ANALYSIS OF THE FACTORS AFFECTING THE ABILITY OF WORKING WITH OTHERS AS AN ELEMENT OF STUDENTS' BURNOUT

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Abstract

This paper explores the factors that affect students' ability in working with others. Students' ability to co-operate with their tutors and their fellow students emerged as a crucial element of the burnout syndrome; the approach was based on an exploratory factor analysis of a structured questionnaire answered by 582 students of the University of Patras. In particular, the student's ability to collaborate with others was analysed via a hierarchical regression tree, the factors of which were in turn decomposed into their dominant independent variables creating thus, nested hierarchical regression trees of direct and indirect influences. The results showed that the main set of factors influencing students' ability to cooperate with each other and with their tutors are in principle the physical - psychoemotional exhaustion, appearing a strong direct correlation. Further set of factors towards the ability of student collaboration emerged to be student's lack of emotional self-determination as well as the lack of interest in their studies. In addition, this research indicated that the students' workload pressure causes physical and psychoemotional exhaustion and ultimately degrades their ability in working with others.

Keywords: *students, working with others, hierarchical regression tree, questionnaire, teamwork*

1. INTRODUCTION

Burnout syndrome in the workplace is a cognitive field of modern intensive research, (Maslach and Jackson, 1981; Cordes and Dougherty, 1993; Maslach, Schaufeli and Leiter, 2001; Schaufeli, Martínez, *et al.*, 2002; Schaufeli, Salanova, *et al.*, 2002; Leiter and Maslach, 2003; Nia and Zadeh, 2019). Burnout syndome's structural elements initially focused on emotional exhaustion, depersonalization and lack of personal achievement, (Maslach and Jackson, 1981; Maslach and Leiter, 2008). As energy reserves of emotion are reduced people feel they can not offer something else at a psychological level and this is often described as a loss of energy, exhaustion, weakness, fatigue. Depersonalization refers to the response towards others and has to do with negative behaviors, cynicism, the treatment of others as if they are impersonal objects and this is often described as inappropriate behavior and loss of ideals, (Guthrie and Black, 1997; Maslach, Leiter and Jackson, 1997). Depersonalization is interpreted as a reaction to exhaustion and in part as a reaction to deviations from the working environment and is manifested by the removal of the individual from other people and partly from work, (Marek, Schaufeli and Maslach, 2017; Portoghese *et al.*, 2018). Reduced self-accomplishment refers to a person's response to his / her own self and has to do with negative self-criticism, feelings of misery and lack of satisfaction for personal, professional achievements and is often described as "low morale", withdrawal, reduced productivity and inability to cope with problematic situations, (Guthrie and Black, 1997; Maslach, Leiter and Jackson, 1997).

However, inadequate personal accomplishment as a third structural element of burnout has been challenged by certain scholars highlighting that it has weak correlation with the dimensions of emotional exhaustion and depersonalization, (Demerouti *et al.*, 2001; Bakker, Demerouti and Verbeke, 2004).

In the context of questioning and therefore transforming the structural elements of the burnout syndrome, the research by Salanova et al. (2005) aimed at determining whether cynicism and depersonalization are two different dimensions of burnout or whether they are incorporated into a single structural element, (Salanova *et al.*, 2005). They were therefore led to the construction of the four-parameter model that includes cynicism, depersonalization, exhaustion, and personal accomplishment as structural elements of burnout. In particular, cynicism and depersonalization emerged as separate

structural components of burnout playing different roles particularly in terms of their relationship to professional accomplishment. In this light emotional exhaustion refers to the reduction of emotional energy sources due to interpersonal requirements. Depersonalization refers to an impersonal treatment of the public one serves or cares for, characterized by a negative and distant attitude. The lack of personal accomplishment is the tendency of negative self-assessment in terms of work. Depersonalization is considered to belong to the hard core of burnout as emotional exhaustion approaches the orthodox context of work stress and personal accomplishment the interpretation of personality efficacy. Based on the extension of the meaning of burnout from anthropocentric professions to the rest the three primary dimensions of burnout were transformed accordingly. Therefore, exhaustion represents severe fatigue irrespective of the cause, cynicism reflects indifferent or distant attitude towards the general context of work and lack of personal accomplishment encompasses social and non-social aspects. As for depersonalization that by definition involves other persons transformation interpreted it as a special case of mental distance. Nowadays, a common eniological umbrella of both depersonalization and cynicism is mental distancing, in the first case from the public of care or service while in the second case from the work itself and its context, (Salanova *et al.*, 2005).

Higher education environment is an important development framework for young people. This means that its characteristics have a critical impact on student development so as low academic achievement, weak mobilization, poor self-esteem, problematic behaviours, anxiety and exhaustion are deterrent areas. Higher education environments are demanding in terms of characteristics that students are required to cope with - by completing tasks, by following courses, by successfully participating in evaluations and by demonstrating consistency in predetermined time and quality conditions - with the aim of completing the degree, (Salmela-Aro and Read, 2017).

Central integral factor in the academic environment is its students. In this sense analysis of student's burnout syndrome becomes imperative. In particular, the parameters of student emotional exhaustion, depersonalization, reduced satisfaction, insufficient dedication to studies, occurrence of stressful situations, increased absences, psychosomatic disorders and disruptive interpersonal relationships have to be examined in depth, (Navarro and Más, 2010).

Neumann, Finaly-Neumann, & Reichel (1990) introduced the term academic burnout that describes the sense of exhaustion due to academic demands, the feeling of pessimism, the lack of interest in academic duties -academic apathy- and the poor personal development in academic and educational matters - academic failure -, (Neumann, Finaly-Neumann and Reichel, 1990). With the passage of the years, academic burnout was further expanded into educational contexts and situations, (Bikar, Marziyeh and Pourghaz, 2018). Student burnout syndrome is now a specialized subject of research, (Dyrbye *et al.*, 2008; Capri *et al.*, 2012).

Following the primary structural definition student burnout is defined as a three-factor psychological syndrome characterized by, (Schaufeli, Martínez, *et al.*, 2002):

1. exhaustion due to the requirements of the courses,
2. cynic and distant attitude towards the degree, and
3. the feeling of low efficacy and academic achievement.

According to Maslach student's burnout syndrome can be characterized by exhaustion due to the requirements of the lessons, a cynical and remote attitude towards the degree itself, and a feeling of inadequacy and low academic self-realization, (Maroco and Campos, 2012). Young people such as students are more prone to emotional exhaustion under the circumstance of expectations for the future (Cordes and Dougherty, 1993), in conjunction with the transition period they experience (Maslach and Goldberg, 1998). Particularly first-year students may experience problems in adapting to the new environment, changing lives and creating new interpersonal relationships that encompasses uncertainty (Hicks and Heastie, 2008). Factors such as students' interaction with each other and their tutors, social life, intellectual development, academic performance are indeed structural elements of their overall satisfaction with student life (Lee *et al.*, 2000) and the higher students' satisfaction level is the lower their exhaustion, (Capri *et al.*, 2012), while the levels of their academic performance and persistence

increase, (Lee *et al.*, 2000). However, the student population faces a number of problems in its everyday life which can erode their satisfaction from student life such as academic achievement, fulfilment of family goals, i.e. relationships with parents, socially, i.e. new friends, interpersonal relationships, professional, i.e. finding work, financial difficulties. The ability of students to collaborate with others is also important in academic cooperation. This is because in the academic context there is a need for students to cooperate with their tutors and with their fellow students due to the anthropocentric nature of the academic environment. Indeed, in many cases the students' cooperation with their fellow students is imposed in the context of group works, presentations, projects and laboratory exercises. Therefore, the ability to cooperate with their tutors and especially with their fellow students may be critical to the accomplishment of these tasks.

This implies that the ability of students to collaborate within their academic environment can also influence the benefits, (Bentley and Warwick, 2013) they gain from working together as groups: reducing workload, more input, interpersonal and inter-cultural communication, opportunity to understand and learn from others, increase self-confidence, time management and academic development. It has been suggested that in fact generating deeper levels of understanding requires students to work collaboratively and thus they can develop social skills useful for future study and employment, (Goold, Craig and Coldwell, 2008).

In the same line of argument certain personality characteristics -extraversion and emotional stability- have an indirect relationship to team viability via their relationship with social cohesion. In contrast when a team member lacks desirable interpersonal traits -such as consciousness- this can negatively affect team processes and the overall performance. Similarly, inclusion of a single member who is highly disagreeable is associated with lower performance, less cohesion, more conflict, less open communication and less sharing of the workload. This is crucial because it illustrates the potentially strong effect one person can have on team performance. In further, several contextual variables that include reward structure and resource availability may affect the interrelationships of ability and personality to team outcomes, (Barrick *et al.*, 1998) and could also consist motives towards students' involvement, (Watts and Robertson, 2011).

As far as students' ability to work with others and its correlation with student burnout from the research of Georgiou and Androulakis (2019) emerged that the most important factor of direct influence on students' cynicism -lack of interest in others, is students' difficulty in working with others within their academic environment that is their tutors and fellow students. In particular the lack of students' interest in their studies emerged as a condition which can lead them indirectly to cynical behaviour towards the others, (Georgiou and Androulakis, 2019a). Moreover, the research of Georgiou and Androulakis (2019) showed that the most significant factor that exerts influence on the status of students' depersonalisation -structural element of students' burnout syndrome- is their difficulty in cooperating with their fellow students and this could also be a foundation stage for depersonalisation manifested by the parallel appearance of cynicism - lack of interest in others. In the same line of argument, the research indicated that prone to depersonalisation are also the students who have difficulty in understanding others and see things from others' point of view that is low emotional intelligence, (Georgiou and Androulakis, 2019b).

In this paper the group of factors -causes- that influence students' ability to collaborate with others within the academic environment as well as the prioritization of these causal factors on the basis of their effect on students' ability to cooperate with their fellow students in groups as well as with their tutors are analysed. Section 2 presents the methodological approach followed in this work. In Section 3 the limitations of the present research are presented. Section 4 presents the research findings accompanied by their commentary. Section 5 is the discussion of the paper. Finally, Section 6 summarizes the findings, practical implications and the axes of future research.

2. METHODOLOGICAL APPROACH

The questionnaire was structured on the basis of exploring the groups of causes that act behind factors on students' burnout, (Georgiou and Androulakis, 2019a, 2019b). The questionnaire includes the following thematic areas: (a) Demographics, (b) Student Life Elements, (c) Elements of students' satisfaction, (d) Student Burnout Syndrome (e) Elements of students' Emotional Intelligence. Most questionnaire items were based on the questionnaires: (a) Maslach Burnout Inventory - Student Survey (MBI-SS), (Schaufeli, Martínez, *et al.*, 2002; Hu and Schaufeli, 2009) (b) Employee Satisfaction Inventory adapted to students; (Koustelios, 1991; Koustelios and Bagiatis, 1997), (c) Trait Emotional Intelligence Questionnaire (TEIQue-SF), (Petrides, 2009), and (d) the Self-Rated Emotional Intelligence Scale questionnaire, (Brackett *et al.*, 2006).

The statistical population of this work is the students of the University of Patras which at the period of the research had twenty four (24) Departments belonging to five (5) Schools -School of Business Administration, School of Engineering, School of Health Sciences, School of Humanities and Social Sciences and School of Natural Sciences-. The survey was conducted in December 2018. The questionnaire was answered by 582 students, weighted in terms of geographical distribution and representative of the departments of the University of Patras. All queries used a 7-point Likert scale. The Cronbach a for the present study was 0.92.

In order to explore the set of factors that are responsible for the causes of students' burnout syndrome an exploratory factor analysis (EFA) on the items focusing on burnout was applied. EFA is the most common quantitative technique of multivariable data analysis for determining the underlying structure of a relatively large set of observed variables. It is usually used to scale and identify a set of latent variables that form the basis of a group of measured, observed variables when there are no a priori assumptions about them. EFA is more accurate when each factor is represented by multiple observed variables in the analysis (Kaiser and Caffrey, 1965; Grice, 2001; Norris and Lecavalier, 2010).

Exploratory factor analysis assumes that any measured variable may be related to any factor. Research is preceded by a multifactorial analysis technique, especially in questionnaires that include a composition of research objects, conducted in particular conditions where researchers seek causal relationships between observed variables in the light of latent variables, (Norris and Lecavalier, 2010).

The EFA revealed seven set of causes acting behind the factors of students' burnout syndrome, (Georgiou and Androulakis, 2019b, 2019a, 2019c): (1) B1 physical-psychological exhaustion, (2) B2 efficacy and self-accomplishment of studies, (3) B3 cynicism - lack of interest for others, (4) B4 empathy – understanging others' feelings (5) B5 lack of interest in study and absenteeism, (6) B6 difficulty in working with others, (7) B7 depersonalization.

The set of causes B6 (difficulty in working with others) is the subject of focused research. In order to study the direct effects on the ability to cooperate with others, interpretive variables as structural elements of the questionnaire thematic modules were used. The EFA for Emotional Intelligence of Students in (Georgiou and Androulakis, 2019c) resulted to four (4) factors, two positive self-control ability (EI1) and heteroawareness (EI4), respectively, and two with negative direction lack of empathy-heteroconsciousness (EI2) and lack of emotional self-determination (EI3). In addition, an EFA focused on elements of student satisfaction, (Georgiou and Androulakis, 2019c), where the following set of causes emerged: (a) A1 workload pressure, (b) A2 learning infrastructure sufficiency, (c) A3 existence of justice and reward, (d) A4 adequate information and organization, (e) SL1 total studying level satisfaction, (f) SL2 level procedures satisfaction , and (g) SL3 satisfaction from studies within the departments.

The set of causes B6 (EFA loading is 1.965) encompasses the following items (the loadings are shown in brackets):

- cooperationsttired (0.658): It's tiring for me to work with my fellow students all day
- cooperteatired (0.490): It is tiring for me to work with my tutors all day
- stresswoclost (0.620): It makes me very stressful to work closely with my fellow students

- stresswoclostea (0.605): It makes me very stressful to work closely with my tutors
- drained (0.393): I feel emotionally drained from my studies

We observe that the majority of the questions that appear in this set of causes derive from the dimension of psychoemotional exhaustion of the triparametric model of burnout.

The above items were evaluated via polytomous item response theory (IRT) which is widely used on the purpose of objective evaluation, (Kamata and Bauer, 2008; De Ayala, 2013). The most important property of IRT is the invariance property where the levels of the latent characteristic for the subject do not depend on which items are to respond and respectively the item parameters do not depend on the sample, (Embretson and Reise, 2013; Reise, 2014). Therefore, this ability allows researchers to link effectively different measurement scales of the same attribute. The scoring of the observed variables of a questionnaire using IRT allows both the release from the measurement scale - a feature that prevents the comparison of findings between surveys conducted on a different scale - and the generalization of findings in other similar populations.

From the application of the IRT on the set of causes B6 the Fig. 1. emerged.

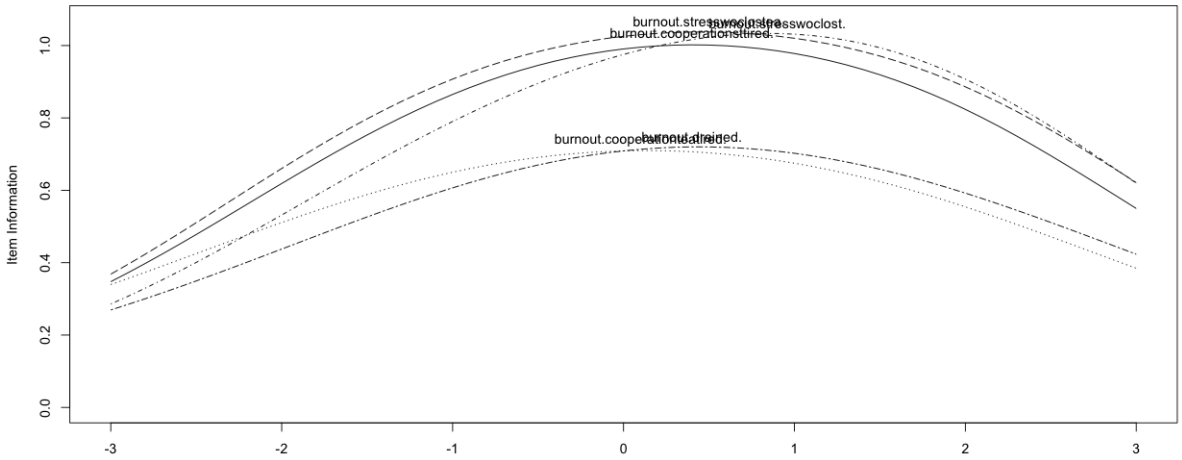


Fig. 1. Information function of item response theory on set of causes B6 difficulty in working with others

As can be observed, the items having the highest discrimination ability to separate respondents with respect to factor B6 are "It's tiring for me to work with my fellow students all day", "It makes me very stressful to work closely with my fellow students" and "I feel emotionally drained from my studies".

In order to study in detail the direct and indirect effects of the factors on the ability of the students to co-operate with their fellow students, the following procedure took place:

- Hierarchy of factors: in order to prioritize the interpretive variables in terms of the significance of their impact on the ability of students to cooperate with others, we applied hierarchical regression trees (Breiman *et al.*, 1984; Breiman, 2017).
- Investigation of correlations and interactions: the most important hierarchical factors that emerged were similarly analyzed, using hierarchical trees for each of them separately.
- Structural Equational Model (SEM), (Kline, 2015): with all the interpretive variables derived from the above complex sequential approach of hierarchical regression trees a constructive model of equations was formated, in order to estimate on overall the direct and indirect effect of the most important factors in the configuration of factor B6 students' difficulty in working with others.

3. LIMITATIONS

As described in the previous section the survey was carried out in University of Patras and the sample was weighted in terms of geographical distribution and is representative of the departments of the university. During the collections of students' answers at the University of Patras certain schools such as Law, Agriculture, etc., did not exist and therefore were not represented.

4. FINDINGS AND DISCUSSION

For the statistical analysis, the psych library of R was used, (Team, 2000; Revelle, 2018). As mentioned before the set of causes regards to depersonalization and cynicism as structural elements of the burnout syndrome of students have as most important common cause the ability of working with others which is the subject this paper deals with. Consequently, in the present work, these two causal structural elements, depersonalization and cynicism do not participate in the range of factors that affect the ability of students to cooperate with their fellow students and their tutors.

The factors that affect, statistically significantly, the level of B6 difficulty in working with others are presented in Table 1 and are as follows:

- B1 physical-psychoemotional exhaustion: it presents a direct positive correlation. Therefore, increased levels of physical and / or psychoemotional exhaustion are associated with increased levels of students' cooperative difficulty.
- B2 efficacy and self-accomplishment of studies: it presents a direct negative correlation. Therefore, increased levels of learning efficacy are associated with reduced levels of students' cooperative difficulty.
- B5 lack of interest in studying and absenteeism: it shows an immediate positive correlation. Therefore, less interest in studies is associated with an increase in students' cooperative difficulty.
- EI1 self-control ability: displays a direct negative correlation. Increasing self-control ability is therefore associated with a reduction in the level of students' cooperative difficulty.
- EI2 lack of empathy – heteroconsciousness: it displays an immediate positive correlation. Therefore, increasing the difficulty of empathy is associated with increasing the level of difficulty in working with others.
- EI3 lack of emotional self-determination: it shows an immediate positive correlation. Therefore, lowering levels of emotional self- determination is associated with increased levels of cooperative difficulty.
- EI4 heteroawareness ability: shows a direct negative correlation. Therefore, increasing the level of heteroawareness ability is associated with a reduction in the level of cooperative difficulty.
- A1 workload pressure: shows an immediate positive correlation. Therefore, increasing workload pressure is associated with increasing the level of difficulty in working together.
- A2 learning infrastructure sufficiency: it has a direct negative correlation. Therefore, increased levels in the adequacy of learning infrastructure are associated with reduced levels of difficulty in working together.
- A3 existence of justice and reward: it presents a direct negative correlation. Therefore, increased levels of sense of justice and reward during studies are associated with reduced levels of difficulty in working together.
- A4 adequate information and organization: it presents a direct negative correlation. Therefore, increased levels in the adequacy of information and organization are associated with reduced levels of difficulty in working with others.

- SL1 total studying level satisfaction: it presents a direct negative correlation. Therefore, increased levels of satisfaction from the overall level of study are associated with reduced levels of difficulty in working with others.
- SL2 level procedures satisfaction: it has a direct negative correlation. Therefore, increased levels in level procedures satisfaction are associated with reduced levels of difficulty in working with others.

	Dependent variables			
Independent variables	**B1**	**B5**	**B6**	**EI3**
B1 physical – psychoemotional exhaustion		0.333 ***	0.499 ***	
		(0.123)	(0.262)	
B2 efficacy and self accomplishment of studies		-0.364 ***	-0.301 ***	
		(0.146)	(0.095)	
B5 lack of interest in studying and absenteeism	0.370 ***		0.446 ***	
	(0.123)		(0.189)	
EI1 self-control ability		-0.302 ***	-0.279 ***	-0.393 ***
		(0.100)	(0.080)	(0.176)
EI2 lack of empathy - heteroconsciousness	0.271 ***		0.350 ***	0.272 ***
	(0.065)		(0.115)	(0.077)
EI3 lack of emotional self-determination	0.338 ***	0.404 ***	0.415 ***	
	(0.098)	(0.156)	(0.156)	
EI4 heteroawareness ability		-0.543 ***	-0.197 ***	
		(0.003)	(0.039)	
A1 workload pressure	0.314 ***		0.190 ***	0.091 ***
	(0.091)		(0.035)	(0.009)
A2 learning infrastructure sufficiency			-0.119 ***	-0.162 ***
			(0.017)	(0.036)
A3 existence of justice and reward			-0.166 ***	-0.078 ***
			(0.025)	(0.006)
A4 adequate information and organization	-0.918 ***		-0.227 ***	-0.199 ***
	(0.006)		(0.043)	(0.037)
SL1 total studying level satisfaction	-0.204 ***	-0.331 ***	-0.253 ***	
	(0.041)	(0.121)	(0.066)	
SL2 level-procedures satisfaction		-0.231 ***	-0.210 ***	
		(0.054)	(0.042)	
Department	Qualitative variable		Qualitative variable	
	(0.072)		(0.106)	

Table 1. Results from simple linear regressions. In columns are presented the dependent variables and in rows the independent ones. Regressions' beta and the R^2 coefficients are displayed. (Significant codes: 0 '***' 0.001).

In order to prioritize the influence of the above factors an hierarchical regression tree was applied via rpart library from R package as shown in Fig. 2., (Therneau, Atkinson and Ripley, 2018). Note that the sequence of hierarchically mapped variables expresses the interactions between the variables. The number inside the eclipsis refers to the mean values of B6 for the particular branch or leaf. The number under the eclipsis refers to the percentage of the student sample corresponding to the branch or leaf. When the indicated condition is true, we are led to the left branch.

The hierarchy of factors as to the significance of their effect on the change of factor B6 difficulty in working with others is illustrated by looking at the root of the tree towards its leaves through its branches. Hierarchically, the most important factor appears to be B1 (physical-psycho-emotional exhaustion). Following the first branch of the hierarchical tree, we find that the second factor varies depending on whether we focus on the large values of the B6 scale or its small values. Therefore, for low B6 values (difficulty in working with others), the second factor of significance is EI4 (heteroawareness), while for the high values of B6 (difficulty in working with others), EI2 (lack of empathy - heteroconsciousness).

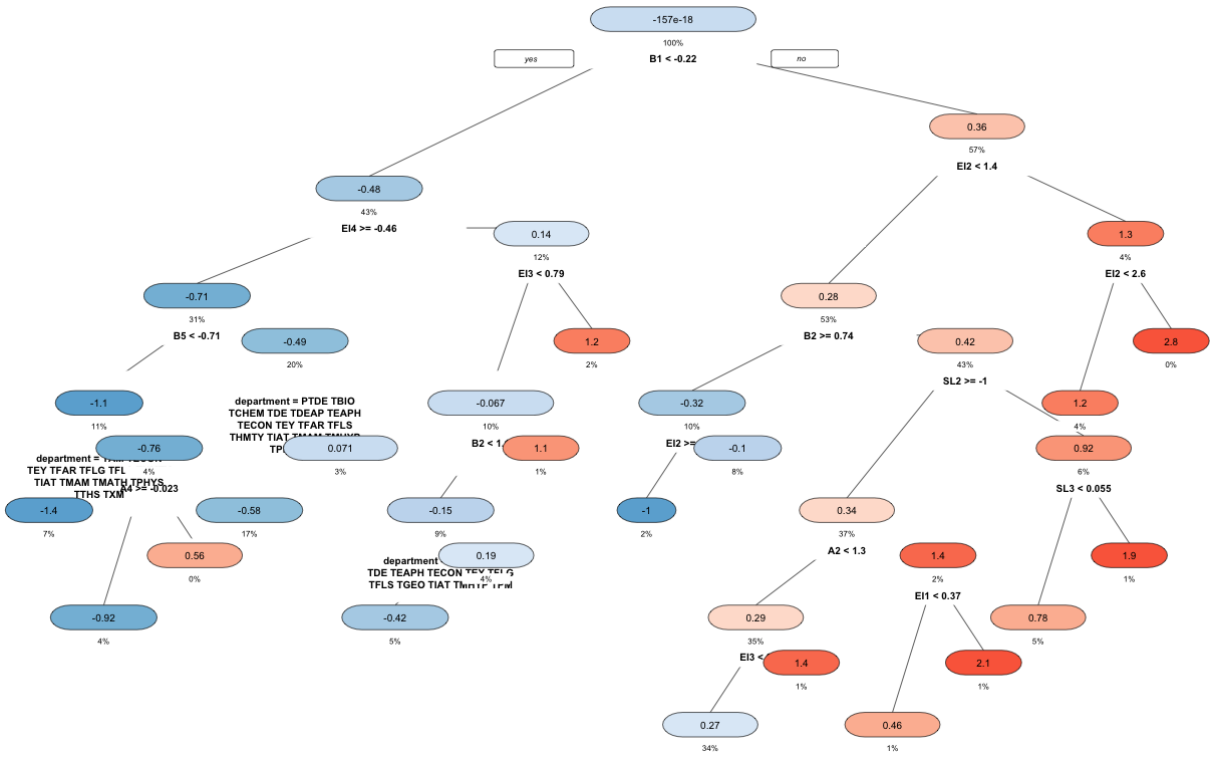


Fig. 2. Hierarchical regression tree for the factor B6 difficulty in working with others

Focusing on the factors that lead to high values on the scale of the factor of difficulty in working with others we observe that the hierarchical tree has three paths:

1. The highest average of 2.8 in the B6 measurement scale (difficulty in working with others) is found in 0.5% of the University of Patras' population and involves students with even minimal physical and psychoemotional exhaustion (B1> -0.22) and very high lack of empathy - heteroconsciousness, EI2> 2.6.
2. The second largest in the B6 measurement scale (difficulty in working with others) is observed in 1% of the student population and involves students with minimal physical and psychoemotional exhaustion (B1> -0.22) but not those who have large values in the lack of empathy - heteroconsciousness measurement scale, EI2 <1.4. In addition, students should not have high values on the efficacy and self-accomplishment of studies scale, B2 <0.74, not to be disappointed with the

level of organization of operations in their academic environment, SL2> -1, to evaluate as much A2> 1.3, and have above-average values in the self-control ability, EI1> 0.37.

3. The third largest mean in the B6 measurement scale (difficulty in working with others) is observed in 1% of the student population, and it concerns students with minimal physical and psychoemotional exhaustion (B1> -0.22) but not those who have large values in the lack of empathy - heteroconsciousness measuring range, EI2 < 0.74. As in case 2, these students must additionally not have high values in the measure of efficacy and self-accomplishment of studies, B2 <0.74, but feel frustrated by the level of organization of operations in their academic environment, SL2 < 1 while at the same time being less than satisfied with the level of study in the department they are attending, SL3> 0.055.

Conversely, by focusing on the factors that lead to low values of the scale factor of the difficulty in working with others, we observe that the hierarchical tree results into two paths, but not with such a large negative average:

1. The smallest average of -1.4 in the Factor B6 measurement scale (difficulty in working with others) occurs in 11% of the University of Patras' population and concerns students who do not have physical and psychoemotional exhaustion (B1 <-0.22), have at least average for heteroawareness, El4> -0.46, and a great interest in their studies, B5 < -0.71. Further differentiation in ability to work with others occurs in half of the university.

2. The second smaller average in the B6 measurement scale (difficulty in working with others) is observed in 2% of the student population and involves students with minimal physical and psychoemotional exhaustion (B1> -0.22) with moderate difficulty in empathy-heteroconsciousness , 0.78 <EI2 <1.4 and feel very effective in their studies, B2> 0.74.

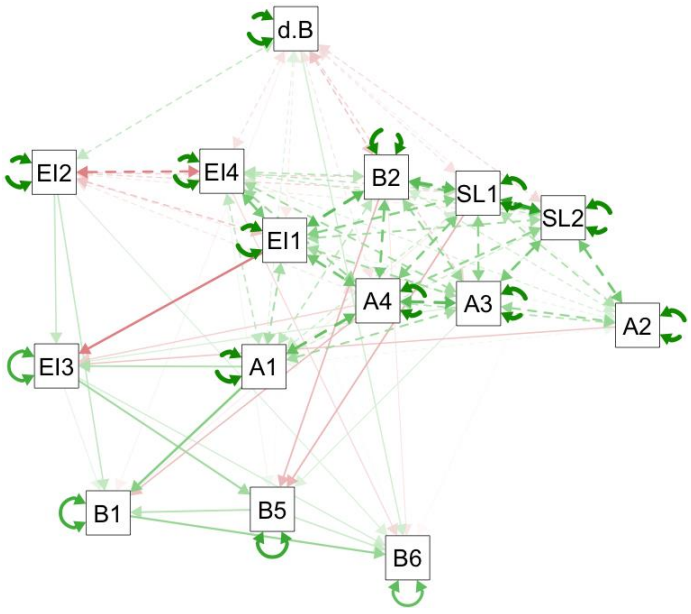


Fig. 3. Structural equation model for factor B6 (difficulty in working with others). Fit measures: CFI (0.9410), RMSEA (0.043), SRMR (0.041)

In order to evaluate not only the direct but also the indirect effects of the most important factors in the formation of B6 (difficulty in working with others), the structural model (SEM) depicted in Fig. 3 was used where the intensity of the correlation is expressed by the intensity of the imaging of the lines.

For the construction of the structural model, the most important factors influencing factor B6 (difficulty in working with others) and at the same time interpreting the greater percentage (75%) of the change as it resulted from multiple linear regression were used. Therefore, the following direct effect factors were

used as the basis: B1 (physical and psycho-emotional exhaustion), B2 (efficacy and self-accomplishment of studies), B5 (lack of interest in studying and absenteeism), EI3 (lack of emotional self-determination), EI4 (heteroawareness ability), SL2 (level-procedures satisfaction), and d.B (department of study). For indirect effects, factors B1 (physical and psycho-emotional exhaustion), B5 (lack of interest in studying and absenteeism) and EI3 (lack of emotional self-determination) based on the hierarchical regression tree are the three most important factors in shaping the change of factor B6 (difficulty in working with others).

Table 1 lists the regression coefficients and the linear correlation coefficient for each bivalent effect of factors B1, B5 and E13 with their respective independent variables. In Table 2 the standardized solution parameters (Est.std), the standard errors (s.e.) and the corresponding p-values of the structural equation model are presented.

Independent Variable	Dependent variable	Est.std	s.e.	p-value
B6 ~	B1	0.344	0.009	0.000
	B2	-0.075	0.012	0.000
	B5	0.179	0.010	0.000
	EI1	*0.020*	*0.012*	*0.106*
	EI2	0.111	0.010	0.000
	EI3	0.143	0.010	0.000
	EI4	-0.117	0.010	0.000
	SL2	*-0.018*	*0.010*	*0.064*
	DEPARTMENT	0.151	0.009	0.000
B1 ~	A1	0.412	0.011	0.000
	DEPARTMENT	-0.038	0.010	0.000
	SL1	-0.055	0.012	0.000
	B5	0.246	0.024	0.000
	EI3	0.079	0.013	0.000
	EI2	0.195	0.010	0.000
	A4	-0.203	0.013	0.000
B5 ~	EI3	0.312	0.013	0.000
	B1	*-0.009*	*0.024*	0.694
	EI1	*-0.013*	*0.014*	*0.355*
	SL1	-0.241	0.018	0.000
	EI4	0.052	0.011	0.000
	SL2	0.107	0.016	0.000
	B2	-0.229	0.013	0.000
EI3 ~	A1	0.263	0.011	0.000
	A2	-0.175	0.010	0.000
	A3	0.125	0.012	0.000
	A4	-0.145	0.014	0.000
	EI1	-0.416	0.010	0.000
	EI2	0.195	0.010	0.000

Table 2. Standardized solution of structural equation model of B6 (difficulty in working with others)

As the most important factor of direct influence on students' difficulty to cooperate with others is their physical and psycho-emotional exhaustion (B1). This means that students who feel physical - psycho-emotional exhaustion have a hard time when working with their fellow students and / or their tutors.

The second factor in importance is the factor B5, namely the lack of interest in studying and absenteeism via the exertion of two kinds of effects: direct positive correlation with the difficulty of working with others, meaning that students who are not interested in their studies and this is often accompanied by absenteeism have difficulty in cooperating with their fellow students or their tutors in the context of group academic work. Regarding the indirect effect, it can be observed that is mediated through factor B1, physical and psychoemotional exhaustion, which can be interpreted that students who are not interested in their studies are led to physical and psycho-emotional exhaustion due to the urgency of their duty and therefore have a hard time when working with their fellow students or their tutors as this process involves psycho-emotional energy spending.

Energy spending is an integral part of communication and cooperation activities, especially when the focus is on the human factor and the importance of motivation (i.e. interest in studies) is dominant in terms of efficiency and effectiveness, is in line with literature. Apart from the structural elements of burnout, the emotional intelligence EI2 (lack of empathy-heteroconsciousness) is strongly influenced by the difficulty of group collaboration among students. This particular effect is twofold: in a direct way, meaning that students who lack emotional self-determination have difficulty in expressing their feelings in words even to understand and recognize what they feel and cannot work with others. In an indirect way, the interpretation is as follows: students who lack emotional self - determination are not interested in their own studies and because studies are an urgent task of life they experience physical - psycho - emotional exhaustion and therefore do not have the necessary physical - psycho - emotional energy to cooperate with the other factors within the academic environment. The parameter of lack of emotional self-determination has emerged as a constituent element of emotional intelligence. The connectivity of emotional intelligence with the management of interpersonal relationships in the workplace as well as a predictive factor for the burnout of students has been documented in the literature.

In the context of the direct impact, it was found that only at the low B6 values in the hierarchical regression tree the role of studies is only related to the ease of cooperation of the students and in no case affects the difficulty of their interpersonal co-operation within the framework of team academic tasks. This is encouraging in the mission of education as it is an important base of literature to be cultivated and the ability of students to collaborate in teams to pursue common goals could be encouraged.

At this point it should be clarified that factors that have a direct effect on the ability of students to collaborate with others do not show a measurable effect compared to the following factors of indirect effect: the negative correlation with two parameters of emotional intelligence, ie EI1 (self-control ability) and EI3 (lack of emotional self-determination). This correlation is the basis of two alternative paths of a direct effect on the difficulty of students collaborating with others and an indirect effect through B5 (lack of interest in studying and absenteeism) and B1 (physical and psycho-emotional exhaustion) factors. It is thus shown that students who have sufficient self-control ability can be emotionally self-determined and therefore can collaborate with others in the academic process. It can be observed that the role of emotional intelligence in terms of the ability to cooperate with others is also a powerful factor on the level of indirect correlations. It has also been shown that students who are aware of workload pressure (A1) cannot work with their fellow students and / or their tutors as long as this pressure causes them to suffer physical-psychoemotional exhaustion (B1) or (EI3) lack of emotional self-determination. It is noteworthy that the structural component B2 (efficacy and self-accomplishment of studies) of the burnout syndrome exerts mainly an indirect effect because its existence combined with interest in studies (B5) can lead to physical - psycho-emotional exhaustion (B1) and this requires the use of energy stocks, so cooperation with others becomes difficult. Factor A4 (adequate information and organization) has been shown to reduce physical and psychological emotional exhaustion, thereby facilitating collaboration with others. The thematic axis of student satisfaction embraces, based on the literature, their overall satisfaction with student life and therefore also with the interpersonal relationships that develop there. In this context, the SL1 factor of satisfaction in the overall level of studies has been shown to affect students' ability to work with others because the more satisfied students

are from their overall level of study the greater their interest in them and their participation in academic duties, thereby their ability to cooperate with others within the academic environment is fostered.

5. DISCUSSION

The cooperation of the students with each other and with their tutors is inherent in the academic life, (Lee *et al.*, 2000) . Particularly first-year students in their adaptation to the new environment are usually asked to broaden their interpersonal relationships and this involves uncertainty as well as adapting to the new environment (Hicks and Heastie, 2008)..

The ability of students to cooperate with others is important in the context of interpersonal relationships and academic cooperation. In the academic context there is a need for students to collaborate with their tutors and their fellow students because of the anthropocentric nature of academic duties and student activities. Frequently, students' interaction with their fellow students is a prerequisite for group work, presentations, projects and laboratory exercises. The ability of students to collaborate with their tutors and their fellow students can be critical for the fulfilment of academic activities.

Our research has shown that it is the cooperation of students with their fellow students rather than with their tutors that most causes fatigue and intense stress. We also noticed that the causal background behind factor B6 -difficulty in working with others- is of psycho-emotional nature. One possible interpretation is the fact that for the majority of students the frequency of interaction with the others within their academic environment is most concentrated in their relationship with their fellow students rather than with their professors.

Indicatively, the findings of Duque (2011) research emphasize that student collaboration is very important in interpreting cognitive and learning outcomes explaining a large percentage of satisfaction and efficiency focused on learning outcomes. In particular, learning outcomes of students - learning and acquiring skills - are not only dependent on quality perception - lesson teaching, program structure, social environment, secretarial support, library, workshops, campus activities, (Duque, 2014) - but also on the ability of students to collaborate with others - the effort and effective interactions with others with in the academic environment - and psychological situations related to their studies, (Duque, 2011).

In Lee, Choi & Chae (2017) research was found that low levels of students' self-determination and cooperative ability are predictive factors for the medical students' burnout. Indeed, students with low cooperation ability tend to criticize others and operate in isolation rather than in cooperation schemas. Their lonely attitude in the workplace prevents the manifestation of empathy -to understand the feelings of others-, cannot be related to openness to innovation -as a characteristic of personality-, distance from the problems of others, leading to the demonstration of cynical behaviour, (Lee, Choi and Chae, 2017).

As we noticed in research of Georgiou and Androulakis (2019) students' ability in working with others within their academic environment -their tutors and fellow students- is the most important factor of direct influence on students' cynicism and depersonalisation. This could also give signs of a foundation stage for depersonalisation on behalf of cynicism - lack of interest in others, (Georgiou and Androulakis, 2019b, 2019a). Moreover, our research showed that students who have inadequate self-control ability, have difficulty in understanding and expressing their own feelings and are not interested in their studies face difficulty in cooperating with their fellow students or tutors in terms of the academic teamwork leading in turn into physical and psychoemotional exhaustion. In the same line of argument, it is interesting that when students perceive workload pressure, they feel fatigue in physical and psychoemotional level and this erodes their ability of working with others within the academic setting.

6. CONCLUSION, IMPLICATIONS AND FURTHER RESEARCH

In this paper an attempt was made towards the analysis of the factors that affect students' difficulty in working with others as one of the structural elements emerged of students' burnout. The analysis was accomplished via a structural equational model in which the independent variables used, derived from the hierarchical regression tree applied. The most important factors emerged were further analysed in

terms of their independent variables. The corresponding nested trees structured the final structural equational model.

In this work it was revealed that the most important factor that exerts influence on the ability of students' cooperation is their physical – psychoemotional exhaustion. The cooperation with their fellow students and tutors is a procedure that demands emotional and physical resources according to the literature and therefore when these are depleted then the interpersonal collaboration is of questionable effectiveness. Moreover, the research showed that students who are not interested in their studies and this is often accompanied or manifested by absenteeism have difficulty in cooperating with their fellow students or tutors in terms of the academic teamwork. Thus, the role of motivation -interest in studies- which is indicated thoroughly in literature is important towards involvement in teamwork. In the same line of argument, it emerged that students who are not interested in their studies are led to physical and psychoemotional exhaustion due to the urgency of their duty and therefore have a greater deal of difficulty in working with the other persons within the academic environment.

In addition, this research indicated that students who lack emotional self-determination and thus have difficulty in expressing their own feelings in words or even understand and recognize what they feel cannot work with others in the university. Under this spectrum, students who lack emotional self - determination are not interested in their own studies and due to the urgency of the academic tasks they may experience physical - psycho-emotional burnout and therefore do not have the necessary physical - psycho-emotional energy to cooperate with the others within the university.

On the contrary, it was showed that students who have sufficient self-control capacity have also the ability to emotionally self-identify and therefore can collaborate with others in the academic process. It can be noticed that the role of emotional intelligence in the ability to cooperate with others is an existing powerful factor mainly on the level of indirect correlations.

The research also pointed out the role of the department in relation to the ability of students' cooperation with their fellow students and their tutors within team work academic tasks. Thus, the correlation of the emotional intelligence with the team work's performance and the structural elements of students' burnout as pointed out in literature, is confirmed.

It has also been showed that students who perceive workload pressure cannot easily work with their fellow students and their tutors especially if this pressure is what causes them physical-psychoemotional exhaustion or even lack of emotional self-determination. It is noteworthy that the structural component of the burnout syndrome emerged to be efficacy and self-accomplishment of studies combined with extravagant interest in studies leading to physical - psycho-emotional exhaustion; this requires usage of energy stocks and therefore, cooperation with others becomes difficult. The existence of adequate academic awareness and organization appears to have a negative correlation with students' physical and psycho-emotional exhaustion, thereby facilitating collaboration with others. The thematic axis of students' satisfaction embraces their overall satisfaction with student life and also the interpersonal relationships they develop there. In this context, the research indicated that students' satisfaction by the overall level of studies can affect students' ability to work with others and in particular, the more satisfied students are from their overall level of study, the greater their interest in them and their involvement in the academic duties and thus their ability to cooperate with others is fostered.

This paper adds to the hierarchy and the direct and indirect categorisation of the structural elements of students' burnout syndrome, students' emotional intelligence and students' life in terms of their influence on students' ability to collaborate within the academic environment. An innovative element in the methodological approach is that since the phenomenon of burnout was initially analysed via exploratory factor analysis, its structural elements were examined as separate set of causes consisting factors, and thus as stages of students' team cooperation.

The same methodological approach could be followed to interpret other structural causal factors students' burnout syndrome such as students' emotional exhaustion, lack of personal accomplishment and lack of interest in their studies. In addition, using the structural models emerge in combination with the structural models of this paper in conjunction with papers Georgiou and Androulakis (2019), (Georgiou and Androulakis, 2019a, 2019b), a more thorough structural model can occur. It is fruitful

that emphasis is placed on students' ability in working with others in teams from a social point of view as well. Today's students who have the ability to collaborate harmonically in teams are equipped with the skill of cooperating effectively in teams in their future workplace to. Therefore, the educational system could implement appropriate interventions towards the enhancement of students' ability of working with their fellow students and their tutors placing emphasis on the particular characteristics of each academic module and on student life so as to meet the goals of student involvement, socialisation and cooperation.

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