

Original Research

The role of adverse childhood experiences in the motivation for treatment of mental disorders: secondary analysis of a cross-sectional study.

Ekaterina S. Gerasimchuk¹, Olga V. Gorbunova¹, Sergey N. Portenier¹, Natalia B. Lutova¹, Mikhail Yu. Sorokin¹

¹ Department of pharmaco-psychotherapy of patients with mental disorders, V.M. Bekhterev National Medical Research Center for Psychiatry and Neurology

Keywords: adverse childhood experience, patient engagement, motivation, mental disorders, trauma, stigma, adults

<https://doi.org/10.55922/001c.142324>

International Journal of Psychiatric Trainees

Vol. 3, Issue 2, 2025

Background

Motivation for treatment is an essential component of patients' compliance for mental disorders therapy, and it can be influenced by factors such as adverse childhood experiences (ACEs), temperament and character, and internalized stigma. In this study we aim to determine the associations between ACEs, temperament, character, and internalized stigma with motivation for pharmaco-psychotherapy in psychiatric patients.

Methods

We conducted a cross-sectional study including Russian patients aged over 18 years with severe mental disorders. Adverse Childhood Experience (ACE) were assessed with the ACE Questionnaire (ACE-10) and the WHO ACE International Questionnaire (ACE-IQ). Correlation and variance analyses were conducted with personality traits (Internalized Stigma of Mental Illness scale (ISMI), Cloninger's Temperament and Character Inventory (TCI)), and treatment motivation (Treatment Motivation Assessment Questionnaire (TMAQ)). Thereafter a logistic regression model was constructed.

Results

133 patients were included, of which 102 patients were used for analyses. Diagnoses coded according to ICD-10 in categories of F2, F3, F6. ACE-10 showed stronger correlations with patient's clinical-anamnestic characteristics and more sensitivity regarding the quantity of ACE than the WHO ACE-IQ (ACE-10: low ACEs = 27, high ACE = 36; WHO ACE-IQ: low ACEs = 31, high ACEs = 32; $\chi^2=11.7$; $df=1$; $p=0.001$). The logistic regression models showed that higher education ($B=1.955$; $\text{Exp}(B)=7.067$; $p=0.011$) and a history of more ACEs ($B=0.337$; $\text{Exp}(B)=1.4$; $p=0.016$) are associated with higher motivation for treatment. Different types of ACEs had opposite effects: a history of emotional abuse ($B=-2.353$; $\text{Exp}(B)=0.095$; $p=0.015$) was associated with a lower motivation for therapy, while frequent observation of violence towards the mother or stepmother ($B=2.725$; $\text{Exp}(B)=15.262$; $p=0.011$) with higher motivation for treatment.

Conclusion

Adverse childhood experiences in clinical groups can be informative for a more comprehensive understanding of treatment motivation.

INTRODUCTION

It is well-researched that adverse childhood experiences have a significant long-term impact on a person's mental and physical health throughout their life,^{1,2} mediated by anatomical and functional changes in the body.^{3,4} The prevalence of adverse childhood experiences (ACEs) in the general population is relatively high, with various estimates reporting that at least 25%⁵ of respondents have ex-

perienced at least one adverse event before the age of 18. However, psychological distress in early childhood does not always lead to mental health problems in the future, as it is not an obligatory risk factor and depends on the combined influence of genetic and epigenetic factors.⁶ Nevertheless, according to a meta-analysis by Thomas et al.,⁷ ACEs are associated with poorer prognosis in the treatment of psychotic disorders in adulthood. The presence of such an association likely necessitates changes in approaches to the

treatment and rehabilitation of patients who have had adverse experiences in childhood.

In order to operationalize the concept of ACEs further for use in clinical practice and further study in clinical settings requires first a reliable and valid questionnaire. However, when studying ACEs, researchers inevitably encounter extreme heterogeneity in the composition of adverse situations and the nature of their recording and subsequent analysis using existing assessment tools. In 1998, B. Felitti et al.⁸ conducted the first significant study on the association between adverse childhood experiences and the risks of developing diseases in adulthood, proposing the ACEs assessment tool (ACE-10), which included seven questions about various negative situations before the age of 18. This tool is still used in research today.⁹ Today more than twenty different versions of ACEs assessment scales have been proposed differing in their composition and structure.¹⁰⁻¹² All these factors raise the issue of choosing an instrument that allows for the most effective assessment of adverse childhood experiences in a specific research sample. When reliable clinical measurement of ACEs based on such an instrument were feasible, this would simplify the assessment of ACEs and to use them for clinical guidance.

In addition to ACEs, significant and well-studied influence on patient motivation is the stigma of mental illness. It has been shown that patients who have experienced adverse childhood experiences are more prone to internalizing stigma.¹³ Consequently, it is not surprising that internalized stigma of psychiatric disorders is associated with reduced healthcare-seeking behavior and lower treatment adherence.¹⁴ Stigma is a crucial issue in psychiatric healthcare because individuals with self-stigmatization tendencies tend to use avoidance and alienation as coping strategies, isolating themselves from participation in social life.¹⁵ Self-stigmatized individuals also exhibit low levels of self-esteem, self-efficacy, and quality of life,¹⁶ and they are less successful in professional skills.¹⁷

Another factor influencing the course of mental illness is the personality characteristics of temperament and character. The Cloninger model is based on the premise that temperament traits are the result of adaptive responses to novelty, danger, and reward. These temperaments are seen as primary, biologically determined drives, while personality traits reflect the ability to regulate and control behavior. Previous findings from studies on the relationship between character and temperament have shown higher levels of harm avoidance and neuroticism associated with higher levels of symptoms, a tendency to passive coping, greater self-stigmatization, lower quality of life, and harm avoidance associated with higher suicidal range.¹⁸ Temperament can significantly influence a patient's motivation for treatment, particularly their willingness and ability to adhere to therapeutic recommendations. For example, people with high levels of persistence may exhibit higher motivation and be ready to follow treatment guidelines, whereas those prone to anxiety and impulsivity may struggle with adhering to the treatment plan.

A review of articles focusing on the relationship between stressful events and motivation revealed a lack of studies examining motivational factors as outcome variables following traumatic experiences.¹⁹ At the same time, it has been shown that individuals who have experienced traumatic events in childhood exhibit reduced positive expectations regarding future endeavours due to decreased self-efficacy, self-esteem, and impaired emotion regulation, which mediate the disturbances in motivational concepts.^{19,20}

Taken together, ACEs, temperament and character and stigma may influence treatment adherence. As ACEs may also influence stigma and personality characteristics and thus treatment motivation indirectly, it is of relevance to study their relations together and in an integrative manner to better understand the interactions between these phenomena.

The aim of the study was first to assess clinical validity of two widely used ACEs questionnaires. The main aim was to bring to light the relationships between the predictors ACEs, stigma, temperament and sociodemographic, clinic and anamnestic characteristics the outcome motivation for treatment among patients with psychiatric disorders. Additionally, the impact of specific ACEs on motivation for treatment was explored.

MATERIALS AND METHODS

PARTICIPANTS

The study participants were selected from patients receiving treatment at the V.M. Bekhterev National Medical Research Center, P.P. Kashchenko Hospital, and City Psychiatric Hospital No. 6 in St. Petersburg in 2019-2021¹.

Inclusion criteria were: 1) age over 18 years; 2) voluntary informed consent to participate; 3) voluntary hospitalization/clinical observation; 4) the patient's ability to understand the research objectives and perform the necessary experimental-psychological procedures following the study design; 5) diagnosis by ICD-10 criteria, coded in the categories of F2, F3, F4, F6. Exclusion criteria were: 1) patients receiving treatment for conditions coded in ICD-10 categories other than F2, F3, F4, F6; 2) presence of significant cognitive impairments or consciousness disorders at the time of assessment; 3) pronounced psychotic symptoms that hindered the execution of the research procedures.

STUDY DESIGN

To address the aims, an observational cross-sectional study design was chosen.

OUTCOME MEASURES

The study was conducted using a set of psycho-diagnostic methods: Adverse Childhood Experience (ACE-10) questionnaire for assessing adverse childhood experiences²¹; WHO Adverse Childhood Experience International Ques-

tionnaire (ACE-IQ)²²; Internalized Stigma of Mental Illness (ISMI) scale²³; Cloninger's Temperament and Character Inventory (TCI)²⁴; and Treatment Motivation Assessment Questionnaire (TMAQ)^{1,19}

STATISTICAL ANALYSES

Statistical analysis was performed using SPSS 26.0 and Jamovi (Version 2.3.28) <https://www.jamovi.org>. According to the power calculation results, we would need a sample size of 100 to reliably (with a probability greater than 0.8) detect an effect size of $\delta \geq 0.4$, assuming a two-sided criterion for detection that allows for a maximum Type I error rate of $\alpha=0.05$. The Shapiro-Wilk test was used to evaluate the normality of the data distribution. To counteract the various comparisons problem was use the Bonferroni correction.

For the preliminary analysis on the ACEs scale clinical validity, we used Pearson's chi-square test and Cramer's V to examine the consistency of the results of 2 different ACEs questionnaires. Student's t-test, Cohen's d and Rosenthal's R were also used to assess the significance of differences in means, as well as the effect size between variables.

For the main analysis exploring the effects on motivation for treatment correlation of the other predictors and the logistic regression model, several types of analysis were applied: at the first stage, dispersion with the use of Student's t-test (presence of children, mental disability) and ANOVA (level of education, diagnosis) bringing the standardized difference in means of Cohen's d and correlation with the calculation of correlation coefficients (age, number of hospitalizations, age of onset of the disease, severity of internal stigma). At the second stage multiple logistic regression analysis was used to evaluate the combined influence of socio-demographic and clinical-psychological factors on patient motivation for therapy. The Cox & Snell's (R^2_{CS}) and Nagelkerke's (R^2_N) coefficients were used as measures of determination in the model. The significance level of the obtained coefficients was assessed using the Wald test, and the significance of the influence of all predictors included in the model was evaluated using Pearson's chi-square test.

For the additional analysis of the effects of different ACEs on motivation for treatment we also used logistic regression analysis with Cox & Snell's (R^2_{CS}) and Nagelkerke's (R^2_N) coefficients. The significance level of the obtained coefficients was assessed using the Wald test, and the significance of the influence of all predictors included in the model was evaluated using Pearson's chi-square test.

All procedures of the experimental study were approved by the independent ethics committee of the the V.M. Bekhterev National Medical Research Center and complied

with the requirements of the latest version of the Helsinki Declaration and good clinical practice (GCP) standards.

RESULTS

SAMPLE CHARACTERISTICS

133 patients were examined. Then nineteen patients were excluded from the study: eleven due to incomplete completion of the set of psycho-diagnostic methods and refusal to further participate in the survey and eight due to exacerbation of mental illness during the study. After exclusion, the study involved 102 patients with diagnoses coded according to ICD-10 in categories of F2 (Schizophrenia, schizotypal and delusional disorders) – 56 patients, F3 (Mood [affective] disorders) – 21 patients, F4 (Neurotic, stress-related and somatoform disorders) – 9 patients, and F6 (Disorders of adult personality and behaviour) – 14 patients. 22 patients (30%) had higher education, 25 (34%) had secondary vocational education, 26 (36%) had school education.

REPRESENTATION OF ACES IN THE STUDY SAMPLE

All patients included in the study were examined using both ACEs questionnaires. The results of both questionnaires were divided into subgroups based on high and low ACEs scores using median values. Using V-Kramer statistics, we identified a moderate level of agreement between the questionnaires. Among the participants, 32% scored below the median on both instruments, and 40% scored above the median on both instruments, indicating that 28% exhibited discrepancies in ACEs scores, with inconsistent classifications of high versus low scores.

CLINICAL VALIDITY OF ACE-IQ AND ACE-10

Patients with high ACE-IQ scores showed higher average transcendence (high ACEs – M 50.4 [S.D. 25.4]; low ACEs – M 30.2 [S.D. 22.4]; $p=0.02$; Cohen's $d=0.8$) and novelty seeking (high ACEs – M 50.8 [S.D. 17.9]; low ACEs – M 36 [S.D. 14.7]; $p=0.02$; Cohen's $d=0.8$). The remaining differences associated with high or low ACE-IQ scores did not reach a significance level of less than 0.05.

Patients with high ACE-10 on average were older (high ACEs – M 31.02 [S.D. 7.9]; low ACEs – M 36.6 [S.D. 14.3]; $p=0.03$; Cohen's $d=0.5$) and scored higher on factors associated with severity of disease: they were hospitalized more frequently (high ACEs – M 2.6 [S.D. 3.9]; low ACEs – M 4.4 [S.D. 4.05]; $p=0.03$; Cohen's $d=0.5$) and the number of ACEs were associated with the number of hospitalisations. Patients with high ACE-10 on average also showed more motivation for treatment, which related to treatment awareness (2 factor: high ACEs – M 0.2 [S.D. 1.1]; low ACEs – M 0.6 [S.D. 1.1]; $p=0.05$; Cohen's $d=0.7$), and personality charac-

¹ Parts of this cohort, processed using different analysis methods, are reported in other papers.³⁶⁻³⁸

Table 1. Sociodemographic and clinical-anamnestic characteristics of the sample

	Mean	Standard Deviation
Age	35.8	13
Age at disease onset	27.9	11.3
Duration of illness	9.3	9.5
Number of hospitalizations	3.6	4.1
Nosological composition of the sample		
Schizophrenia, schizotypal and delusional disorders (F2 category of ICD-10)	Mood [affective] disorders (F3 category of ICD-10)	Neurotic, stress-related and somatoform disorders (F4 category of ICD-10)
F20.0 Paranoid schizophrenia	F31.0 Bipolar affective disorder, current episode hypomanic	F42.0 Predominantly obsessional thoughts or ruminations
F20.6 Simple schizophrenia	F31.3 Bipolar affective disorder, current episode mild or moderate depression	F42.3 Hoarding disorder
F21 Schizotypal disorder	F32.0 Mild depressive episode	F43.2 adjustment disorders
F25.2 Schizoaffective disorder, mixed type	F32.3 Severe depressive episode with psychotic symptoms	F60.1 Schizoid personality disorder
	F33.1 Recurrent depressive disorder, current episode moderate	F60.3 Emotionally unstable personality disorder
		F60.4 Histrionic personality disorder
		F61 Mixed and other personality disorders

Table 2. Representation of ACEs in the study group by two instruments.

		ACE-10		Total
	ACEs level	low	high	
ACE-IQ	low	20 31.7%	11 17.5%	31
	high	7 11.1%	25 39.7%	32
Total		27	36	63 100%

Kramer-V= 0,43; $\chi^2=11,7$; df=1; p=0,001

ACEs – adverse childhood experiences; low ACEs level – low ACEs score relative to the median value of the instrument; high ACEs level – high ACEs score relative to the median value of the instrument; ACE-10 – Adverse Childhood Experience questionnaire; ACE-IQ – WHO Adverse Childhood Experience International Questionnaire.

teristics (Novelty Seeking: high ACEs – M 51.8 [S.D. 15.1]; low ACEs) and temperamental characteristics of more novelty seeking (high ACEs – M 51.8 [S.D. 15.1]; low ACEs – M 38.3 [S.D. 14.8]; $p=0.001$; Cohen's $d=0.9$), and more self-directedness high ACEs – Me 44.4 [IQR 19.8]; low ACEs – Me 55.2 [IQR 20.5]; $p=0.04$; R Rosenthal=0.4). Also, according to the results of the analysis showed an association of ACE-10 total scores with the number of hospitalizations ($\rho = -0,243$ $p=0,02$).

ASSOCIATIONS OF ACES WITH TREATMENT MOTIVATION: SOCIODEMOGRAPHIC AND CLINICAL INFLUENCES

ACE-10 proved to be more sensitive regarding the quantity of ACEs despite the absence of their severity assessment. In

this regard, further analysis was carried out based on its results.

Associations with socio-demographic and clinical-anamnestic data and the intensity of internal stigma were examined (Table 3). The overall intensity of therapeutic motivation decreased with the increasing age of the patients. Regarding the individual components of therapeutic motivation, negative factors included the presence of disability due to mental illness, having only a primary school education compared to those with higher education, diagnoses classified under categories F4 and F2 compared to F6, and F4 compared to F3, early onset of the disease, and high scores on the stigma resistance. Positive associations with therapeutic motivation were found in patients with children and a higher number of hospitalizations.

Obtained results underwent multiple binary regression analysis with outcome of high or low intensity of thera-

Table 3. Trends and effect sizes of identified associations between sociodemographic, clinic and anamnestic characteristics of patients and the structure of their motivation for treatment and internalized stigma.

		Indicators of motivation for treatment				
		factor 1	factor 2	factor 3	factor 4	Summ. score
Age			$\rho = -0.3^*$	$\rho = -0.4^{**}$	$r = -0.4^{**}$	$\rho = -0.4^*$
Children are/are not					$d = 0.8^*$	
Mental disability: yes/no					$d = 0.7^*$	
Higher Education/School Education				$d = 0.14^*$		
Diagnoses coded in F4/F3 groups				$d = 1.3^*$		
Diagnoses coded in F6/F4 groups				$d = 1.7^{**}$		
Diagnoses coded in F6/F2 groups			$d = 1.2^{**}$	$d = 1.2^*$	$d = 1.1^*$	
Number of hospitalizations		$r = 0.4^{**}$				
Age at disease onset				$\rho = -0.3^*$		
Stigma resistance (ISMI)		$\rho = -0.4^*$			$\rho = -0.5^*$	
ACE-10	Question 2: yes/no		$R = 0.4^{**}$			
	Question 4: yes/no		$R = 0.3^*$		$d = 0.8^*$	$R = 0.3^*$
	Question 7: yes/no			$R = 0.4^*$	$d = 0.7^*$	$R = 0.4^{**}$
	Question 8: yes/no	$d = 0.7^*$			$d = 1.03^*$	
	Summ. score			$\rho = 0.3^*$	$r = 0.4^*$	$\rho = 0.3^{**}$

*- $p \leq 0.05$, **- $p \leq 0.01$, d - Cohen's mean difference, R - Rosenthal correlation coefficient; r - Pearson correlation coefficient, ρ - Spearman's rank correlation coefficient; factor 1 - reliance on own knowledge and skills in overcoming the disease, factor 2 - understanding the need for treatment, factor 3 - understanding the psychological mechanism of painful disadaptation, factor 4 - readiness to cooperate actively in the treatment process, summ. score - common intensity of motivation for treatment; question 2 - experience of physical abuse in childhood, question 4 - experience of emotional neglect in childhood, question 7 - observation of violence against the mother or stepmother, question 8 - abuse of alcohol or other psychoactive substances (substances) by a close relative.

peutic motivation (above and below the median of summed score). One of the models (predictive ability 74.2%; $p = 0.002$) demonstrated an increase in the odds of high motivation among patients with higher scores on the ACE-10 and those with higher education. The severity of internal stigma did not have a significant impact on the odds of forming intensive motivation in patients. In analyzing the associations of individual subscales of ISMI in another regression model, their indicators also did not show significant effects. The predictive ability of the model was 75.8% ($p = 0.06$), and the significance levels for the regression coefficients of all subscales were ≥ 0.199 .

Final model, accounted 77.4% ($p = 0.002$) of the variance, predicted the influence of higher education on the likelihood of high motivation among patients, increasing it by a factor of 5.92, as well as the various types of ACEs (Table 4). A positive response to one question related to emotional violence in childhood reduced the odds of high motivation in a patient by a factor of 10.5. Conversely, frequent observation of violence towards the mother or stepmother (question 7 in the ACE-10) increased the odds of high motivation for treatment in patients by a factor of 15.3.

The model exhibited relatively high sensitivity, accurately predicting 85.3% of cases of high motivation for therapy among patients, compared to its specificity (67.9%). According to the results of the ROC analysis, the model performed well as a classifier ($AUC = 0.873$)

DISCUSSION

The study utilized two alternative instruments for assessing negative childhood experiences: ACE-10 and WHO ACE-IQ. The development of questionnaires has been primarily conducted on mentally healthy respondents.⁹ In this study, the sample consisted predominantly of Russian-language patients with mental disorders. Under these conditions, the results obtained using the ACE-IQ were less frequently associated with the clinical and psychological parameters of the patients compared to the ACE-10, that also was more sensitive. Based on this, it was preferred for further use in the current study.

Overall, according to the results of the current study, significant predictors of therapeutic motivation among patients with mental disorders (including the quantity of ACEs and temperament but not stigma) when assessed separately, supported the general notion of a dose-response effect postulated by previous studies, which suggests an amplification of the severity of consequences.^{25,26}

Specific socio-demographic parameters were identified as predictors for treatment motivation. Patients with higher education were more motivated for treatment. We hypothesize that this may be due to an increased awareness of the psychological mechanism of their maladjustment and were more willing to collaborate with their doctors during treatment actively. This aligns with evidence indicating that the resources associated with higher education, along with financial stability, increase individuals' resilience to

Table 4. Results of logistic regression analysis of educational attainment and separate type of ACEs with intensity motivation for treatment

Predictor	B	Mean Square Error	p	Exp (B)
Vocational education	1.340	0.855	0.117	3.820
Higher education	1.778	0.895	0.047*	5.917
question 1	-2.353	0.972	0.015*	0.095
question 2	1.127	0.948	0.234	3.085
question 3	-0.152	0.970	0.875	0.859
question 4	0.724	0.824	0.380	2.063
question 5	0.863	1.299	0.506	2.371
question 6	-0.230	0.791	0.771	0.795
question 7	2.725	1.067	0.011*	15.262
question 8	0.656	0.874	0.453	1.927
question 9	1.269	0.807	0.116	3.557
question 10	0.450	1.610	0.780	1.568
Constant	-1.723	0.754	0.022	0.179

$R^2_{CS}=0.390$. $R^2_N = 0.522$. $\chi^2(df = 12, N = 62) = 30.650$. $p = 0.002$;

question 1 - experience of emotional abuse in childhood, question 2 - experience of physical abuse in childhood, question 3 - experience of sexual abuse in childhood, question 4 - experience of emotional neglect in childhood, question 5 - experience of physical neglect in childhood, question 6 - divorce, death or separation from a parent, question 7 - observation of violence against the mother or stepmother, question 8 - abuse of alcohol or other psychoactive substances (substances) by a close relative, question 9 - depression, other chronic mental illness or suicide of a close relative, question 10 - imprisonment of a close relative. * significance <0.05

trauma.²⁷ These factors essentially may contribute to post-traumatic personal growth, as individuals with higher education tend to be more informed about their illness, treatment options, and the availability of assistance.

An essential finding of the study was the relatively weak associations between internalized stigma of mental disorders and motivation for treatment. Only one factor of the ISMI questionnaire, resistance to stigma, demonstrated the expected negative moderate associations with specific measures of motivation assessment. However, neither the total score of internalized stigma nor its factors influenced the chances of forming high-intensity motivation for treatment, according to the regression analysis. Comparing these results with previously published data²⁸ highlights discrepancies between the findings of the current and earlier studies. Resolving these conflicts will require future research involving larger and more diverse patient groups, as the impact of stigma on motivation may vary across different populations.

Among all the types of adverse childhood experiences examined in our study, the most pronounced consequences were associated with emotional neglect, alcohol or substance abuse by close relatives, and witnessing violence against the mother or stepmother. These findings align with previous research suggesting that such experiences hindered developmental needs in childhood and increased the risk of additional adverse events that disrupt mental well-being.²⁹

The results of additional analysis of individual ACEs types showed childhood emotional abuse reduced the chances of forming intensive therapeutic motivation in adult patients while witnessing violence against the mother or stepmother in childhood increased the likelihood of intensive motivation. The ambiguity of the obtained data

further supports the notion that individuals respond differently to traumatic events. For some individuals, the experienced traumas become a source of post-traumatic growth in cases of positive reappraisal and acceptance of the traumatic event.^{30,31} Opposing effects found for adverse childhood experiences using more rigorous methodological approaches demonstrate the ambiguity of its role in the psychology of the treatment process among patients with psychiatric profiles.

Assessing the combined influence of social, clinical, and psychological predictors on patient motivation for treatment represents a particular scientific and practical interest. Patients with mental disorders, with their specific social, clinical, and psychological characteristics, do not simply represent a sum of individual variables but rather integrate a dynamic set of factors.^{32,33} This was convincingly confirmed by the results of the conducted multiple logistic regression. Well-studied isolated negative associations between therapeutic motivation and patient adherence to treatment with stigma,³⁴ when compared with its effects in conjunction with other biopsychosocial factors, demonstrate a significantly lower impact of stigma on the treatment process than expected.³⁵ On the contrary, for elements of adverse childhood experiences, previously obtained data were confirmed the relations between ACEs and treatment motivation remained significant in models where other factors including stigma and temperament were included.³⁶

It is important to highlight some limitations of the current study. The selection of participants was multicenter, but the sample cannot be considered representative because it included a heterogeneous group of patients treated in a hospital and treated at a dispensary with different diagnoses, age, and social status, so extrapolating the results

of the work should be done with caution. The study's results may also have been influenced by the size of the sample studied and the non-simultaneous collection of data. Respondents filled out the questionnaires by themselves, some of which involved a retrospective evaluation of their experiences, and therefore, the results may have been subject to cognitive bias. The cross-sectional design of the study does not allow us to draw definitive conclusions about cause-effect relationships. However, the identified regularities and their theoretical explanations can be a basis for further research.

CONCLUSION

The role of social, clinical, and psychological characteristics in the psychology of the treatment process among patients with mental disorders should be considered from a combined influence perspective since their implementation, particularly in the formation of treatment motivation, is ensured through a dynamic set of effects. The integrative contribution of adverse childhood experiences is of crucial importance; however, unlike internalized stigma of mental disorders, it can be equally associated with both more and less adaptive motivational models among patients during their treatment.

.....

AUTHORS' CONTRIBUTIONS

Mikhail Yu.Sorokin: development of research design; Ekaterina S. Gerasimchuk, Olga V. Gorbunova, Sergey N. Portenier: obtaining data for analysis, analysis of obtained data; Ekaterina S. Gerasimchuk, Mikhail Yu.Sorokin: writing manuscript text; Mikhail Yu.Sorokin, Natalia B. Lutova: development of the idea, setting the research objectives, discussion of the results, and formation of conclusions. All authors contributed significantly to the research and preparation of the article, and read and approved the final version before publication.

DECLARATION OF CONFLICT OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

ROLE OF FUNDING

None to declare.

Submitted: June 18, 2023 CET. Accepted: January 14, 2025 CET. Published: October 28, 2025 CET.



This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CCBY-4.0). View this license's legal deed at <http://creativecommons.org/licenses/by/4.0> and legal code at <http://creativecommons.org/licenses/by/4.0/legalcode> for more information.

REFERENCES

1. Hughes K, Bellis MA, Hardcastle KA, et al. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *Lancet Public Health*. 2017;2(8):356-366. doi:[10.1016/S2468-2667\(17\)30118-4](https://doi.org/10.1016/S2468-2667(17)30118-4)
2. Gehred M, Knodt A, Ambler A, et al. Long-term Neural Embedding of Childhood Adversity in a Population-Representative Birth Cohort Followed for 5 Decades. *Biological Psychiatry*. 2021;90(3):182-193. doi:[10.1016/j.biopsych.2021.02.971](https://doi.org/10.1016/j.biopsych.2021.02.971)
3. Nordholm D, Krogh J, Mondelli V, et al. Pituitary gland volume in patients with schizophrenia, subjects at ultra high-risk of developing psychosis and healthy controls: A systematic review and meta-analysis. *Psychoneuroendocrinology*. 2013;38:2394-2404. doi:[10.1016/j.psyneuen.2013.06.030](https://doi.org/10.1016/j.psyneuen.2013.06.030)
4. Cullen AE, Rai S, Vaghani MS, et al. Cortisol responses to naturally occurring psychosocial stressors across the psychosis spectrum: A systematic review and meta-analysis. *Front Psychiatry*. 2020;11:513. doi:[10.3389/fpsy.2020.00513](https://doi.org/10.3389/fpsy.2020.00513)
5. Velemínský MSr, Dvořáčková O, Samková J, Rost M, Sethi D, Velemínský MJr. Prevalence of adverse childhood experiences (ACE) in the Czech Republic. *Child Abuse Negl*. 2020;102:104249. doi:[10.1016/j.chiabu.2019.104249](https://doi.org/10.1016/j.chiabu.2019.104249)
6. Misiak B, Karpiński P, Szmidt E, et al. Adverse Childhood Experiences and Methylation of the FKBP5 Gene in Patients with Psychotic Disorders. *Journal of Clinical Medicine*. 2020;9(12):3792. doi:[10.3390/jcm9123792](https://doi.org/10.3390/jcm9123792)
7. Thomas S, Höfler M, Schäfer I, et al. Childhood maltreatment and treatment outcome in psychotic disorders: a systematic review and meta-analysis. *Acta Psychiatrica Scandinavica*. 2019;140(4):295-312. doi:[10.1111/acps.13077](https://doi.org/10.1111/acps.13077)
8. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med*. 1998;14(4):245-258. doi:[10.1016/s0749-3797\(98\)00017-8](https://doi.org/10.1016/s0749-3797(98)00017-8)
9. Velemínský MSr, Dvořáčková O, Samková J, Rost M, Sethi D, Velemínský MJr. Prevalence of adverse childhood experiences (ACE) in the Czech Republic. *Child Abuse Negl*. 2020;102:104249. doi:[10.1016/j.chiabu.2019.104249](https://doi.org/10.1016/j.chiabu.2019.104249)
10. Holden GW, Gower T, Chmielewski M. Methodological considerations in ACEs research. In: *Adverse Childhood Experiences*. Elsevier; 2020:161-182. doi:[10.1016/B978-0-12-816065-7.00009-4](https://doi.org/10.1016/B978-0-12-816065-7.00009-4)
11. Ujhelyi Nagy A, Kuritár Szabó I, Hann E, Kósa K. Measuring the Prevalence of Adverse Childhood Experiences by Survey Research Methods. *Int J Environ Res Public Health*. 2019;16(6):1048. doi:[10.3390/ijerph16061048](https://doi.org/10.3390/ijerph16061048)
12. Center for youth wellness. Accessed May 23, 2023. <https://centerforyouthwellness.org/aceq-pdf/>
13. Lutova NB, Sorokin MYu, Novikova KE, et al. Childhood Adversity as a Factor of Self-Stigma in Patients with Schizophrenia. *Psychiatry, Psychotherapy and Clinical Psychology*. 2020;11(4):665-675. doi:[10.34883/PI.2020.11.4.001](https://doi.org/10.34883/PI.2020.11.4.001)
14. Yilmaz E, Okanlı A. The effect of internalized stigma on the adherence to treatment in patients with schizophrenia. *Arch Psychiatr Nurs*. 2015;29:297-301. doi:[10.1016/j.apnu.2015.05.006](https://doi.org/10.1016/j.apnu.2015.05.006)
15. Schwarzbald ML, Kern RS, Novacek DM, McGovern JE, Catalano LT, Green MF. Self-stigma in psychotic disorders: Clinical, cognitive, and functional correlates in a diverse sample. *Schizophr Res*. 2021;228:145-150. doi:[10.1016/j.schres.2020.12.003](https://doi.org/10.1016/j.schres.2020.12.003)
16. Dubreucq J, Plasse J, Franck N. Self-stigma in Serious Mental Illness: A Systematic Review of Frequency, Correlates, and Consequences. *Schizophrenia Bulletin*. 2021;47(5):1261-1287. doi:[10.1093/schbul/sbaa181](https://doi.org/10.1093/schbul/sbaa181)
17. Yanos PT, West ML, Gonzales L. Change in internalized stigma and social functioning among persons diagnosed with severe mental illness. *Psychiatry Res*. 2012;200(2-3):1032-1034. doi:[10.1016/j.psychres.2012.06.017](https://doi.org/10.1016/j.psychres.2012.06.017)
18. Scholte-Stalenhoef AN, Pijnenborg GHM, Hasson-Ohayon I, Boyette LL. Personality traits in psychotic illness and their clinical correlates: A systematic review. *Schizophr Res*. 2023;252:348-406. doi:[10.1016/j.schres.2023.01.001](https://doi.org/10.1016/j.schres.2023.01.001)
19. Sorokin MYu, Lutova NB, Wied VD, et al. *Method for Systemic Assessment of Motivation for Treatment in Patients with Mental Disorders: Methodological Recommendations*. V. M. Bekhterev National Medical Research Center for Psychiatry and Neurology; 2020.

20. Reidy DE, Niolon PH, Estefan LF, et al. Measurement of Adverse Childhood Experiences: It Matters. *Am J Prev Med.* 2021;61(6):821-830. doi:[10.1016/j.amepre.2021.05.043](https://doi.org/10.1016/j.amepre.2021.05.043)
21. Finkelhor D, Shattuck A, Turner H, Hamby S. A revised inventory of Adverse Childhood Experiences. *Child Abuse Negl.* 2015;48:13-21. doi:[10.1016/j.chiabu.2015.07.011](https://doi.org/10.1016/j.chiabu.2015.07.011)
22. Katan EA. Using the international questionnaire of adverse childhood experiences to identify psychotraumatic factors in childhood and adolescence. *Med psihol Ross.* 2019;11(2):8. doi:[10.24412/2219-8245-2019-2-8](https://doi.org/10.24412/2219-8245-2019-2-8)
23. Ritsher JB, Otilingam PG, Grajales M. Internalized stigma of mental illness: psychometric properties of a new measure. *Psychiatry Res.* 2003;121(1):31-49. doi:[10.1016/j.psychres.2003.08.008](https://doi.org/10.1016/j.psychres.2003.08.008)
24. Enikolopov SN, Efremov AG. Approbation of the biosocial Cloninger method "The structure of character and temperament." In: *Materials of the 1st international conference dedicated to the memory of Zeigarnik B. V.* ; 2001:104-105.
25. Bebbington PE, Jonas S, Kuipers E, King M, Cooper C, Brugha T, et al. Sexual abuse and psychosis: data from an English National Survey. *Br J Psychiatry.* 2011;199(1):29-37. doi:[10.1192/bjp.bp.110.083642](https://doi.org/10.1192/bjp.bp.110.083642)
26. Read J, Bentall RP, Fosse R. Time to abandon the bio-bio-bio model of psychosis: Exploring the epigenetic and psychological mechanisms by which adverse life events lead to psychotic symptoms. *Epidemiol Psychiatr Soc.* 2009;18:299-310. doi:[10.1017/S1121189X00000257](https://doi.org/10.1017/S1121189X00000257)
27. Campbell-Sills L, Forde DR, Stein MB. Demographic and childhood environmental predictors of resilience in a community sample. *J Psychiatr Res.* 2009;43(12):1007-1012. doi:[10.1016/j.jpsychires.2009.01.013](https://doi.org/10.1016/j.jpsychires.2009.01.013)
28. Sorokin MYu, Neznanov NG, Lutova NB, Wied VD. Revisiting Drug Compliance: The Need for a Holistic Approach in the Treatment of Severe Mental Disorders. *Consortium Psychiatricum.* 2021;2(3):17-25. doi:[10.17816/CP93](https://doi.org/10.17816/CP93)
29. Keane CA, Magee CA, Kelly PJ. Is there Complex Trauma Experience typology for Australian's experiencing extreme social disadvantage and low housing stability? *Child Abuse Negl.* 2016;61:43-54. doi:[10.1016/j.chiabu.2016.10.001](https://doi.org/10.1016/j.chiabu.2016.10.001)
30. Zhou X, Wu X, An Y, et al. The role of rumination and social support in the associations between core beliefs challenge and post-traumatic growth among adolescent survivors after Wenchuan earthquake. *Acta Psychol Sin.* 2014;46:1509. doi:[10.3724/SP.J.1041.2014.01509](https://doi.org/10.3724/SP.J.1041.2014.01509)
31. Quan L, Lu B, Sun J, et al. The relationship between childhood trauma and pos-traumatic growth among college students: The role of acceptance and positive reappraisal. *Front Psychol.* 2022;13:921362. doi:[10.3389/fpsyg.2022.921362](https://doi.org/10.3389/fpsyg.2022.921362)
32. Tripathi A, Das A, Kar SK. Biopsychosocial Model in Contemporary Psychiatry: Current Validity and Future Prospects. *Indian J Psychol Med.* 2019;41(6):582-585. doi:[10.4103/IJPSYM.IJPSYM_314_19](https://doi.org/10.4103/IJPSYM.IJPSYM_314_19)
33. Barreira DP, Marinho RT, Bicho M, et al. Psychosocial and Neurocognitive Factors Associated With Hepatitis C - Implications for Future Health and Wellbeing. *Front Psychol.* 2019;9:2666. doi:[10.3389/fpsyg.2018.02666](https://doi.org/10.3389/fpsyg.2018.02666)
34. Yilmaz E, Okanli A. The effect of internalized stigma on the adherence to treatment in patients with schizophrenia. *Arch Psychiatr Nurs.* 2015;29:297-301. doi:[10.1016/j.apnu.2015.05.006](https://doi.org/10.1016/j.apnu.2015.05.006)
35. Sorokin M, Lutova N, Wied V. Phenomenology of psychiatric stigma: A factor of patients' motivation to treatment. *Eur Psychiatry.* 2021;64(Suppl 1):S502. doi:[10.1192/j.eurpsy.2021.1344](https://doi.org/10.1192/j.eurpsy.2021.1344)
36. Gorbunova OV, Sorokin MYu, et al. Adverse childhood experiences as a factor of therapeutic motivation in psychiatric inpatients. In: Neznanov NG, Karavaieva TA, Lutova NB, et al., eds. *The Alliance of Psychology, Psychotherapy and Pharmacotherapy. Science and the Real World in the Treatment of Mental Disorders. Proceedings of the conference dedicated to the 90th anniversary of the birth of B. D. Karvasarsky. V. M. Bekhterev National Medical Research Center for Psychiatry and Neurology*; 2021:54-56.
37. Gerasimchuk ES, Sorokin MYu. Evaluation of Adverse Childhood Experiences in Patients with Mental Disorders and its Role in Treatment Process. *Psychiatry (Moscow).* 2022;20(S3(2)):122-123.
38. Lutova NB, Sorokin MYu, Novikova KE, Portenier SN, Wied VD. Childhood adversity as a factor of self-stigma in patients with schizophrenia. *Psychotherapy and Clinical Psychology.* 2020;11(4):665-675. doi:[10.34883/PI.2020.11.4.001](https://doi.org/10.34883/PI.2020.11.4.001)