

An analysis of student behaviour in light of H. Selye and C.G. Jung's theories: causes, consequences and the search for solutions to the problem

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ABSTRACT: In this article, the authors discuss the problem concerning a student's stress levels while attending a technical university from the standpoints of the Selye's theory and the Jung's analytical psychology of the unconscious. The hypothesis put forward by the authors is that the psychological relations between university staff and students may be attributed to the archetype of the collective unconscious. Concrete approaches have been suggested so as to avoid any negative consequences regarding stress when teaching students at a university and students' subsequent industrial activities.

INTRODUCTION

The strong psychical emotions of students are revealed in such subjective feelings as fear, grief, depression, nervousness, etc. This is often accompanied often by physical reactions (eg blushing, trembling, tachycardia, sweating and other symptoms of the vegetative nervous system) and should be attributed to the after-effects of the state in which strong demands are placed on the nervous system, ie stress. Repeated stress being a non-specific organism response that hampers the organism from adapting to the resultant distress, ie considerable mental or physical discomfort or pain.

However, due attention has not, as yet, been given to the study of the above-mentioned psychical phenomena under learning conditions at universities. Stressful situations, in the case being considered, become mainly apparent during an examination period, when one cannot help but become excited in the context of going in for examinations, as well as when fulfilling test papers and passing tests in various courses. It should also be noted that students may contact their instructors, who should have pedagogical competences that calls for definite correction.

Stress must not be ruled out [1]. Furthermore, the passive or careless treatment of stress and the disability to cope with one's own emotions can lead to highly undesirable results, ie to distress, notably in engineering activities when a person is deciding the crucial decisions. Such situations include averting the peril of somebody's life and the elimination of potential grave industrial accidents.

From what has been mentioned above, it would appear that there is a real need to undertake an analysis of students' emotional reactions in order to select the methods of the psychological rehabilitation in the process of studies at a

university. It is also important to mould graduating students' creative initiative to prevent distress in the process of activities to come. Further, there is a need to propose codes of conduct that are directed towards the achievement of these aims.

STRESS IN ENGINEERING EDUCATION: CAUSES, EFFECTS AND ANALYSIS

As one would expect, confidential conversations conducted with students of various courses of study have shown that stress encountered in the education process at a university may be considered as a not infrequent and inevitable phenomenon. The above-mentioned emotional reactions are associated with the organism's psychical reactions to characteristic stressors. The latter ones are specific for higher education when fulfilling the test papers, at the stage of a test period and examinations. Other stress stimulators include public reprimands and criticism that may be tactless in form but still deserving. The consequences of such actions may also be attributed to the category of a specific organism reaction as well.

The possible after-effects of a stressful situation are displayed in Figure 1.

It should be noted that, at worst, information overload may be combined with a complexity of the phenomenon being studied, but at a higher pace of setting forth the lecture subject matter.

Exceptions to physiological (information) stress of students can be achieved by utilising the following methods to pedagogical psychology:

- Activating students' thinking when lecturing courses [2][3];
- Using the dialectical method of philosophy as an effective tool to bring to light the interrelations between causes and

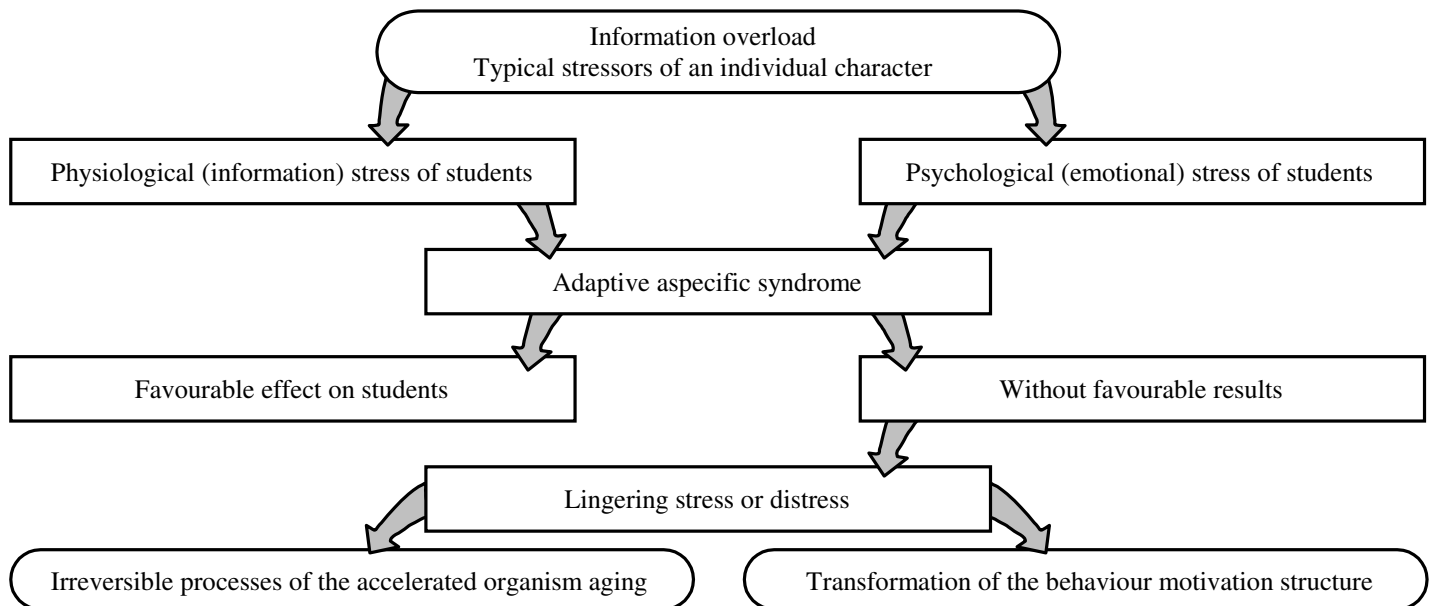


Figure 1: The possible stress manifestation when lecturing on engineering courses.

effects when studying new technical phenomena and processes [4];

- Extending basic pedagogical modes in order to provide the most auspicious conditions for delivering lectures in engineering courses, which results in developing not only the theoretical thinking, but also professional ethical ideas [5];
- Following modern tendencies in the context of elite oriented engineering educational systems [6][7].

H. Selye asserted that the long-term consequences in the area of negative emotions, such as hatred, distrust, contempt, hostility and thirst for revenge, threaten somebody's safety because they provoke hostile feelings in other people [1].

Sources of stress at a university during the process of students' teaching, as a rule, are absent. However, future conditions of industrial activities may manifest distress in many ways and situations that are associated with taking on a new generation of specialists and the responsibility for making important decisions, especially in temporal deficiencies. Adequately weakening probable undesirable consequences in the case under consideration should be achieved when educating specialists at a university. It is obvious that the above objective represents a relatively new educational problem.

Questionnaire for Donetsk Students

Table 1 shows the dynamics of changing the quantitative and qualitative indices of activity, and the symptoms of the

vegetative nervous system having been experienced by students from Donetsk National Technical University (DonNTU), Donetsk, Ukraine. The questionnaire has been proposed to students of the same calendar year (at the beginning of an academic year). Despite the limited statistical data given in Table 1, the quantitative dynamics, in the author's opinion, can also be attributed to other universities of the former Soviet Union. Table 1 shows that students' capacity for work in lectures grows from year to year. However, the number of students seeking advice from their group peers, instead of consulting their tutors, ie using the tutorial system, remains at a rather high level during the teaching period.

It is believed, from the standpoint of phylogenies studies, that the processes connected with the origin and evolution of the psychology of a student's behaviour described above can be bound up historically with periods of humankind's development. Such periods are of decisive importance in the process of transferring experience to the younger generation (including the prehistoric era and civilisation epoch).

Subordinate relations of the type similar to *master-apprentice* have been manifested historically in the course of hunting, at handicraft workshops, etc. In the case under consideration, students' behavioural outlines, being characterised by the adduced specific findings, go from one student generation to the next. From the viewpoint of the C.G. Jung's analytical psychology, the results mentioned above can be attributed, to a certain extent, to the realisation of a particular kind of archetype being reflected in the *master-apprentice* relation [8].

Table 1: Characteristics of stressful situations.

Course of Studies	Number of Students (on an educational group scale)		Emotional Reactions Experienced by Students When Being Taught			
	Preferring to consult lecturers	Preferring to consult advanced students	Fear	Grief	Depression	Nervousness
1 st year	20%*	60%	100%	100%	100%	100%
2 nd year	45%	50%	100%	100%	100%	100%
3 rd year	80%	50%	90%	100%	100%	100%
4 th year	80%	40%	70%	90%	90%	90%

BEHAVIOUR MODIFICATION BY AUTOGENESIS AND ACTIVATING A STUDENT'S PERSONALITY AS A MEANS TO COUNTER STRESS

Methodological recommendations that are aimed at solving such problems can be substantiated through a consideration of the functional structural components of a student's personality [9] (see Table 2). This is supplemented by organisational structures that foster more active students. As indicated in Table 2, it is possible to utilise only the first and second components of a student's personality to develop skilled specialists who possess the knowledge for successful professional activity. In this case, when choosing the required organisational form to activate the envisaged personality, this can be realised in the process of teaching particular courses at the DonNTU. The course for the first form is titled *Fundamentals of Scientific Researches*, while the second form requires students to master *Behaviour Modification by Autogenesis*.

The above mentioned course, which is included in the electrical engineering curriculum (bachelor level), envisages the study of heuristic methods (morphological analysis, synectics, etc), which target the development of students' latent creative capacity and mastery of practical skills [10][11]. Much attention is given to fostering the following qualitative characteristics, which are required for practical activities:

- Initiative and a keen interest to solve technical problems;
- The ability to discover multi-variant solutions for inventive problems;
- The ability to establish personal standpoint for a problem and to show courage when defending the decisions taken.

It should be noted that when laboratory works are elaborated, they must, as a rule, pose problems so as to foster and encourage students' creative initiative. An example of this has been published elsewhere [5].

Recommendations about reducing stress duration by using behaviour modification by autogenesis could be made within the limits of the second structural component of a student's personality (see Table 2). The latter means can be realised as an individual initiative. The most convenient method to estimate the emotional agitation level when determining mental disorder is taking the student's pulse every 15 seconds.

It is generally known that methods of psychical self-regulation include formulae that develop conditional reflex connections between the words being mentally pronounced and the real feelings being implied by these words. The method of conducting behaviour modification autogenesis is widely elucidated in popular medical literature. It should be noted that the organisational form in question might relax, to a certain degree, the apparent negative consequences when meeting the young specialist with new industrial problems.

At present, the lack of acquired habits from liberated behaviour leads graduating students to display passiveness at production meetings and, in certain cases, to unfavourable results when trying to solve industrial problems and obtain quick promotion.

The solution of the problem devoted to preventing distress in young engineers in their industrial activities is presented graphically in Figure 2.

Following on from Jung's theory, the therapeutic methods of psychology based on bringing to the student's consciousness the unconscious contents, and then synthesising the mentioned concepts in the cognitive act, seems to be questionable in the case being considered, ie they will not lead to taking down the archetype that has been established. The problem is that cognition, as a rule, does not possess the moral strength [8].

The most effective approach to stirring students to greater creative activity is to draw them into the scientific research projects that are being carried out by the teaching staff of the university.

Distinctions can be drawn between conventional course works and training practice studies where the tutor is made aware of the best solution of the problem. In the latter case, the tutor (as a supervisor of research) and the student are on equal grounds about the solution being sought. In some cases, such conditions help the student out of the archetypal state.

In the case under consideration, the statement by V. Francl's that adherence to creative values can be regarded as the first of a triad of key elements that determine the meaning of life and, consequently, the stability of the student's psychological state, is of vital importance [12].

Table 2: Simplified dynamic structure of a student's personality.

Basic Components	Substructures of Personality	Basic Connections		Possible Organisational Form to Activate a Student's Personality
		With Consciousness	With Personal Activity	
1. Establishment of a personality orientation	Convictions Ideals Aspirations Interests	Realising the future	Through persuasion	Education
2. Peculiarity of psychological processes	Attention Will Sense Perception Thinking	Sufficiently to realise the present	Through the will and emotions	Exercise
3. Biopsychological characteristics	Cannot be used to prevent distress			
4. Experience	Insufficient for tackling the problem raised			

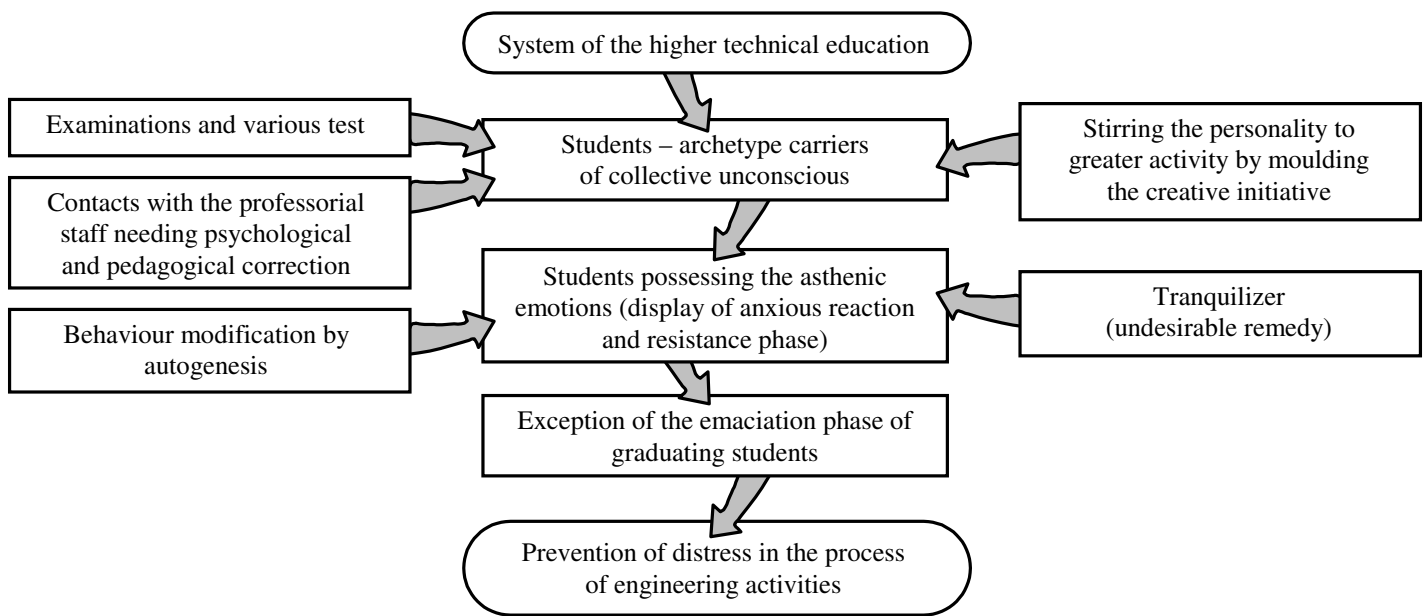


Figure 2: Prevention of distress of the engineering staff elite (in the framework of Selye's and Jung's theories).

The discussed psychological phenomena occur everywhere in the world, and bring emotional pressure upon students. To the author's regret, the statistical data utilised have been found to be inadequate to carry out a strict mathematical analysis.

CONCLUSIONS

The following conclusions can be reached:

- It has been established that the student's psychological characteristics should be attributed to the category of a collective unconscious.
- There are grounds to assume that the stereotypes of the student's negative emotions when studying at a university impact not only on the quality of the physiological and psychological processes, but also on future industrial activity as well. Therefore, consideration must also be given to possible connections between systematic psychological stress and organic diseases of an organism.
- Concrete approaches have been suggested to avoid the negative consequences of stress when teaching students at a university so that students can acquire the required habits to prevent stressful situations arising in industrial conditions, as stress can result in dissatisfaction with one's career and one's own activities, etc.
- It might be assumed that taking steps to generate permanent keen interest among high school students in their speciality, and to mould their creative initiative, can be viewed not only as a pedagogical problem, but also as an important social problem.

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