

# Psychological Risk Factors of the Neurotization of Adolescents under the Conditions of Quarantine Measures of the COVID-19 Epidemic

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**Abstract:** *The work analyzes the individual psychological factors that determine the risks of the neurotization of adolescents under the conditions of quarantine measures during the COVID-19 epidemic in order to improve psychoprophylactic correctional programs. Applying the neuroticism questionnaire by A. Kokoshkarova and Multifactor questionnaire by R. Cattell, an empirical examination of 152 adolescents between the ages of 15 and 17 showed that quarantine measures under pandemic conditions increase the risk of neurotic disorders of adolescents owing to a very similar constellation of changes in such individual psychological factors as forced isolation, emotional instability because of exhausting tension, anxiety and worry emerging from timidity. Hence, preventive and rehabilitative measures, aimed at reducing the risks of adolescents neurotization after the quarantine period in the face of an epidemiological threat should be focused primarily on increasing communication openness, emotional stability, social courage, self-confidence reducing anxiety and tension.*

**Keywords:** *neurotic disorders; adolescents; quarantine measures; the COVID-19 epidemic; individual psychological qualities.*

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## 1. Introduction

The problem of the COVID-19 epidemic has had not only serious consequences for the physical health of the population but also a negative impact on people's psychological well-being. It is related to the feeling of threat to life and health, as well as the difficulty of adapting people to special quarantine conditions. Such measures changed the usual way of social life radically that disrupted the adaptive potential of people. It resulted in mental disorders and, in particular, neurotization.

One of the most vulnerable social groups is adolescents (Aleksandrov et al., 2017). As a result of the lack of life experience, it is much more difficult for them to adapt, including the adaptation to quarantine restrictions under the threat of the COVID-19 epidemic. These extraordinary circumstances of a radical change in the way of social existence, in addition to the peculiarities of the awkward age, lead to significant psychological traumatization of adolescents. This causes the neurotization owing to the violation of the compensatory protective mechanisms.

## 2. Literature Review

The problem of neurotic disorders as reactions to stress-inducing factors in general, and adolescents in particular, has been considered in the works of many scientists (Bridges et al., 2004; Chess & Hassibi, 1978; Davis et al., 2014; Garrett, 2003; Gratz et al., 2010; Kokoshkarova, 1984; Lawrence et al., 2017; Robins et al., 2012). At the same time, the peculiarities of the neuroses of adolescents under the conditions of quarantine measures resulting from the high epidemiological threat still remain an insufficiently developed topic that determined our interest in this problem. Therefore, the **aim** of the study is to analyze the individual psychological factors that determine the risks of adolescents' neurotization under quarantine measures to improve psychoprophylactic correctional programs.

## 3. Methodology

The choice of psychodiagnostic methodologies is conditioned by the need for a comprehensive study of the psychological factors of adolescents' neurotization under the conditions of quarantine measures in order to achieve the objectives of the empirical research. Taking into account the diversity of neurotic manifestations, the empirical study tools included appropriate psychodiagnostic methodologies:

1) The choice of the standardized questionnaire for detecting neuroticism by A. Kokoshkarova (Kokoshkarova, 1984) is conditioned by the fact that intrapersonal problems, arising in the context of quarantine restrictions of adolescents and general social tensions because of the epidemiological situation and are not being resolved, cause neurotic reactions that lead to the formation of unproductive compensatory mechanisms. In addition, this methodology is widely used in the process of psychological support of school students to prevent neurotic states. After the COVID-19 epidemic had begun, we conducted a retest of adolescents to compare the risks of neurotic disorders before the pandemic and after the quarantine period. On the basis of the analysis of answers to 83 questions, this technique allows determining the level of the following indicators: sincerity, autonomic disturbances (ICD-10: G90), neurasthenia (ICD-10: F48.0), psychasthenia (ICD-10: F48.8), histrionic personality disorder (ICD-10: F60.4), hypochondria (ICD-10: F45.2), depression (ICD-10: F32), derealization and depersonalization (ICD-10: F48.1) (Table 1).

**Table 1.** The criteria for the intensity of neurotic states

Scales	Normal range	Vivid trend	Strong trend
	«↔»	«+»	«++»
Sincerity	4-8		
Autonomic disturbances	≤ 6	7-9	≥ 10
Neurasthenia	≤ 5	6-8	≥ 9
Psychasthenia	≤ 7	8-10	≥ 11
Histrionic personality disorder	≤ 3	4-5	≥ 6
Hypochondria	≤ 2	3	≥ 4
Depression	≤ 3	4-5	≥ 6
Derealization and depersonalization	0	1	≥ 2

2) The multifactor questionnaire by R. Cattell & Mead (2008) (16-PF form C) for the diagnosis of personality factors of neuroticism includes the following scales of 16 Primary factors: Warmth (A); Reasoning (B); Emotional Stability (C); Dominance (E); Liveliness (F); Rule-Consciousness (G); Social Boldness (H); Sensitivity (I); Vigilance (L); Abstractedness (M); Privatness (N); Apprehension (O); Openness to Change (Q1); Self-Reliance (Q2); Perfectionism (Q3); Tension (Q4).

In addition, to interpret the results correctly, a survey of adolescents was conducted to identify a subjective assessment of changes in their psychological well-being under the quarantine restrictions.

The empirical basis of the study involved 152 adolescents between the ages of 15 and 17, who underwent a routine examination in schools of Ukraine according to the methodology by A. Kokoshkarova under psychological support during November 2019. In addition, an online retest study was conducted in May 2020 with the same category of respondents in order to identify the dynamics of the risks of neurotic disorders under quarantine measures during the COVID-19 epidemic. The processing and interpretation of the results were carried out at the Department of Social Work of the Faculty of Psychology of Taras Shevchenko National University of Kyiv (Kyiv, Ukraine) and the Department of Legal Psychology of the National Academy of Internal Affairs (Kyiv, Ukraine).

On the basis of the study objectives, we conducted a mathematical and statistical analysis of the main correlations of the risk indicators of various neurotic disorders according to the methodology by A. Kokoshkarova with indicators of individual psychological factors according to the methodology by Cattell & Mead (2008). In the course of processing, the existing relationships were determined by calculating Spearman's rank correlation coefficient. This is due to the fact that the metrics obtained are not subject to the law of normal distribution. It should be noted that concerning the sample size ( $n=152$ ), the statistical value of  $r_s$  is not less than 0.160 with  $p \leq 0.05$ , the high value of  $r_s$  is not less than 0.210 with  $p \leq 0.01$ , and the maximum value of  $r_s$  is 0.266 with  $p \leq 0.001$ .

The study was performed in accordance with the requirements and provisions of the Ethics Code of Taras Shevchenko National University of Kyiv (Protocol No. 2 of 27.12.2017). Informed consent was obtained from all participants who were guided by the principles of academic integrity, accountability, ethical norms, and rules established by law during the scientific process to establish confidence in the results of creative achievements. They could refuse to participate in the study at any time.

#### **4. Results**

A comparison of the results of the initial testing of adolescents before the pandemic, and the results of a retest after 2 months of quarantine, showed some changes (Table 2).

**Table 2.** The average results of the test and retest of adolescents according to the methodology by A. Kokoshkarova

	Sincerity	Autonomic disturbances	Neurasthenia	Psychasthenia	Histrionic personality disorder	Hypochondria	Depression	Derealization and depersonalization
Test	4.73	4.62	3.53	5.41	2.60	0.85	1.11	0.52
Retest	5.21	4.93	6.47	8.78	3.11	3.86	3.92	0.84

Thus, all the indicators had been within the norm before the epidemic, but there were noticeable changes after the quarantine. First, an increase of neurasthenia and psychasthenia, which have reached the level signaling the existence of disorders, is remarkable. The rate of hypochondria is close to the limit, which indicates an aggravation of concern for the health in terms of the epidemic uncertainty. The level of depression has also almost reached critical levels, which also proves the risks of the neurotic disorder of this type. Other indicators did not change significantly.

## 5. Limits and Discussion

The general upward trend in the risks of psychasthenia, neurasthenia, hypochondria, and depression is not informative (Bridges, Denham, & Ganiban, 2004; Ding, & Kalashnyk, 2020; Lawrence et al., 2017) as it does not explain the changes in the individual psychological constructs of adolescents that occur as a result of the stressful conditions of quarantine. Therefore, our study expanded the understanding of the risks of neurotic conditions. Thus, in particular, the methodology by A. Kokoshkarova and the methodology by Cattell and Mead (2008) determined the leading correlations of these neurotic states with personal factors (Table 3).

**Table 3.** The correlations of neurotic states according to the methodology by A. Kokoshkarova with personal factors according to the methodology by Cattell and Mead (2008)

		The methodology by A. Kokoshkarova							
		Sincerity	Autonomic disturbances	Neurasthenia	Psychasthenia	Histrionic personality disorder	Hypochondria	Depression	Derealization and depersonalization
The methodology by R. Cattell 16-PF	A	0.002	-0.127	-0.081	-0.170	-0.133	-0.041	-0.013	-0.047
	B	-0.039	-0.157	-0.050	-0.084	-0.021	0.109	-0.102	0.007
	C	-0.116	-0.262	-0.239	-0.230	-0.126	-0.116	-0.164	-0.007
	E	-0.101	-0.084	0.014	-0.112	-0.048	-0.065	0.039	-0.050
	F	-0.125	-0.189	-0.048	-0.181	-0.001	-0.143	-0.213	-0.048
	G	-0.161	-0.114	-0.115	-0.032	-0.060	-0.069	0.021	0.089
	H	0.134	-0.199	0.062	-0.192	-0.082	-0.102	-0.035	-0.038
	I	-0.054	0.035	-0.040	-0.086	-0.183	0.011	-0.036	-0.001
	L	-0.154	0.075	-0.009	0.066	0.073	-0.008	0.085	0.018
	M	-0.004	0.037	0.023	0.044	-0.048	0.086	0.055	0.020
	N	-0.003	-0.051	-0.063	0.060	-0.036	-0.049	0.061	-0.027
	O	-0.083	0.168	0.174	0.178	0.075	0.068	0.092	0.027
	Q1	0.017	0.107	0.023	0.053	-0.084	0.011	0.080	-0.003
	Q2	-0.047	-0.048	-0.049	-0.023	0.048	0.042	-0.066	-0.088
	Q3	-0.213	0.069	-0.094	-0.060	0.037	0.040	0.065	0.155
	Q4	-0.018	0.063	0.163	0.112	-0.022	-0.074	0.043	-0.153

The mentioned indicators show that the increase in the risks of psychasthenia is associated with an increase in isolation (factor A  $r_s = -0.170$ ,  $p \leq 0.05$ ), emotional instability (factor C  $r_s = -0.230$ ,  $p \leq 0.01$ ), anxiety (factor F  $r_s = -0.181$ ,  $p \leq 0.05$ ), timidity (factor H  $r_s = -0.192$ ,  $p \leq 0.05$ ), and worry (factor O  $r_s = 0.178$ ,  $p \leq 0.05$ ).

The increase in the risks of neurasthenia is related to an increase in such personal qualities as emotional instability (factor C  $r_s = -0.239$ ,  $p \leq 0.01$ ), worry (factor O  $r_s = 0.174$ ,  $p \leq 0.05$ ), and debilitating tension (factor Q4  $r_s = 0.163$ ,  $p \leq 0.05$ ).

The risk of increased depression is connected with emotional instability (factor C  $r_s = -0.164$ ,  $p \leq 0.05$ ) and anxiety (factor F  $r_s = -0.213$ ,  $p \leq 0.01$ ).

In addition, the risks of autonomic disorders showed correlations similar to psychasthenia, indicating the similar nature of the neurotic risk of these forms. In particular, autonomic disorders of neurotic nature are associated with an increase in emotional instability (factor C  $r_s = -0.262$ ,  $p \leq 0.01$ ), anxiety (factor F  $r_s = -0.189$ ,  $p \leq 0.05$ ), timidity (factor H  $r_s = -0.199$ ,  $p \leq 0.05$ ), and worry (factor O  $r_s = 0.168$ ,  $p \leq 0.05$ ).

The abovementioned conclude that quarantine measures under the conditions of a pandemic increase the risks of neurotic disorders of adolescents owing to a very similar constellation of changes in individual psychological factors: forced isolation, emotional instability because of exhausting tension, anxiety and worry emerging from timidity.

## 6. Conclusions

The conducted analysis identified the peculiarities of the risks of neurotic disorders of adolescents under quarantine measures. In addition, it clarified that preventive and rehabilitative measures, aimed at reducing the risks of adolescents' neurotization after the quarantine period under the epidemiological threat of COVID-19, should focus primarily on increasing communication openness, emotional stability, social courage, self-confidence reducing anxiety and tension.

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