



Research Article

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Interrelation between Character Accentuations and Defense Mechanisms in University Students

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Abstract

This article aims to study possible relationships between character accentuations and psychological defense mechanisms in university students. The Leonhard–Shmishek test questionnaire “Personality Accentuations” and the Plutchik–Kellerman–Conte questionnaire “Life Style Index” were used. The results were analyzed using correlation, for which the Spearman r -coefficient was used. The significance of differences between the groups was calculated using the Kruskal–Wallis H -test, and a comparative analysis of the indicator percentages was also conducted. It was found that hyperthymic, emotive, and exalted accentuations prevailed among the students surveyed. Furthermore, it was concluded that students with hyperthymic accentuation tend to use the denial defense mechanism; rationalization is inherent in students with emotive accentuation, and substitution is inherent in students with exalted accentuation. The data obtained allow for the following conclusion: the characteristic features of accentuations can influence the choice and use of certain defense mechanisms. The research results expand the possibilities in psychological and pedagogical work at the university to help students who have difficulty adapting, in academic performance, and in self-determination.

Keywords: *personality accentuation, psychological protection, self-realization, psychotype, university students*

1. Introduction

Modern conditions with rapidly changing events require new approaches to the educational process, suggesting that students can quickly adapt. Therefore, in addition to gaining knowledge, many students need additional psychological and pedagogical support, which will help them cope with internal problems associated with difficulties in adaptation, successful learning, personal development, and self-realization (Harward, 2016; Kass, 2017; Shutenko et al., 2019). Usually, these problems are caused by unconscious processes that, in the form of attitudes, stereotyped responses, and other manifestations, destructively affect human behavior. Quite often, such reactions result from the action of defense mechanisms (Kartashova & Sarvilina, 2018, 2019).

Protection mechanisms are understood as unconscious mental processes aimed at minimizing

negative experiences (Dwijendra et al., 2021). The term “psychological defenses” was first used by S. Freud in his work “Defensive Neuropsychoses” in 1894 (Freud, 2004). His daughter A. Freud defined such reactions as protective actions against external and internal dangers (Freud, 2018). She classified various defenses in situations that provoke anxiety and fears. On the one hand, psychological defenses play a positive role, helping cope with painful experiences for some time, on the other hand, defenses have a negative impact, since, due to their stereotypical repetition, they provoke inadequate neurotic reactions (Davletova et al., 2019; Nurbekova et al., 2018). In addition, protective psychological mechanisms contribute to the personality’s maladaptation, and this prevents effective development and self-realization (Zein et al., 2022; Ualiyeva, 2023). Since the action of defenses is unconscious, the person does not have an understanding of cause-and-effect relationships, and the true source of the problem remains hidden from them (Muslumov et al., 2019). Therefore, it is crucial in psychological and pedagogical work to pay special attention to the identification of defensive reactions and their comprehension (Oleinik et al., 2020; Ualiyeva et al., 2022). Since, during comprehension, defenses become less stable, a person can control them and use their positive properties, which consist in increasing adaptive capabilities, the ability to make difficult experiences not so painful; maintaining self-respect, etc. Based on these considerations, A. Freud argued that the conscious and purposeful use of defense mechanisms “makes life easier and more successful”.

The psychoevolutionary theory of emotion by R. Plutchik, H. Kellerman, and H.R. Conte is popular and the basis for creating the *Life Style Index* questionnaire. This questionnaire makes it possible to determine the most commonly used defense mechanisms: denial, repression (suppression), regression, compensation, projection, substitution, intellectualization, and rationalization (Nadezhdina, 2011).

The term “personality accentuation” was proposed by K. Leonhard in 1968. Accentuation is understood as an extreme version of the norm of individual traits that determine the selective vulnerability of the individual (Mukataeva et al., 2023). Based on Leonhard’s concept, *Personality Accentuation* test questionnaire by K. Leonhard and N. Shmishek was developed, in which ten main types of accentuations were identified: hyperthymic, emotive, anxious, demonstrative, dysthymic, sticking, pedantic, cycloid, excitable, and exalted (Istratova & Exakusto, 2016).

1.1 Research Problem

Psychological defense preferences depending on the psychotype have already been studied by foreign and domestic psychologists (Buravleva & Telelichko, 2019; Gladyshev, 2022; Mikhailova et al., 2009; Muslumov et al., 2019; Bond, 2004; Vaillant, 1994). These studies were based on the assertion that, on the one hand, the formation of psychological defenses largely depends on the individual typological characteristics of a person, and on the other hand, behavioral stereotypical reactions to stress affect the process of character formation. Therefore, there must be a relationship between psychotypes and defense mechanisms (Oleinik et al., 2020). Unfortunately, despite the results obtained, scholars have not come to unequivocal conclusions about which defense mechanisms are preferred by certain psychotypes. The information is still quite contradictory. Therefore, further studies on these issues are needed. The proposed research provides an opportunity to obtain additional data related to the study of the relationship between accentuation and defense mechanisms. In addition, the relevance of this research lies in the fact that studying the use of protective mechanisms by students with different types of accentuations will make it possible to better adapt to changing conditions, improve academic performance, and promote personal development and self-realization in psychological and pedagogical work. Thus, the study hypothesis is based on the assumption that stable relationships exist between character accentuations and defense mechanisms. The study establishes these relationships, and its subject is the relationship between accentuations and defense mechanisms in university students.

In the publications devoted to the link between psychotypes and defense mechanisms, only correlation analysis was used, which allows only indicative conclusions to be drawn. The novelty of

the proposed research lies in the fact that it uses correlation, the Kruskal–Wallis H-test, and a comparative analysis of the percentages of students with pronounced accentuation who use defense mechanisms and those who do not have these behavioral reactions.

2. Methods and Materials

2.1 Sample

410 people aged 19-25, 77% of girls and 23% of boys (university students majoring in economics and management, from the 1st and 4th year of bachelor's and 1st year of master's degree programs) participated in the testing. The study was conducted for 7 years from 2014 to 2022. From the entire array of the students, groups with hyperintimate, emotive, and exalted accentuations were singled out because these accentuations were the most common.

2.2 Tools

The *Personality Accentuation* test questionnaire by K. Leonhard and N. Shmishek was used to diagnose the characterological features (Istratova & Exakusto, 2016). The test questionnaire was created on the basis of the concept of “accentuated personalities” by K. Leonhard. The test questionnaire is designed to determine accentuated character traits. This test can be used for adolescents, youths, and adults. It identifies ten accentuated types (hyperthymic, emotive, anxious, demonstrative, dysthymic, sticking, pedantic, cycloid, excitable, and exalted). The authors of this methodology note that the presence of accentuations is not pathology. These are character traits with both positive and negative peculiarities.

The Plutchik–Kellerman–Conte *Life Style Index* questionnaire (Nadezhdina, 2011) was used to determine the most commonly applied defense mechanisms. The questionnaire was developed on the basis of R. Plutchik's psychoevolutionary theory and H. Kellerman's structural theory of personality. The questionnaire is a successful diagnostic tool that allows diagnosing the degree of manifestation of each psychological defense (denial, suppression, regression, compensation, projection, substitution, intellectualization, and rationalization).

Statistical data processing methods were used for calculations using the IBM SPSS Statistics 25 software. Spearman's r-coefficient was used for correlation analysis, and the significance of differences between groups was calculated using the Kruskal–Wallis H-test.

The research hypothesis is that there is a relationship between personality accentuations and psychological defense mechanisms.

3. Results and Discussion

This study revealed the most common types of accentuations in university students: *hyperthymic* (24%), *emotive* (25%), and *exalted* (23%). It was also found that students used the “repression” defense mechanism least frequently. Because only 11% of the entire array of respondents tend to use this defense, further research into the relationship between repression and accentuations was inappropriate.

3.1 Analysis of the Results of the First Stage of Research

In the first stage of the research, a correlation analysis of the relationship between accentuations and defense mechanisms was conducted using the Spearman r-coefficient. The *hyperthymic* type had a significant positive relationship with the “denial” mechanism ($r = 0.375$, with the significance level of $p = 0.001$) (Table 1). No significant correlation was observed with other protection mechanisms. In previous studies, the same results were obtained (Buravleva & Telelichko, 2019).

In the group with *emotive* accentuation, a correlation was found with *regression* ($r = 0.364$), *rationalization* ($r = 0.335$), and *compensation* ($r = 0.190$), with a significance level of $p = 0.001$ (Table 1). A less significant relationship with the *projection* ($r = 0.103$) was also found at the significance level of $p = 0.005$, but because it was not so strong, further analysis was not conducted for this mechanism. In similar studies, the relationship of emotive accentuation with regression was established (Buravleva & Telelichko, 2019), another work found with the relationship with rationalization and compensation (Muslumov et al., 2019).

In the group of students with *exalted* accentuation, a positive correlation was established with the following defense mechanisms: *regression* ($r = 0.425$), *projection* ($r = 0.369$), *substitution* ($r = 0.316$), *compensation* ($r = 0.235$), and *rationalization* ($r = 0.131$), with the significance level of $p = 0.001$ (Table 1).

Table 1: Correlation between accentuations and defense mechanisms

Scales	Denial	Regression	Compensation	Projection	Substitution	Intellectualization	Rationalization
Hyperthymic type	0.375**	-	-	-	-	-	-
Emotive type	-	0.364**	0.190**	0.122*	-	-	0.335**
Exalted type	-	0.425**	0.235**	0.369**	0.316**	-	0.131**

** The correlation is significant at the level of 0.01 (two-tailed).

* The correlation is significant at the level of 0.05 (two-tailed).

In previous studies, the relationship was established with regression, compensation, projection, and substitution (Buravleva & Telelichko, 2019), in another case with regression and rationalization (Muslumov et al., 2019). Thus, apart from the regression mechanism, other conclusions comply with previous studies.

3.2 Analysis of the Results of the Second Stage of Research

In the second stage of the research, a comparative analysis of groups with different levels of manifestation of character traits was conducted using the Kruskal-Wallis H-test to confirm the correlation.

Further, the following hypotheses were assumed: a null hypothesis – there are only random signs between the samples, and defense mechanisms are not associated with accentuations; an alternative hypothesis – there is a significant relationship between accentuations and defense mechanisms. The following groups were identified for calculations: those with pronounced accentuations, those with a moderate manifestation of characterological traits, and those with poorly manifested traits.

Thus, the groups with different severity of *hyperthymic* character traits included students with a high level of accentuation ($n = 166$), with an average level of $n = 148$ and a low level of $n = 86$. An analysis of the determination of the average ranks for these groups established the significance of differences between Groups 1-2 and 3 and between Groups 1-2 and 2-3 (Table 2). Consequently, the null hypothesis was not confirmed, and it can be argued that there is a relationship between hyperthymic accentuation and the *denial* defense mechanism.

Next, samples were made from the total array of the surveyed students with pronounced *emotive* traits ($n = 167$), with their moderate manifestation ($n = 147$), and without these traits ($n = 86$) (Table 2). The calculation of the H-test showed the significance of differences between Groups 1, 2, and 3 and between Groups 1-2 and 2-3 with rationalization and regression.

However, for regression, the average indicators do not increase in accordance with the growth of emotive properties, but rather decrease. In the case of an available link, the average indicators should increase with the increase in the manifestations of psychotypical traits. Therefore, the

reliability of the relationship between emotive accentuation and regression remains doubtful.

For compensation, the significance of differences was revealed between Groups 1, 2, and 3 and between Groups 1 and 2, while no significant differences were found between Groups 2 and 3 (Table 2). Consequently, the stronger the emotive traits, the weaker the link with this defense mechanism; therefore, there is no reason to assert that it is preferable for students with emotive accentuation to use compensation. Thus, at this stage of the research, it can be assumed that students with emotive accentuation tend to use *rationalization* and possibly *regression*.

The division into groups with different levels of manifestation of *exalted* traits revealed $n = 82$ for the group with pronounced exalted characteristics, $n = 240$ for the group with an average level of manifestations of exalted traits, and $n = 78$ for the group without pronounced manifestations of this character.

The calculations confirmed the significance of differences between Groups 1, 2, and 3 and between Groups 2 and 3 for the defense mechanisms: compensation, projection, and substitution; at the same time, no significant differences were found between Groups 1-2 (Table 2). It can be assumed that with poorly manifested exalted traits, there is no link with these defense mechanisms; however, with an increase in the manifestation of exalted traits, the link also increases. Therefore, a significant relationship exists between exalted accentuation and compensation, projection, and substitution mechanisms.

Table 2: Reliability of differences in indicators of defense mechanisms in groups with different levels of manifestation of hyperthymic, emotive, and exalted accentuations

Accentuations and defense mechanisms	Groups with hyperthymic, emotive, and exalted accentuations (middle rank)			Significance of differences in the Kruskal-Wallis H-criterion					
	Low values (Group 1)	Medium values (Group 2)	High values (Group 3)	General difference Groups 1-2-3		Pairwise difference Groups 1-2		Pairwise difference Groups 2-3	
				H	Asymp. sig.	H	Asymp. sig.	H	Asymp. sig.
Hyperthymic - Denial	140.30	184.18	246.24	53.09	0.00	9.43	0.00	24.40	0.00
Emotive - Rationalization	140.23	187.20	243.24	48.66	0.00	9.76	0.00	19.19	0.00
Emotive - Repression	119.69	201.31	241.40	63.50	0.00	30.20	0.00	10.56	0.00
Emotive - Regression	240.30	205.96	175.20	18.89	0.00	4.72	0.03	5.55	0.02
Emotive - Compensation	154.77	207.04	218.30	18.22	0.00	11.81	0.00	0.84	0.36
Exalted - Compensation	156.83	188.20	225.04	21.92	0.00	3.84	0.05	8.03	0.01
Exalted - Projection	158.23	159.93	241.74	51.52	0.00	0.01	0.92	38.36	0.00
Exalted - Substitution	159.51	174.30	232.47	31.68	0.00	1.02	0.31	19.91	0.00
Exalted - Denial	207.31	228.92	180.51	-	-	-	-	-	-
Exalted - Rationalization	191.00	182.18	215.38	-	-	-	-	-	-
Exalted Regression	203.57	198.77	200.36	-	-	-	-	-	-

At the same time, the research did not confirm differences in exalted accentuation during the manifestation of such defense mechanisms as rationalization, denial, and regression since with denial, the average ranks in the 2nd group exceed the averages in the 1st and 3rd groups. In contrast, with regression and rationalization, the indicators in the 2nd group are lower than in the 1st and 3rd groups. In the case of the mutual influence of these defense mechanisms and exalted accentuation, the average indicators should increase in accordance with the intensification of the manifestations of exalted features. However, because this was not observed, the significance of the relationship between exalted accentuation and these protective mechanisms cannot be confirmed, and further analysis with them was not conducted. Therefore, we can discuss the presence of a link between exalted accentuation and defense mechanisms such as *compensation*, *projection*, and *substitution*.

3.3 Analysis of the Results of the Third Stage of Research

In the third stage of this research, a comparative analysis of the percentages of the students with pronounced accentuation using the defense mechanism and those with accentuation who do not use these mechanisms was conducted.

The following groups of students were identified for analysis: group with hyperthymic accentuation (n = 58), group with emotive accentuation (n = 80), and group with exalted accentuation (n = 72). A group of students without pronounced accentuations (n = 76) was also identified.

The research revealed that in the group with *hyperthymic* accentuation, 60% of the students tended to use the mechanism of denial, and only 34% who did not have pronounced hyperthymia were prone to such reactions. These data confirm the results of previous calculations; therefore, it can be argued that the majority of students with hyperthymic accentuation use denial as a defense mechanism. This can be explained by the fact that the hyperthymic type tends to be energetic, self-confident, optimistic, proactive, success-oriented, easily solving problems, and precisely denial is best to ignore information that can make it difficult to reach the goal.

In the group with *emotive* accentuation, 51% of the students used *rationalization*, and 24% preferred *regression*. In the absence of emotive character traits, the use of *rationalization* was observed in 16% and regression in 9% of the respondents.

Regression in this group is used much less frequently than rationalization. The results confirmed doubts that the relationship between emotive accentuation and regression really exists.

At the same time, half of the students tended to use rationalization, while in the absence of emotive characteristics, this indicator was almost three times less. Therefore, it is possible to confirm the existence of a link between emotive accentuation and rationalization; however, the link between regression and this accentuation was not confirmed.

When rationalizing, a person strives to provide plausible justifications for one's own or someone else's behavior, which are not as such, but the person is unable to recognize this because of the threat of losing self-esteem. Therefore, rationalization helps representatives of the emotive type cope with their excessive sensitivity to frustrating situations, perceiving information in such a way that makes it less traumatic while reducing the value of what is difficult or impossible to achieve.

Studies in the student group with *exalted* accentuation showed that almost all the respondents used the substitution mechanism (98%), whereas the absence of exalted features reduced this figure to 19%. Hence, substitution can be considered the most characteristic way of protection for an exalted personality type.

In addition, the projection mechanism is typical for 42% of respondents with an exalted type, while the absence of these traits leads to a decrease in this indicator to 27%. It can be seen from these data that the projection is used much less frequently than the substitution mechanism. At the same time, this relationship may exist, but since it is not obvious, further studies are needed to confirm it.

In the group with exalted accentuation, studies revealed that 25% of students use compensation, while 22% also exhibit these behavioral features in the absence of exaltation. Since there is practically no difference between these indicators, it is impossible to argue that compensation is a mechanism inherent in this accentuation.

Thus, it can be confidently stated that there is a link between exalted accentuation and the *substitution* mechanism. Features of this character (rapidly increasing tension, intense emotional reactions, fears, anxiety, and sometimes egocentrism) make it much easier for representatives of the exalted type to express emotional irritation, directing it to objects that are less dangerous or more accessible. At the same time, the main goal is precisely the discharge of tension, rather than the solution of a problem or the achievement of tasks.

In summary, it can be argued that the characteristic features of accentuations can influence the choice and use of certain defense mechanisms. Thus, representatives of a hyperthymic character tend to use denial; those having emotive character prefer rationalization; and students with exalted

accentuation use substitution. At the same time, the relationship between emotive accentuation and regression, as well as between exalted accentuation and projection, remains questionable; therefore, further research is needed to clarify this issue.

It is also necessary to note the limitations of this study. The survey involved students of humanitarian-social specialization, but the results of the survey of students studying in other specializations (e.g., engineering and technical universities) may differ somewhat. In addition, in this study, most respondents were girls (73%); with a predominance of boys, there may also be some variation in the results.

Despite these limitations, significant results were achieved, which confirm that the characteristic features of accentuation can influence the choice and use of certain defense mechanisms. Therefore, knowing a student's accentuation, it is possible to assume the presence of certain unconscious defense mechanisms that negatively affect psychological well-being and academic performance. In this way, the search for the causes of the arising difficulties is narrowed.

4. Conclusions

In this research, the relationship between personality accentuation and the defense mechanism is analyzed in detail, which made it possible to obtain additional data on this still underdeveloped topic. It was revealed that there are significant relationships between accentuated characters and mechanisms of psychological defense: hyperthymic accentuation and the mechanism of denial, emotive accentuation and rationalization, and exalted accentuation and compensation.

The established relationships between accentuations and psychological defense mechanisms enable us to expand the possibilities in psychological and pedagogical work to help students who have difficulty in adapting, academic performance, and self-determination.

Unfortunately, the research covered only hyperthymic, emotive, and exalted accentuations, which are most common among university students. Relationships between anxious, demonstrative, dysthymic, sticking, pedantic, cycloid, and excitable accentuations and psychological defense mechanisms were not considered. Therefore, further research is required in this direction.

The theoretical significance of this research is its ability to specify, supplement, and expand knowledge about the relationship between accentuations and defense mechanisms. At the same time, the research results indicate the need for further study of this issue.

The practical significance of this study lies in the possibility of applying the obtained data in psychological and pedagogical activities in higher education. Understanding the psychotype of a student, we can assume the behavioral mechanisms he/she is inclined to use when overcoming stressful situations. This allows us to narrow down the search for the causes of emerging problems and purposefully conduct psychological and pedagogical work with difficulties associated with the destructive influence of unconscious defense mechanisms.

Thus, the study results provide an opportunity to develop correctional programs and training for students experiencing difficulties in adaptation, considering their individual typological characteristics.

5. Research Ethics

Ethical approval was not required for the studies involving humans because the research experiment was fully anonymized, and the respondents were not forced to share any personal information. The study was conducted in accordance with the local legislation and institutional requirements. The participants provided written informed consent to participate in this study.

References

- Bond, M. (2004). Empirical studies of defense style: relationships with psychopathology and change. *Harvard Review of Psychiatry*, 12(5), 263–278. <https://doi.org/10.1080/10673220490886167>
- Buravleva, N. A., & Telelichko, N. N. (2019). The relationship of defense mechanisms and personality accentuations. *Pedagogical Review*, 5(27), 157–165.
- Davletova, A. H., Tolganbaiuly, T., Tazhigulova, A. I., Smagulova, L. A., Kasymova, A. H., & Baigozhanova, D. S. (2019). Project-oriented training experience in micro-robot programming in college and its features. *Opción*, 35(Special Issue 22), 292–307. <https://produccioncientificaluz.org/index.php/opcion/article/view/29446>
- Dwijendra, N. K. A., Akhmadeev, R., Tumanov, D., Kosov, M., Shoar, S., & Banaitis, A. (2021). Modeling social impacts of high-rise residential buildings during the post-occupancy phase using DEMATEL method: a case study. *Buildings*, 11(11), 504. <https://doi.org/10.3390/buildings1110504>
- Freud, A. (2018). *The ego and the mechanisms of defence*. *Child psychoanalysis*. St. Petersburg: Piter.
- Freud, S. (2004). *Psychology of the unconscious*. St. Petersburg: Piter.
- Gladyshchev, Yu. V. (2022). Type of temperament and the degree of manifestation of the mechanisms of psychological defenses. *Psikhologiya. Psikhofiziologiya = Psychology. Psychophysiology*, 15(2), 115–123. <https://doi.org/10.14529/jppm220210>
- Harward, D. (Ed.). (2016). *Well-being and higher education: A strategy for change and the realization of education's greater purposes*. Washington, District of Columbia: Association of American Colleges and Universities.
- Istratova, O. N., & Exakusto, T. V. (2016). *Psychodiagnostics: a collection of the best tests*. (8th ed.). Rostov-on-Don: Phoenix.
- Kartashova, E. A., & Sarvilina, I. V. (2018). The influence of cytoflavin on molecular mechanisms of myocardial and vascular wall remodeling in patients with systolic arterial hypertension. *Kardiologiya i Serdechno-Sosudistaya Khirurgiya*, 11(5), 40–46. <https://doi.org/10.17116/kardio20181105140>
- Kartashova, E. A., & Sarvilina, I. V. (2019). About the prognostic role of fibulin-5 protein in the progression of pathological vascular remodeling in patients with isolated systolic arterial hypertension. *Advances in Gerontology*, 32(6), 1003–1010.
- Kass, J. (2017). *A person-centered approach to psychospiritual maturation: Mentoring psychological resilience and inclusive community in higher education*. Cham: Palgrave Macmillan. <https://doi.org/10.1007/978-3-319-57919-1>
- Mikhailova, V. P., Korytchenkova, N. I., & Kuvshinova, T. I. (2009). Models of student behavior depending on the ratio of the type of temperament, personality accentuation and psychological defenses. *Bulletin of the Kemerovo State University*, 1, 77–86.
- Mukataeva, Z., Dinmukhamedova, A., Kabieva, S., Baidalinova, B., Khamzina, S., Zekenova, L., & Aizman, R. (2023). Comparative characteristics of developing morphofunctional features of schoolchildren from different climatic and geographical regions. *Journal of Pediatric Endocrinology and Metabolism*, 36(2), 158–166. <https://doi.org/10.1515/jpem-2022-0474>
- Musulmov, R. R., Pecherkina, A. A., & Vedenkina, I. P. (2019). The relationship of psychological defenses of adolescents with different types of personality accentuations. *Bulletin of the Ural Federal University. Series 1: Problems of Education, Science and Culture*, 1(183), 160–168.
- Nadezhkina, V. (2011). *Practical psychodiagnostics. Tests and methods*. Minsk: Harvest.
- Nurbekova, Z. K., Mukhamediyeva, K. M., Davletova, A. H., & Kasymova, A. H. (2018). Methodological system of educational robotics training: systematic literature review. *Espacios*, 39(15), 28. <https://www.revistaespacios.com/a18v39n15/a18v39n15p28.pdf>
- Oleinik, A., Kapitanov, A., Alexandrov, I., & Tatarkanov, A. (2020). Calculation methodology for geometrical characteristics of the forming tool for rib cold rolling. *Journal of Applied Engineering Science*, 18(2), 292–300. <http://dx.doi.org/10.5937/jaes18-25211>
- Olejnik, A., Kapitanov, A., Alexandrov, I., & Tatarkanov, A. (2020). Designing a tool for cold knurling of fins. *Journal of Applied Engineering Science*, 18(3), 305–312. <https://doi.org/10.5937/jaes18-25786>
- Shutenko, E. N., Shutenko, A. I., Kanishcheva, M. A., & Lokteva, A. V. (2019). Intentional modalities and value attractors of student youth self-realization in the university educational environment. *Contemporary Dilemmas: Education, Politics and Values*, 6(S8), 7. <https://doi.org/10.46377/DILEMAS.V27I1.1587>
- Ualiyeva, R. M. (2023). Functional Role of vitelline glands and Mehlis gland in the process of resistant egg shell formation in trematodes. *OnLine Journal of Biological Sciences*, 23(2), 124–132. <https://doi.org/10.3844/ojbsci.2023.124.132>

- Ualiyeva, R. M., Kukusheva, A. N., Insebaeva, M. K., Akhmetov, K. K., Zhangazin, S. B., & Krykbayeva, M. S. (2022). Agrotechnological methods of plant feeders applying for spring wheat agrocenoses (North-Eastern Kazakhstan varieties). *Journal of Water and Land Development*, 55(X-XII), 28-40. <https://doi.org/10.24425/jwld.2022.142301>
- Vaillant, G. E. (1994). Ego mechanisms of defense and personality psychopathology. *Journal of Abnormal Psychology*, 103(1), 44-50. <https://doi.org/10.1037//0021-843x.103.1.44>
- Zein, A., Mahmudiono, T., Alhussainy, A. A., Zainal, A. G., Akhmadeev, R., Kosov, M., Sabit, S. H., Meshkova, G. V., & Suksatan, W. (2022). Investigating the effect of Islamic values on citizenship behaviours of Muslim citizens. *HTS Teologiese Studies / Theological Studies*, 78(4), a7334. <https://doi.org/10.4102/hts.v78i4.7334>