BRAIN. Broad Research in Artificial Intelligence and Neuroscience
ISSN: 2068-0473 | e-ISSN: 2067-3957
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2024, Volume 15, Issue 1, pages: 1-13 | https://doi.org/10.18662/brain/15.1/530

Neuropsychological Prevention of Students' Procrastination

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Abstract: *The article addresses to the problem of theoretical study of the problem of academic procrastination and its neuropsychological prevention for students. It describes neuropsychological means of prevention of academic procrastination with the recommendation to take into account the results of psychodiagnostics and analysis of some conditions and causes of the studied phenomenon. The psychological portrait of a student-procrastinator is analised the components of which are individual psychological, psychophysiological and personal characteristics. The role of the relationship between self-regulation and student learning motivation in foreign literature is also summarized. Peculiarities of educational burnout of procrastination students on the basis of foreign and domestic works are noted. It was revealed the essence of development and introduction of neuropsychological means of academic procrastination – conditioning of dynamic process of emotional and cognitive transformations in self-regulation of the student's personality and improvement of his/her educational success. The author's system of neuropsychological exercises for neuropsychological prevention of academic procrastination is presented in the article considering the neuropsychological mechanisms of its development at the cognitive-emotional-bodily systemic level. It is noted that procrastination may be associated with a negative emotional and mental response to the introduction of quarantine and the transition to distance learning, and even with the new opportunities. It is emphasized that neuropsychological prevention of academic procrastination should be combined with programs for the formation of future professionals thinking and development of a high level of independence, discipline and responsibility in educational activities as a successful strategy to prevent burnout and actualize motivation to learn at the integration level.*

Keywords: *Burnout, emotional and physical exhaustion, neuropsychological exercises, academic procrastination, academic performance, psychophysiological indicators, self-regulation, burnout.*

How to cite: Absalyamova, L., Kriukova, M., Chorna, O., Bader, S., Anastasova, N., & Maksymchuk, B. (2024). Neuropsychological prevention of students' procrastination. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 15*(1), 1-40. https://doi.org/10.18662/brain/15.1/530

Introduction

Today in Ukraine, as in the whole Europe, the impact of psycho-traumatic situations is noticeable, in particular pandemics, unexpected reforms with inconsistency of the human factor to their adoption, social crises, which causes internal essential changes in student youth, which is forced in situations of social deprivation to resort to mechanisms of psychological protection. It is known that rigid psychological protection can emotionally and physically deplete a person, which is always associated to some extent with the biological mechanisms of procrastination (neuropsychological and psychosomatic means of protection) and socio-psychological factors of adaptation of the student's personality to the requirements of the professional environment at the cognitive, motivational, emotional and behavioral levels (Demchenko et al., 2021; Prots et al., 2021; Kosholap et al., 2021).

Important conditions for the successful development of the future specialist are internal conditions, which provide the optimal functioning of the student's ability to work successfully in combination at the psychophysiological level, of course, along with personal resources. Neuropsychological prevention of procrastination in students is closely interrelated with the provision of their psychosomatic health and is an urgent medical and psychological applied problem in neuropsychological science and the work of psychological services in higher education.

The objectives of the article are the theoretical analysis of academic procrastination and the development of a neuropsychological program for the prevention of procrastination for students, taking into account neuropsychological mechanisms. The novelty and practical significance of the article is that for the first time the technologies of neuropsychological prevention of academic procrastination at the system-integration level are considered, in combination with applied research of diagnostics and correction of mental and psychological characteristics of procrastinators in order to implement programs for the formation of future professionals' professional style of thinking and the development of a high level of independence, discipline and responsibility in educational activities as a prevention of burnout.

Theoretical analysis of studying the problem of students' procrastination

The concept of procrastination comes from Latin and literally means postponement. Determination of cases today is a modern problem of student youth and teachers, the subject of scientific and applied interest of specialists in various fields. For neuropsychological science, this phenomenon of procrastination is little studied, although it is of great interest to higher education teachers, who daily face the manifestations of irresponsible attitude of students to learning or feel helpless in motivating them to work. Dub (2020) argues that academic procrastination is manifested in the postponement of classes' preparation, credit-examination session, writing course or diploma projects. Chronic procrastination is a characteristic of students who have chosen the wrong specialty and the wrong educational institution, so they study without interest and try to complete educational tasks on the last day. Students with a low level of procrastination have a high general ability to self-regulation and academic success, a higher level of self-acceptance, a more positive assessment of their capabilities, a high level of self-esteem.

Modern psychology tends to believe that procrastination is an expression of an emotional reaction to planned or necessary things. Depending on the nature of these emotions, procrastination is divided into two fundamental types: "relaxed" one, when a person spends time on other, more enjoyable activities and entertainment, and "tense" one, associated with general overload, loss of sense of time, dissatisfaction with their own achievements, vaguely defined life goals, indecision, self-doubt. Procrastination is characteristic of almost 50% of students, most of whom are procrastinators of the "intense" type. This type of procrastination is caused by fear of failure or unprofessionalism, due to ignorance or incompetence. There is often a kind of inferiority complex, which can sometimes be expressed in the form of mania for greatness: "I can do it better than others, but I do not have time to do it". Perfectionists are especially afraid of failure. In the student environment, the features of perfectionism are characteristic mainly of freshmen who were excellent during their studies at school (Soboleva, 2014).

The literature notes the number of studies of the academic procrastination phenomenon in foreign countries (Kim and Seo, 2015; Stainton et al., 2000; Blunt and Pychyl, 2000; Ziegler and Opdenakke, 2018; Fritzsche et al., 2003 and many others) and national lyterature (Stoliarchuk et al., 2021; Dub, 2020; Dvornik, 2018; Soboleva, 2014 and many others).

Instead, the question of neuropsychological mechanisms of student procrastination and its prevention is covered in scientific sources rather weakly and incompletely (in some aspects) in individual works. Consideration of neuropsychological mechanisms of origin and development of procrastination is presented in detail in the works of Zhuravlov and Zhuravlova (2020).The use of psychological programs to prevent academic procrastination is also noted (Shamsutdinova and Rybakova, 2014).

Thus, national psychologists like Stoliarchuk et al. (2021) the dynamics and characteristic features of academic procrastination of students in the conditions of distance learning are investigated in the article. The survey conducted in 2020 indicates an unfavorable emotional and mental response to quarantine measures and online training. The most common phenomenon of emotional distress among students was stress, which arose as a result of organized activities under quarantine conditions. Procrastination is the result of a protest reaction to the conditions of distance learning, in particular, a protest against excessive study load. Internalization is manifested as a determinant of personal procrastination in respondents during distance learning. The main factors in their view are the internal factors of procrastination, laziness, stress due to quarantine. During the survey, it was found that procrastination is caused by insufficient interest in the chosen specialty, which confirms the assumption about the importance of internal stimulation in acquiring a profession. According to the results of the study, it can be determined that the qualitative indicators of the level of knowledge and academic procrastination of students depend on the form of education. When the quarantine measures first started, the procrastination of students decreased more in general, but there were more individuals with average and high indicators. This situation is caused by greater adaptation to the pandemic, in particular, there has been a change in the goals and potential of personal resources. But another threat is emotional burnout when acquiring a profession, which causes procrastination, the essence of which is laziness and low volitional regulation. Fiore (2007) notes that procrastination is a mechanism for dealing with anxiety related to the beginning or end of a case or decision-making. Those who find it difficult to start a business, who are afraid of criticism and mistakes, are afraid of losing some opportunities due to dependence on one project. The psychologist offers The Now Habi program, which includes the most effective ways to overcome procrastination: replacing negative attitudes with positive wording, self-

confidence, forming and consolidating new positive habits, full rest from work, planning goals, setting realistic goals, training concentration.

Dubinina (2018) considers procrastination as a problem of psychology of personality of the student, manifestation of human laziness, in particular the desire of the individual to do things at another time, later, "for tomorrow", "for the future" and on the basis of generalization allocates procrastination daily (household), in decision-making, neurotic, compulsive, academic with such fundamental types: relaxed (temporary) and intense (chronic) procrastination and causes of procrastination: psychological (lack of motivation to learn, volitional disorders, perfectionism, inability to organize themselves and their time and plan their activities, increased personal anxiety, low self-esteem), socio-psychological (lack of direct communication with the environment and excess of virtual, resistance to external control, social and family problems.), pedagogical (lack of guidance and advice from teachers) and psychophysiological (health, illness, fatigue, temperament, neuroticism, impulsiveness, low vitality). According to the researcher, if you undergo psychological prevention and correction of procrastination in time, you can prevent the deterioration of learning and the development of skills and knowledge in professional activities, and, therefore, you can increase competitiveness in professional activities.

In our opinion, the period of a person's youth, especially the stages of professional development against the background of normative identity crises may be accompanied by social and biological manifestations of procrastination. Students do not always have enough personal adaptive resources, especially for the first year students, to show responsibility, effective time management, overcoming negative psycho-emotional states that can turn into a psychosomatic syndrome with refusal to actively participate in learning, long-term depletion of the nervous system, burnout. The experience of negative learning phenomena is exacerbated by the feeling of personal failure in students due to low learning ratings and excessive workload, accompanied by feelings of guilt and resentment, high anxiety.

Learning burnout may be related to the mechanisms of interaction of the cerebral hemispheres, the lower parts of the brain structure, especially the hypothalamus. The question of the mechanisms of interaction between the functional systemic connections of the brain should be considered in the organization of cognitive and educational activities of students as one of the neuropsychological factors in the prevention of procrastination. Psycho-emotional stress is accompanied mainly by activation of the right hemisphere of the brain, so left-handed students need special attention. It can be predicted that they may be prone to learning burnout under the

influence of hormonal metabolism. Psychophysiological indicators of the body's adaptive systems are associated with stress responses and are reflected in the "symptom complex of procrastination" of "right-hemispheric" students, which requires the development of neuropsychological exercises with an individual approach.

From the disciplary point of view for procrastination the results of empirical research by foreign researchers are also interesting: Ariely and Wertenbroch (2002) investigated the issue of self-regulation, in particular self-control on the manifestation of procrastination in the study of tasks and confirm that the productivity of the task is higher when the deadlines are evenly distributed over time, externally defined deadlines can be more effective, appropriate strategies for flexibility and balance in self-control; Bäulke and Dresel (2000) claim that academic procrastination is a common phenomenon in higher school, academic procrastination is closely related to the peculiarities of self-regulation, individual motivation to meet the needs of students in autonomy and competence; Grunschel et al. (2016) investigated that the main cause of procrastination is a low level of motivation to learn and self-regulation in students, analyzed the relationship of academic procrastination with the use of motivational regulation strategies and student academic performance and emotional/cognitive well-being; Grunschel et al. (2018) also link academic procrastination to a low level of self-regulation in students and offer a cyclical model of group learning with the offer of trainings for different groups of procrastinators, in which students' self-regulation is actualized at the optimal level.

Zhuravlov & Zhuravlova (2020) in the work "Features of somatization of persons with different levels of procrastination" confirmed a wide range of relationships between the level of predisposition to dilatory behavior of persons with psychosomatic disorders. The closest connection of indicators of the general level of tendency to procrastination is traced with values on a scale "Depletion" that testified to excessive decrease in power resources of an organism inherent in procrastinators. The correlation of procrastination with the criterion of gastric complaints was fixed and it confirmed the predisposition of persons with the formed habit of postponing important cases to the syndrome of nervous epigastric disorders. The close connection of integral indicators of procrastination on the scale "Rheumatic factor" confirmed existence at the specified respondents of the subjective sufferings connected with algic and spastic symptoms. The characteristic correlation of procrastinators of diseases localized in the vascular sphere was indicated by the recorded correlation of the indicators of the studied construct with the frequency of expression of cardiac

complaints by respondents. Individuals with a habit of procrastination, assess their own physical well-being as unsatisfactory.

In the work "Neuropsychological mechanisms of procrastination development" Zhuravlov and Zhuravlova (2020) claim that when comparing the data, it was established that the procrastination scales are almost always inversely correlated with the parameters of the meaningful orientations method, such a dependence is characteristic of all experimental groups. In the group with a high level of procrastination, the correlation of the phenomenon with the "Goals" scale is most often observed. In other words, the higher the level of procrastination and the more "postponing things for later", the less the respondent has a desire to plan his future, to see goals that give life meaning, direction and time perspective. The same dependence is observed on the "Process" scale, which allows us to conclude that procrastinators evaluate life as less emotionally saturated, they are less satisfied with the process in the present. It is significant that in the group with a low level of procrastination there is a direct dependence on the scale of the method of meaningful life orientations and the scale of self-efficacy.

Most often in the role of neuropsychological substrates of dilatory behavior are called disorders of the prefrontal cortex and parahypocampal gyrus. Activation of the latter one positively correlates with the development of procrastination, while the increase in electrical activity in the prefrontal cortex increases the intention to act, ie shows an inversely proportional relationship with the level of dilatory behavior. The structures of the cerebral cortex described above are associated with cognitive control mechanisms that appear to reveal some degree of imbalance in subjects with a high level of propensity to delay things. Procrastination is apparently associated with decreased ability to strengthen self-control in more complex situations and/or lack of response in the context of adverse events. Experimental data also show that procrastinators have impaired error handling mechanisms. Analysis of the psychosomatic aspect of procrastination suggests that the prediction of this phenomenon has both direct and indirect mechanisms. The main effect of the direct connection between procrastination and the psychosomatic sphere is the activation of the sympathoadrenal system due to the increasing stress of the situation of postponement of careful activity.

Dvornik (2018), in turn, sees positive characteristics in procrastination and notes that personality constructs, characterological features, emotional reactions, locus of motivation, behavioral manifestations, etc., are the basis that meaningfully describes the deferral-futurological reality and a typology that confirms that procrastination is not at all the action that must be condemned. Practicing procrastination, the individual at

the same time gets the opportunity to transform it when formulating stories about their future, which, obviously, has great potential for self-understanding and finding new ways of mental growth, qualitative changes in life. For someone, while postponement the state is radically or mildly anxious, for others it is calm, and for others it is exhausted, slurred, habitual, or even energetic, and for some it may or may not describe it at all. The calm state during the postponement corresponds to the focus of the personal future on utilitarianism – this type of postponement-futurological strategies was called constructive one; the conventional type combined the routine of procrastination with the contact orientation of the future; energy-saving type, which together with the conventional type is characteristic mainly of young people, means exhaustion as a cause of delay, and the construction of the future – as a fairly contact; the sporadic type combines routine methods of postponement and random orientation of the personal future; the stereotypical type, predominantly female, combined a state of routine procrastination and uncertainty in the construction of futurological history; representatives of the trend type during the postponement felt routine, and the future was constructed, focusing on self-affirmation; communicative, mostly female, type combined an energetic way of procrastination and a contact version of building a personal futurological reality.

Neuropsychological means of procrastination prevention in students

Neuropsychological prevention of procrastination in students is a set of measures aimed at maintaining psychosomatic health, prevention of physical and emotional exhaustion, compliance with neuro-psychohygiene, care for neuropsychological support of optimal performance in the learning process. Preventive neuropsychotechnologies should be used with complication and taking into account psychosomatic, personality-oriented and systemic approaches.

The selection of effective neuropsychological prophylactics depends on the diagnosis of students' propensity to procrastination, which can be determined by psychological testing and neuropsychological methods to study the features of functional asymmetry of the brain (as already mentioned, procrastination is predisposed mainly right hemisphere). Such students often have psychosomatic disorders, tend to experience anxiety in connection with decision-making, performing tasks in conditions of excessive workload. The results of psychodiagnostics provide an opportunity to study the causes of procrastination of students. Due to the main reason for postponing learning – that is a low level of student's motivation to study (in the absence of a high level of personal anxiety and various emotional

disorders), neuropsychological prevention of procrastination will be effective for such a student to maintain and strengthen his/her health.

The tendency of procrastination students to burnout is appropriate and effective, in our opinion, when preventing with the help of self-regulation methods in accordance with the tasks of neuropsychocorrection. The methods are well described in the literature on the problems of emotional burnout (Vodopianova & Starchenkova, 2008): exercises to reduce arousal (relaxation exercises, distraction or switching of attention, breathing exercises); resource mobilization (ideomotor training, recollection of feelings about one's confidence, means of sensory and mental stimulation, heterosuggestion); mental desensitization (self-suggestion of confidence and neutral attitude to stressors, the formula of intentional passive attitude); elimination of emotional stress (hetero-musical psychoregulation, methods of relaxation and psychological protection); recovery (inspired by sleep and rapid recovery, meditation); "Tonisation" (representations of psychophysiological state that excite certain body functions – heart rate, blood pressure, motor, sensory and other functions; ideomotor training as figurative representations of motor actions that increase physical and emotional tone; figurative representations of situations that can cause an increase psychophysical tone); regulation of autonomic processes (autogenic training, hetero regulation, breathing exercises to manage mental stress and mood).To expand the resource of "antiburnout" it is appropriate to express irrational thoughts and beliefs and master the principles and techniques of positive thinking, self-analysis of internal dialogue and eliminate self-humiliation and self-flagellation, use problem-oriented coping as a cognitive and behavioral effort to solve stressful situations.

Restoration of optimal nervous system functioning with the help of individually selected neuropsychological exercises for muscle relaxation and exercises to reduce the tone of the sympathetic nervous system requires students prone to study burnout, frustration intolerance, with high rates of psychophysiological maladaptation and extraversion also with the presence of irrational fears and beliefs. Considering the patterns of mental processes at the neurophysiological level, the selection of neuropsychological exercises should take into account the features of concentration, volume and the ability to quickly switch attention to ensure the success of psychophysiological adaptation of the student to excessive workload; Neuropsychological exercises to train professional thinking and professional memory in students are important, as well as neuropsychological exercises to reduce emotional stress and improve psycho-emotional state, taking into account the neuropsychological mechanisms of procrastination.

Neuropsychologists know that the connecting link between thoughts, emotions and the body are breathing techniques. It is desirable task after the use of breathing exercises to re-diagnose the cognitive and emotional properties of the student's personality, to identify their relationship with the body "blocks" to ensure the effectiveness of individually selected respiratory system. The neuropsychological methods of prevention of academic procrastination surely should be supplemented by psychological programs for the formation of future professionals thinking and development of a high level of independence, discipline and responsibility in educational activities as a successful strategy to prevent burnout and actualize motivation to learn at the integration level.

Conclusion

Neuropsychological prevention of procrastination for students provides their psychosomatic health, stress resistance and frustrating tolerance for unexpected changes in the educational environment with information and psychophysiological loads, which requires young people emotional stability and care for their health, which is a priority of self-sufficiency. The implementation of the developed neuropsychological projects for the prevention of procrastination for students can ensure their success in professional development and educational process in establishments of higher education, the ability to overcome the state of emotional arousal when performing complex tasks, psychophysiological parameters of performance, neuropsychological competence and emotional stress exhaustion, prevention of anxiety and depression, while maintaining the effectiveness of functioning in educational activities.

Neuropsychological prevention of academic procrastination can cause a dynamic process of emotional and cognitive transformations in self-regulation of the student's personality and affect the improvement of his academic performance, provided a person-centered approach to psychological support of the educational process, timely identification of causes and development of procrastination to partner cooperation with students in eliminating the consequences of delaying the performance of educational duties at the neuropsychological and professional-psychological levels.

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