, but also the formation of a set of qualities of a teacher that meet the requirements of the pedagogical profession. Professional adaptation of a teacher has a number of significant features and depends on many conditions: social, psychological, professional and personal, as noted by N. Shakun & N. Yaremenko (2023). Professional adaptation of a teacher is a process of active interaction of the personality and social environment. The purpose of such interaction is to achieve relationships that ensure the greatest degree of pedagogical activity effectiveness, constructive development of the school community and personal satisfaction of the teacher with his or her own professional realisation. The degree of correspondence of the pedagogue's professional orientation to the content of pedagogical activity is an indicator that determines the peculiarities of the dynamics of the young teacher's adaptation process. In the era of global change, the requirements for teacher's activities change constantly. Therefore,

modern teachers differ with the inconsistency between personal qualities formed in the process of adaptation to previous professional activities, and changed professional requirements, which causes psychological disadaptation. Overcoming this or that form of disadaptation is aimed at eliminating the reasons that cause it. N. Shakun, & Yaremenko

The psychological adaptation of Ukrainian pedagogues to global changes and, in particular, to the conditions of war is determined with the ability of the psyche to adapt to new conditions of existence, which contributes to the achievement of balance between person and the environment. The focus of interests and the formation of ideas about real and desired pedagogical activities are significant factors of teachers' professional adaptation. Stressful events, situations of prolonged danger to life (in particular, in war conditions), have a significant impact on the emotional area, which reduces the teacher's adaptive capacity significantly and creates prerequisites for disadaptive behaviour. Indicators of psychological disadaptation include confusion, fear, depression, etc. The state of psychological disadaptation means disharmony between the real world and the teacher's perception of it, which leads to the inability of control and self-correction of one's own behaviour and relationships with pupils.

According to current research, modern emotional tension causes professional burnout of teachers, which affects the quality of their pedagogical activities negatively. The influence of individual qualities on the state of psychological adaptation of a pedagogue is studied by many scientists. Thus, researches show that the factors of learned helplessness of modern pedagogues include depression and lack of subjective control over events in their educational and professional activities (Bohonkova *et al.*, 2023). Thus, teacher's depression and externalisation are the factors that obstruct the social and psychological adaptation of pedagogues. All this indicates an insufficient level of adaptation of Ukrainian teachers to difficult living conditions.

Thus, the pedagogue's psychological adaptation to global changes in the conditions of war is determined by the ability of the psyche to adapt to new conditions of existence, which contributes to the achievement of balance between person and the environment. The psychological adaptability of a teacher is manifested in mental stability, self-control, tolerance to uncertainty, a high level of professional competence, and responsibility. Basing on the information mentioned above, the purpose of the article was to present the results of an empirical research of the peculiarities of social and psychological adaptability of Ukrainian pedagogical workers of different age categories in the context of global world changes.

Materials and Methods

In the first half of 2023, an empirical research of the peculiarities of the social and psychological adaptability

of pedagogical workers of different age categories who have been under prolonged stress for three years (first, the Covid-19 pandemic, then the year of full-scale war in Ukraine) was conducted. The study was conducted on three stages. The first stage consisted of psychodiagnostic data collection through individual testing and questionnaires (March-April, 2023); the second stage included the processing of empirical data (May-early June, 2023); the third stage included a meeting with the respondents who participated in the study (June, 2023), as well as the publication of generalised results and psychological counselling for teachers (optional).

The study procedure consisted of psychodiagnostic testing of respondents using the “Adaptability” methodics, which was revised by I. Prykhodko *et al.* (2017), which made it possible to measure the adaptive potential of a personality according to the criteria of “Behavioural regulation”, “Moral normativity” and “Communicative competence”. The study also used 2 questions from the author’s questionnaire “Attitude towards Global World Changes” (Paulyk, 2024), which helped to determine the degree of not only social and psychological, but also professional adaptability of the pedagogue to world changes. The following indicators were studied using the questions of the questionnaire “Attitude towards Global World Changes”:

1. Self-assessment of one’s own adaptability (“Access to what extent you consider yourself as adapted one to global changes”. 1 – not ready for changes at all...; 10 – fully adapted for changes).

2. Readiness to teach the worldview material (“Access how ready you are to talk to pupils about world changes: to present this information, to answer the complex questions”. 1 – not ready to teach at all ...; 10 – completely ready to teach).

The following norms of self-assessment of the sense of adaptability and readiness to teach the worldview material were determined: 1-3 – low level, 4-7 –medium level, 8-10 – high level. The analysis and interpretation of the results of psychodiagnostics were based on the calculation of percentage and average statistical indicators according to the methodics mentioned above. The percentage distribution of indicators was determined with proportionally calculation of the percentage of respondents (the number of people with a certain level of the specified quality) within the general population, as

well as within three samples of pedagogues according to the age criterion:

$$x(\%) = \frac{a \times 100\%}{n}, \tag{1}$$

where n is the total number of respondents; a is the number of respondents within one level.

The study involved 95 pedagogues aged 19-66. Among them there were 46 young teachers aged 14-24 (graduates of the “Kremenchuk A.S. Makarenko Humanitarian and Technological Academy” College), 26 teachers aged 25-39 from Kremenchuk, and 23 experienced teachers of the educational institution No. 816 “Lileia” of Kyiv aged 40-66. The study was conducted individually. The ethical standards registered in the Declaration of Helsinki (Declaration of Helsinki, 2013) were followed during the research. In particular, the participation of teachers in the testing was based on the principle of voluntariness. For ethical reasons, the results of individual testing were not disclosed. Only generalised, statistically processed data were highlighted in the publications. Upon request, pedagogues had the opportunity to receive information about the results of their own testing and individual psychological counselling. It was the opportunity to receive a free consultation from a highly qualified psychologist that proved to be an important stimulus for pedagogues to participate in the study. The results were analysed through comparing percentage and average indicators in three age groups of pedagogues: 19-24 years old, 25-39 years old and 40-66 years old.

Results and Discussion

The study of self-assessment of their sense of adaptability to global changes in the context of war showed that one third of the total number of pedagogues (34.8%) consider themselves as well adapted ones, about half of the respondents (52.2%) consider themselves as partially adapted ones, and 13.1% of respondents feel disadaptation in modern conditions, in particular in war, and need psychological help. Thus, the percentage of teachers who feel fully adapted is 2.5 times higher than those who feel disadaptation in the current conditions of war. The percentage distribution of pedagogical workers of different age categories according to the level of self-assessment of their sense of adaptability is shown on the Figure 1.

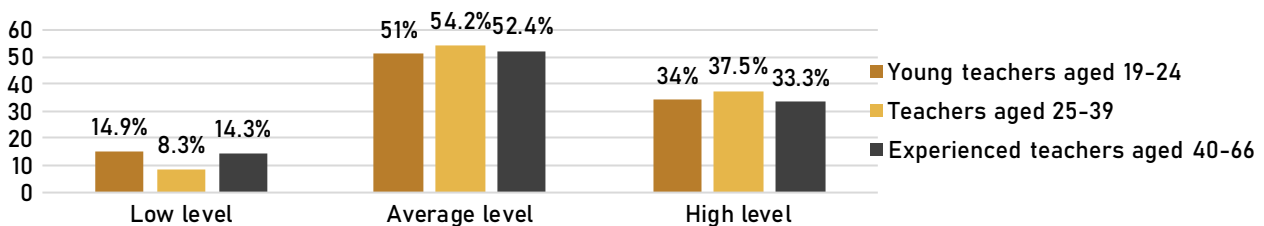


Figure 1. Percentage distribution of pedagogical workers of different age categories by the level of self-assessment of their own adaptability to global changes

Source: created by the author

The diagram shows that the majority of pedagogues of all age categories has an average level of adaptability. It is noteworthy that the sample of teachers aged 25-39 stands out from all three samples in terms of adaptability, as they demonstrate higher rates of high and medium levels with lower rates of low levels of sense of personal adaptability. Therefore, it can be concluded that teachers aged 25-39 are more flexible and adaptable than young and experienced pedagogues. An adapted teacher has a constructive picture of the world based on a system of spiritual and moral values, which allows them to respond to unexpected social situations calmly and to find the adequate solutions to problems and to teach the complex material with worldview content to pupils.

It is worth noting that not all teachers who feel adapted to modern conditions are ready to talk about global changes with pupils and to answer the difficult questions. Also, when asked to assess their own readiness to teach the complex worldview material about

global world changes to pupils, there were repeated cases when teachers noted that they felt partially adapted, but were ready to tell pupils about world changes. For example, 42.4% of pedagogues said they were ready to teach worldview material, although only 34.8% of teachers feel they are adapted to global changes. This fact may indicate either weak self-reflection or hyper-responsibility of the pedagogue.

15.21% of teachers feel unprepared to talk to pupils about global changes, globalisation, and the causes of the war in the country. At least, these people reflect on their psychological state and admit honestly that they are unable to teach what they were not taught in vocational institutions. The percentage distribution of pedagogues according to the criterion of their readiness to teach the material about global world changes to pupils, to talk to them about the causes of war, relevant problems, and to answer the difficult questions is shown on the Figure 2.

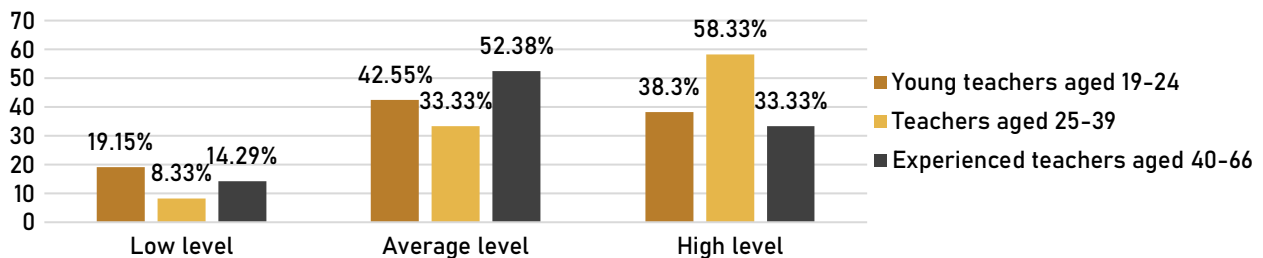


Figure 2. Percentage distribution of pedagogues of different age categories according to the criterion of readiness to teach the worldview material to pupils

Source: created by the author

Once more, the diagram shows that teachers aged 25-39 are the most adaptive and active category comparing to all other pedagogues. They have significantly higher rates of high readiness to teach the complex worldview material to pupils, while demonstrating the lower rates of low and medium level of readiness. This can be explained as follows: young teachers do not have sufficient life experience yet, so they do not know the answers to many vital questions, which makes them unprepared to teach this material. And the category of pedagogues aged 40+, and especially teachers of respectable age, are well aware that not everything in this world is as clear-cut as it seems. Therefore, their moderateness hinders their readiness

to teach complex issues to children who are not able to understand everything correctly, because they do not have life experience.

As for teachers aged 25-39, they are energetic, active, creative, understand a lot, and have some life and teaching experience that pushes them to active professional activity. To summarise, young teachers aged 25-39 are the most adaptive and creative category in the pedagogical community. This tendency is confirmed with the results of a psychodiagnostic study using the "Adaptability" methodics (Prykhodko *et al.*, 2017). Figure 3 shows that the average indicators of adaptive potential of pedagogues aged 25-39 are significantly higher than those of teachers of other age categories.

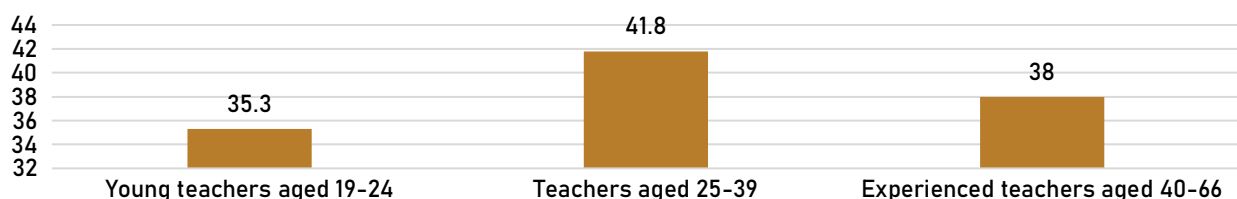


Figure 3. Average indicators of personality adaptive potential of teachers of different age categories

Source: created by the author

It is also worth noting that the adaptive potential of experienced teachers is higher than that of young teachers. Comparing the results of self-assessment of their own adaptability to global changes basing on the answers to the questionnaire and the data of psychodiagnostics using the “Adaptability” methodics, it should be noted that not all pedagogues assess their own adaptability adequately. The answers to the questionnaire showed that 34.8% of teachers consider themselves as well adapted, while the psychodiagnostic indicators of the “Adaptability” methodics indicate that only 22%

of pedagogical workers are well adapted to modern conditions. Also, according to the results of the questionnaire, only 13.1% of pedagogues believe that they have problems related to adaptation. In fact, there are twice as many of them (because according to the results of psychodiagnostics, 27.5% of the surveyed teachers have a low level of psychological adaptability and need psychological support to improve their adaptation to new conditions). The percentage distribution of the levels of adaptive potential of the personality in the general population of pedagogues is shown on the Figure 4.

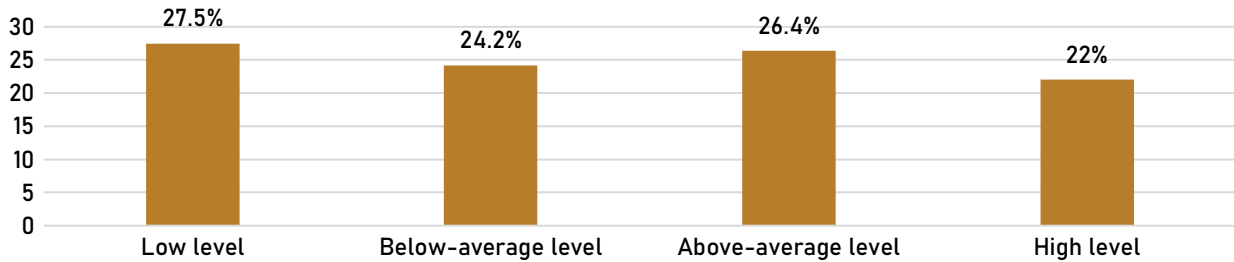


Figure 4. Percentage distribution of the levels of adaptive potential of the personality in the general population of pedagogical workers

Source: created by the author

The diagram shows that all pedagogues are almost equally distributed in terms of their adaptability to modern conditions. However, it should be noted that the percentage of well-adapted teachers (22.0%) is lower than that of disadapted ones (27.5%). This fact is an evidence of the relevance of the problem of

developing programmes of psychological support for professional and pedagogical activities aimed at modern teacher adaptive psychological mechanisms development. The percentage distribution of levels of adaptive potential of pedagogues of different age categories is shown on the Figure 5.

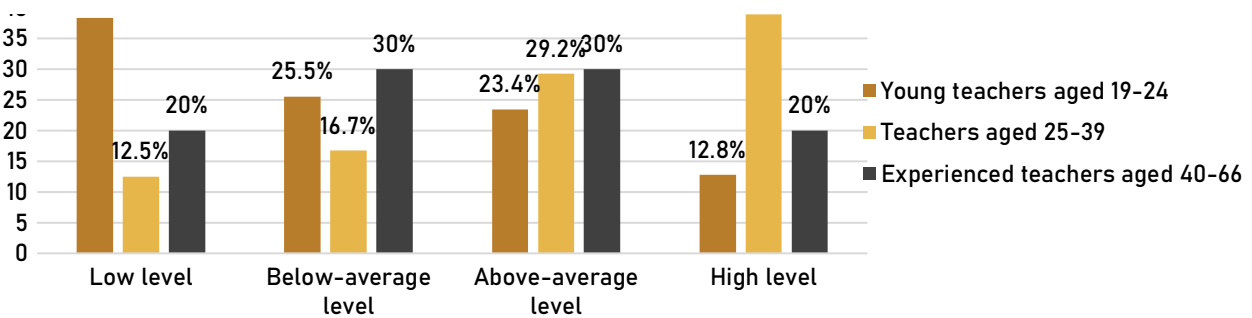


Figure 5. Percentage distribution of the levels of adaptive potential of the personality of pedagogues of different age categories

Source: created by the author

The diagram shows that young teachers aged 19-24 have a low level of adaptability (38.3%), while a high level is observed to a greater extent among teachers aged 25-39 (41.7%). The percentage of respondents with above-average levels of adaptability slightly exceeds the percentage of teachers with below-average levels of adaptive potential, also mainly due to teachers aged 25-39. Figure 6 shows the distribution of average statistical indicators of the development of components of the adaptive potential of pedagogues of different age categories.

Figure 6 shows that teachers aged 25-39 have all the components of the adaptive potential of personality as the most developed ones. Among the components of adaptive potential, teachers of all age categories have communicative competence and moral normativity as the most developed ones. This is not surprising, as pedagogical education is aimed at developing the future teacher’s communicative and moral qualities. The component of behavioural self-regulation is the least developed among teachers of all age categories. This leads to the conclusion that it is

necessary to develop methods of psychological support (psychological exercises, trainings, lectures) aimed at developing teachers' mental stability and behavioural self-regulation. The percentage distribution of levels of behavioural regulation among pedagogues of different age categories is shown on the Figure 7.

It can be seen that young teachers aged 19-24 have the least developed behavioural regulation comparing to other categories of pedagogues. This is evidenced by a significantly higher percentage of young teachers among those with low and below average levels of behavioural regulation.

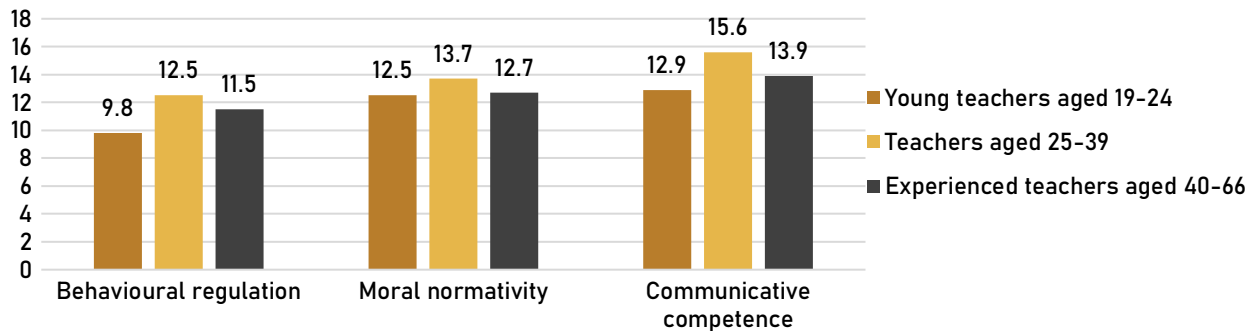


Figure 6. Average statistical indicators of the components of the adaptive potential of pedagogues of different age categories

Source: created by the author

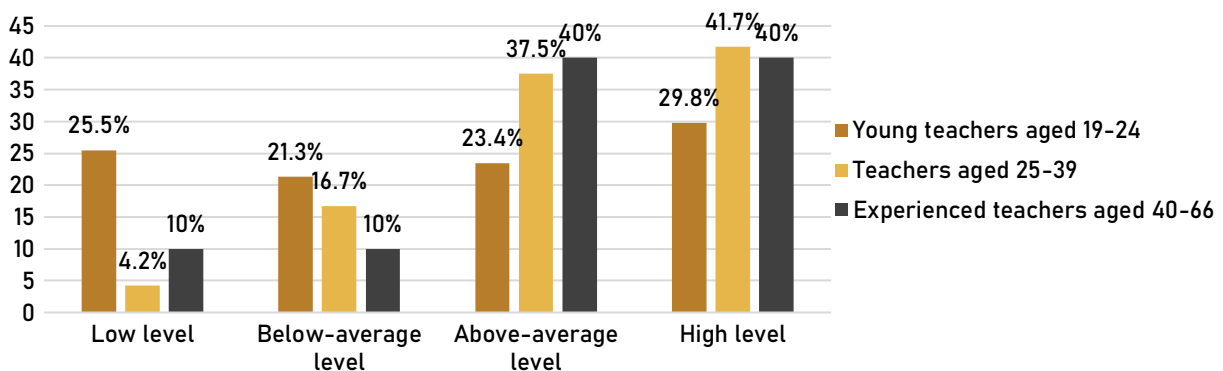


Figure 7. Percentage distribution of levels of personality's behavioural regulation of pedagogues of different age categories

Source: created by the author

Therefore, it can be assumed that the process of pedagogue's professionalisation contributes to the development of mental stability of the personality. Thus, almost 80% of middle-aged and older teachers demonstrate high and above average levels of behavioural self-regulation. Therefore, when developing programmes of psychological support for teachers' professional activities, age-related psychological peculiarities of teacher professional development should be taken into account, namely: at the beginning of their professional development young teachers should pay considerable attention to the process of mental stability gaining through the development of psychological self-regulation of their own behaviour.

The percentage distribution of the levels of moral normativity of pedagogues of different age categories is shown on the Figure 8. As can be seen, modern teachers have rather high moral normativity, mostly demonstrating high and above average levels of its

development. This is understandable, since teacher-training education has always been based on moral education through the acquisition of moral norms, on the understanding that a future teacher should become a model of moral behaviour for pupils.

Once more, pedagogues aged 25-39 demonstrate significantly higher levels of moral normativity than other categories of respondents (66.7% as opposed to 50-53%). The percentage of young teachers who have a level of moral normativity below the average (14.9%) is significantly higher than that of older teachers (4.2-5%). However, the percentage of young teachers with a high level of moral normativity (53.2%) is slightly higher than that one of experienced teachers (50%). Therefore, it can be assumed that young teachers undergo the process of moral formation of their personalities actively: they face problems related to moral dilemmas of problematic situations in their personal and professional lives and seek answers to vital questions actively.

Therefore, psychological support of professional activity is most needed, first of all, by young teachers, and it should be based on consideration of the moral context of complex and social situations. The percentage distribution of the levels of communicative competence

of pedagogues of different age categories is shown on the Figure 9. As can be seen from the diagram, modern teachers are quite communicatively competent (as there are no respondents with a low level of communicative competence).

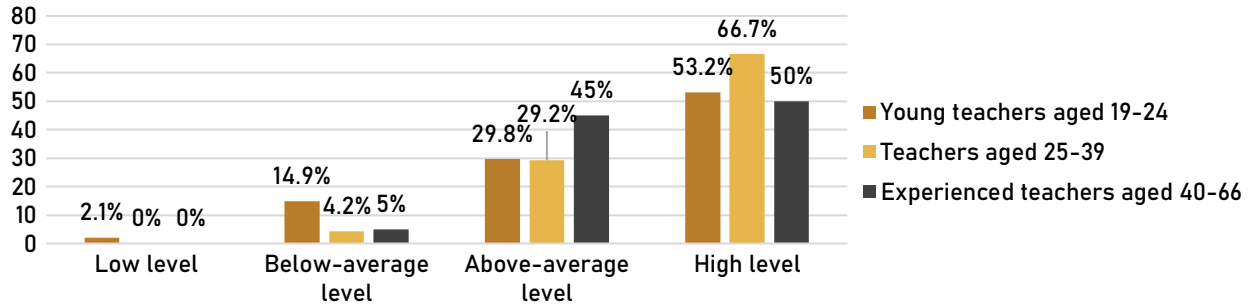


Figure 8. Percentage distribution of levels of moral normativity of teachers of different age categories
 Source: created by the author

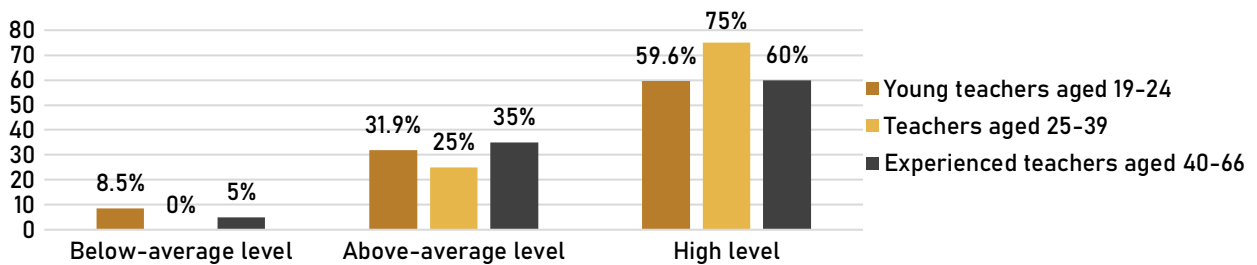


Figure 9. Percentage distribution of communicative competence levels of pedagogues of different age categories
 Source: created by the author

Teachers aged 25-39 have the best communication skills, with high (75%) and above average (25%) levels of communicative competence. Young teachers aged 19-24 almost do not differ from experienced teachers in terms of communicative skills. This can be explained by the fact that young teachers are closest to the pupils of the new generation in the linguistic and cultural aspect (they use the same slang, modern concepts, etc.), which allows them to increase the level of communicative understanding and mutual interest in communication significantly. Therefore, communication

trainings in the structure of psychological support of pedagogical activity should be present to a much lesser extent comparing with trainings of moral development and especially with trainings of personality's mental self-regulation development. Next, the peculiarities of the manifestation of suicidal risk of pedagogical workers are considered. The percentage distribution of the level of suicide risk among pedagogues of different age categories shows that the majority of modern Ukrainian pedagogues do not have a significant suicide risk (Fig. 10).

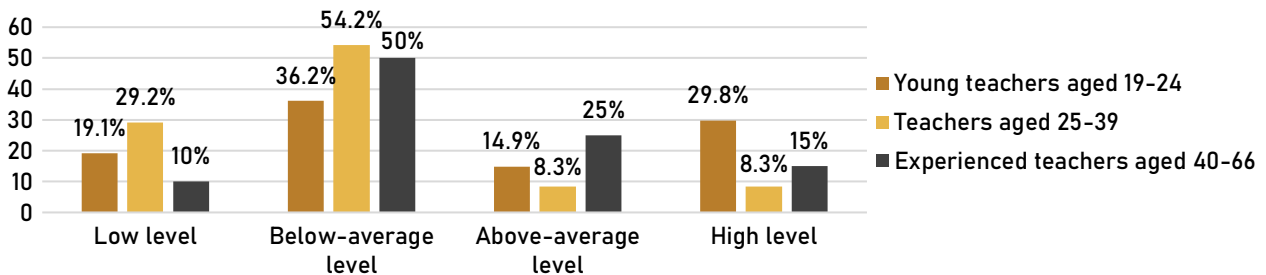


Figure 10. Percentage distribution of the level of suicide risk among pedagogues of different age categories
 Source: created by the author

The 29.8% of young teachers aged 19-24 and 15% of experienced teachers who have a high level of suicide risk, are the exception, as well as 14.9% of young and a quarter of experienced teachers who have an above-average level of such risk. Therefore, the practical achievement of the study of the peculiarities of adaptation of Ukrainian pedagogues to global world changes in the context of war is the conclusion that 25-39 years old pedagogues are the most stress-resistant, adaptable, active and creative category. A fairly large proportion of pedagogical workers (more than one third) need psychological support in their professional activities. Young teachers have the biggest difficulties with psychological adaptation.

Psychological support of professional activity is needed, first of all, for young teachers, because at the beginning of their professional development, pedagogues should pay considerable attention to the process of mental stability gaining through the development of psychological self-regulation of their own behaviour. Communication training for pedagogues should be based on consideration of the moral context of difficult social situations. However, such trainings should be present in the structure of psychological support of pedagogical activity to a much lesser extent comparing to trainings on the development of mental self-regulation of the personality.

As a discussion of the results of the study, it should be noted that certain aspects of the factors of psychological adaptation of the modern teacher are confirmed in the research of many Ukrainian and foreign scientists, and slightly overlap with the results of the presented study. For example, the study by I. Vizniuk *et al.* (2021) argues that psychological resilience determines the higher adaptive capacity, which is provided with physiological, social and personal factors. These researchers empirically prove that psychosomatic health is a factor in a person's social adaptation in a postmodern society. Psychosomatic factors of personal adaptation include endurance, energy, and positive mood. The neuropsychological stability of the personality is the leading mechanism of adaptation, which determines the teacher's endurance and his or her ability to professional and personal development (Maruta, 2020; Arslan *et al.*, 2021). The ability to somatic self-regulation is the most important integrator of personality adaptive resources in times of war, as noted by S. Hrabovska *et al.* (2024). Some scholars include psychological defence mechanisms as adaptive resources of the personality. Other researchers study such peculiarities of psychological adaptation as emotional balance, volitional stability, and affective balance (Yıldırım *et al.*, 2021). Emotional balance, volitional stability, affective balance are the other factors of psychological adaptation. Anxiety, tension, and uncertainty limit the adaptive capabilities of the personality. In the context of the presented study, these qualities

correspond to such component of social and psychological adaptation as behavioural regulation.

Researchers I. Vizniuk *et al.* (2021) note that the most appropriate conditions for adaptation include the development of a self-regulation system through the formation of an active life position, responsibility, correction skills, and the ability to organise one's own motivational area. These provisions also convincingly confirm the conclusion that psychological self-regulation of the personality is the basis of psychological adaptation to difficult conditions. Scientist D. Astanova (2022) argues that it is the responsibility of the pedagogue that determines the development of his or her adaptive abilities. This position confirms the criterion of moral normativity as a component of teacher's social and psychological adaptation.

Investigating the peculiarities of pedagogues' adaptation to new working conditions, V. Pidtyachy (2022) focuses on the effectiveness of the mechanism of coping strategies that promote adaptation, stress overcoming through maintaining psychophysical balance and the mental harmony restoring. Extraversion, sociability, and openness to experience contribute to the development of teachers' psychological well-being (as an indicator of their social and psychological adaptability) in martial law conditions (Kashpur & Roenko, 2023; Dudarev & Purtov, 2024). The effectiveness of a teacher's pedagogical activity can be achieved through synergy between fundamental (hard-skills) and flexible (soft-skills) skills (Ridei, 2021). These provisions slightly overlap with the position about communicative competence as a component of teacher's adaptation to new living conditions.

O. Shportun *et al.* (2024), considering the problem of personal adaptation in war conditions, identify such components of psychological adaptation of personality as cognitive, conative and emotional ones. I. Vizniuk *et al.* (2021) argue that the process of psychological adaptation includes emotional, motivational and intellectual components in combination with a system of values. The results of these scientific studies open a more holistic perspective on the problem of social and psychological adaptation of the personality.

Some researchers define meaningful life factors as the leading determinants of psychological adaptation. I.D. Mannapjonovna (2023) notes that there is a significant influence of a person's value orientations on the process of his or her adaptation to modern globalisation conditions. The same determinants are correlated with such factors as: meaningfulness of life, self-actualisation of the personality, meaningful life. N. Savelieva *et al.* (2023) note that a person's comprehension of his or her own inner world in order to find psychological resources (intellectual, emotional, volitional ones) is the most important factor in adapting to the conditions of today. An adequate teacher's response to stressful situations should be conducted by appealing to spiritual and moral values, as balanced behaviour of a person is a

manifestation of his or her spiritual and moral position. In the work of S. Rostami *et al.* (2023) there is proposed a model of teacher professional development, the application of which will contribute to the psychological adaptation of the pedagogue. It has also been statistically proven that psychological flexibility contributes to the development of adaptive abilities and an optimistic attitude to life. V.A. Vince *et al.* (2023) talk about the emotional and motivational factor of stress resistance development, proving that the success of teachers' psychological adaptation in wartime is influenced with the motivation to succeed.

Thus, modern research proves that there are many psychological factors in the development of the personality's adaptive abilities. Thus, the study expanded the view on the problem of peculiarities and factors of teacher's social and psychological adaptation to global changes under conditions of long-term stress and leaves broad prospects for further study of the phenomenon of social and psychological adaptability of the personality. A more thorough and comprehensive study of the factors of socio-psychological adaptation to global world changes will contribute to the construction of a comprehensive model of psychological adaptation of the personality, which can be the basis for the newest developments in the field of educational psychology.

Conclusions

The psychological adaptation of a pedagogue to global changes in the conditions of war is determined with the flexibility of the psyche and the ability to adapt to new conditions of existence. The leading role in the process of adaptation is played by the ability to mental self-regulation. The study showed that modern educators demonstrate an insufficient level of self-awareness of their adaptability to global changes in the conditions of war: direct answers to the questionnaire showed that 34.8% of teachers consider themselves as well adapted, but psychodiagnostic indicators of the "Adaptability" methodics show that only 22% of pedagogues are well adapted to modern conditions.

According to the results of psychodiagnostics, 27.5% of pedagogues show features of psychological disadaptation and need psychological support in their professional activities; 42.4% of pedagogues are ready to teach the complex worldview material about global

world changes, and 15.2% of teachers feel unprepared to talk to pupils about world changes, globalisation, and the causes of the war in the country. Modern teachers are quite morally normative and communicatively competent, but their behavioural self-regulation is not developed sufficiently. Young teachers aged 19-24 are the most vulnerable category of pedagogues in terms of behavioural self-regulation. Teachers aged 25-39, who are more flexible and adaptable than young and experienced teachers, are the most active and adaptable part of the teaching community. They demonstrate mature personal attitudes to globalisation processes, which makes them optimistic about Ukraine's current social crisis and the most capable of social and psychological adaptation. This leads to a high level of readiness to teach the complex material of worldview content to pupils.

Psychological support of a teacher's professional activity is most needed, first of all, by young teachers. It should be conducted through the development of psychological self-regulation in order to gain the mental stability. Therefore, communication trainings in the structure of psychological support of a pedagogue's professional activity should be present to a lesser extent comparing to trainings on the personality's psychological self-regulation development. The development and testing of a system of psychological support for pedagogical and professional activities are the prospects for further research.

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Conflict of Interest

None.

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Соціально-психологічна адаптація педагога до глобальних світових змін в умовах довготривалого стресу

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Анотація. В сучасному світі надто виразно відбуваються глобальні трансформації (біологічні, екологічні, соціальні, економічні, технічні, культуральні тощо). Все це зумовлює важливість вирішення проблеми розвитку соціально-психологічної адаптації сучасної людини, зокрема, вчителів, до нових умов існування. Метою представленої статті було висвітлення результатів дослідження особливостей соціально-психологічної адаптації українських педагогічних працівників в умовах довготривалого стресу. У дослідженні застосовувалися такі методи аналізу емпіричних даних як анкетування, психодіагностичне тестування, змістовий аналіз відсоткових і середньостатистичних показників. У статті представлено аналіз та узагальнення результатів емпіричного дослідження стану соціально-психологічної адаптивності українських педагогічних працівників до світових змін в умовах довготривалого стресу (пандемії Covid-19, війни). Дослідження показало, що сучасні педагоги демонструють недостатній рівень адаптованості до світових змін: лише 22 % вчителів гарно адаптовані до сучасних умов і готові викладати учням світоглядний матеріал, а 27,5 % вчителів мають ознаки вираженої психологічної дезадаптації й потребують психологічної допомоги й психологічного супроводу своєї професійної діяльності. Дослідження показало, що сучасні вчителі виявляються досить морально нормативними й комунікативно компетентними, проте поведінкова саморегуляція в них виявляється розвиненою не достатньо. Автором встановлено особливості прояву адаптивного потенціалу особистості сучасних вчителів різних вікових категорій. Педагоги 25-39 років порівняно з молодими (19-24 років) й більш досвідченими вчителями (40-66 років) виявляються найбільш адаптивною частиною педагогічної спільноти. Показник їх адаптивного потенціалу значно перевищує аналогічні показники у вчителів інших вікових категорій за рахунок більш розвиненої у них здатності до поведінкової саморегуляції. Педагоги 40-66 років найбільш за всіх продемонстрували високу моральну нормативність. Доволі складно соціально-психологічна адаптація відбувається у молодих вчителів 19-24 років, адже ця вікова категорія є найбільш уразливою в плані поведінкової саморегуляції. Результати дослідження можуть бути використані для створення програм підтримки педагогічної діяльності, що сприяють підвищенню професійної ефективності та стабільності освітнього процесу

Ключові слова: глобальні трансформації в суспільстві; педагогічні працівники; психологічна адаптивність особистості; поведінкова регуляція; комунікативна компетентність; моральна нормативність

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