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# THE IMPACT OF TEAMWORK ON THE MOTIVATION PROCESS AND ACADEMIC INVOLVEMENT OF STUDENTS

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This article presents the results of a quantitative study conducted to highlight the importance of teamwork in the academic environment, particularly in the current context defined by the transition to new educational formats because of the pandemic and post-pandemic period. Amid these changes, achieving and maintaining the same level of motivation, collaboration, and academic engagement, essential for successful learning environments, has become challenging and difficult. The analysis of preferred working methods of students revealed that teamwork has a favorable impact on increasing intrinsic motivation for knowledge and experiencing stimulation, on extrinsic motivation for identification and regulation, as well as on academic engagement of students. We believe that the findings of this research have significant practical value for the educational process, enabling educators to identify teaching and assessment methods based on the premise that teamwork significantly contributes to enhancing the motivation process and academic engagement behavior of the students.

***Keywords:*** *academic engagement, intrinsic motivation, extrinsic motivation, teamwork.*

## IMPACTUL LUCRĂRII ÎN ECHIPĂ ASUPRA PROCESULUI DE MOTIVAȚIE ȘI IMPLICAREA ACADEMĂ A ELEVILOR

Acest articol prezintă rezultatele unui studiu cantitativ realizat pentru a evidenția importanța muncii în echipă în mediul academic, în special în contextul actual definit de tranziția la noile formate educaționale din cauza perioadei de pandemie și post-pandemie. În mijlocul acestor schimbări, atingerea și menținerea aceluiași nivel de motivație, colaborare și angajament academic, esențial pentru mediile de învățare de succes, a devenit provocatoare și dificilă. Analiza metodelor de lucru preferate ale studenților a relevat faptul că munca în echipă are un impact favorabil asupra creșterii motivației intrinseci pentru stimularea cunoașterii și experienței, asupra motivației extrinsece de identificare și reglare, precum și asupra angajării academice a studenților. Considerăm că rezultatele acestei cercetări au o valoare practică semnificativă pentru procesul educațional, permițând educatorilor să identifice metode de predare și evaluare pe baza premisei că munca în echipă contribuie semnificativ la îmbunătățirea procesului de motivare și a comportamentului de implicare academică al studenților.

***Cuvinte-cheie:*** *angajament academic, motivație intrinsecă, motivație extrinsecă, lucru în echipă.*

### Introduction

In recent decades, research conducted in the fields of developmental psychology and educational psychology has highlighted that the educational process is the most complex tool for individual development, guiding individuals toward performance, helping them achieve their goals, and ensuring a high quality of life [1, 3, 10, 16].

In the current educational context, there has been a noticeable decline in the level of student engagement in the educational process, especially in recent times, which have been marked by the transition to new educational formats, adopted globally due to the pandemic and post-pandemic periods. Both direct observations and research in this field have shown that in new educational environments such as virtual, online, or hybrid formats, maintaining the same level of motivation, collaboration, and academic engagement has become challenging, creating pressure for both teachers and students [2, 12].

Recent research on motivational aspects and academic engagement has highlighted several issues related to perceptions influenced by the pandemic crisis, during which many educational institutions implemented significant changes in response to the measures imposed by the new situation. Although studies have shown that these changes have affected both psychological well-being and participation in the educational process, by decreasing motivation to engage in study, it remains unclear whether the decline in motivation and aca-

demic engagement can be explained by the organization of students' study and work methods, which in turn were impacted by the changes and adaptation to new educational formats [13, 17].

In this context, through the conducted research, we aim to highlight the differences in motivation and academic engagement based on students preferred working methods: individual or team-based work.

**Aspects of Student Motivation and Academic Engagement**

To acquire the skills and competencies necessary to meet contemporary challenges, student academic engagement increases the likelihood of achieving both educational and personal goals. Thus, academic engagement is a key indicator in shaping graduates, enabling them to accumulate and possess the knowledge and skills that are appropriately reflected by obtaining a bachelor's degree [10].

Academic engagement is an indicator of the extent and intensity with which a participant in the educational process becomes involved in various activities characteristic of the learning process. This construct has two components: academic identification and academic participation, making it more than just attending classes and acquiring knowledge [11, 16].

In the context of studying student academic engagement behavior, the aspect of motivation is one of the most important aspects, with research focusing on the connection and impact of different types of motivation on learning behaviors in general. According to the self-determination theory proposed by E. L. Deci and R. M. Ryan in 1985, motivation is not a unidimensional concept and must be analyzed through three facets: intrinsic motivation, which refers to voluntary participation in an activity without internal or external pressures; extrinsic motivation, which involves participation in an activity due to external or internal pressures; and amotivation, or the absence of motivation [4].

The opinion of these researchers is further supported and developed by subsequent studies in the field of motivation, which elaborate on the three dimensions [5-7]. In 1992, R. J. Vallerand and his collaborators presented a model with three components of intrinsic motivation: intrinsic motivation to know – characterized by concepts such as curiosity, the need for knowledge, and understanding; intrinsic motivation to accomplish – defined by the attempt to reach high standards or create something; and intrinsic motivation to experience stimulation – marked by enthusiasm and the desire to experience positive feelings through action.

Regarding extrinsic motivation, R. J. Vallerand and his collaborators also detail this concept, presenting three aspects of extrinsic motivation: external regulation – characterized by involvement in an activity for rewards; introjected regulation – where actions are gradually internalized by the individual; and identified regulation – where behaviors are valued and perceived as personal choices. A final aspect within this theory is the lack of motivation, or amotivation, characterized by the absence of a link between actions and outcomes, often associated with the phenomenon of learned helplessness [18, 19, 20].

In the context of associating the motivational dimension with those of individual development, one of the most recent approaches is proposed by C. S. Dweck in 2017, who supports a unified theory of motivation, personality, and development, building on the theory of R. M. Ryan and E. L. Deci. The approach underlying this theory stems from the idea that these three constructs lead to specific objectives that individuals need to fulfill their needs. In the process, a series of beliefs, emotions, behaviors, and tendencies toward action are generated, which are associated with the motivational dimension [8].

J. A. Fredricks and his collaborators indicated in their 2004 study that academic engagement continues to be a major subject of interest, as science remains essential in driving innovation in the economy and society. It was concluded that academic engagement tends to characterize more scientifically productive individuals, suggesting that it is complementary or even instrumental to academic research activities. This engagement is positively correlated with the mobilization of research funds and resources. Such behavior appears to be driven more by autonomous, individual characteristics, such as intrinsic motivation, and less influenced by the characteristics of the academic environment, which relate more to extrinsic motivation [9].

In 2021, a research team led by M. Perkman conducted a meta-analysis on academic engagement, reviewing the existing literature from the past decade in this field. The conclusions highlighted that academic engagement is also influenced by the behaviors of peers in the academic environment, along with the disci-

plinary characteristics of the academic setting. An important aspect of the research, considering its practical value, is the conclusion that academic engagement is positively associated with the subsequent scientific productivity of students [15].

**Research Methodology**

**The purpose** of this research is to identify the differences that arise in the motivation process and the academic engagement process of students, based on their preferred mode of study and work, comparing individual versus team settings. The proposed research objectives are to highlight the differences present in various aspects of the motivational process between students who prefer studying and working in teams versus those who prefer individual study and work, and to evaluate the potential differences in academic engagement levels between students who prefer to study and work in teams compared to those who prefer to work individually.

**Measurement instruments**

To collect the necessary data for the research, the scales used were combined into a single questionnaire, along with items designed to gather the socio-demographic data of the respondents. The two instruments which we used for measuring the constructs analyzed in the research are: the Academic Motivation Scale and the Academic Engagement Scale.

The Academic Motivation Scale (AMS-C 28) was developed by R.J. Vallerand and his colleagues in 1992 and is sourced from the Research Central platform, which provides the translation and adaptation from the original scale. This scale serves as an instrument based on self-determination theory, measuring the three levels of the motivational process: intrinsic motivation, extrinsic motivation, and amotivation [20]. The internal consistency coefficient for this questionnaire was calculated based on the data obtained from the studied sample, yielding a value of 0.895, which indicates an appropriate level of internal consistency for the 28 items of the questionnaire.

The second instrument applied is the Academic Engagement Scale, developed by S. Zhang and collaborators, and obtained from the Research Central platform, translated and adapted from the original source. The scale was developed to assess students' academic engagement [22], and the calculation of the internal consistency coefficient when applying the test to the studied sample indicates a value of 0.885, which corresponds to good internal consistency of the applied instrument.

**Research Sample**

The data used for this research were collected from a sample composed of 149 students in their first, second, and third years of undergraduate studies at the Faculty of Psychology and Educational Sciences of Hyperion University in Bucharest. The sample consisted of 125 female respondents, representing 84% of the group, and 24 male respondents, representing 16%. The average age of the subjects is 32 years. Regarding the distribution by year of study, 82 respondents are first-year students, accounting for 55% of the sample; 47 respondents are second-year students, making up 32% of the sample; and 20 respondents are third-year students, representing 13% of the sample.

**Results Obtained**

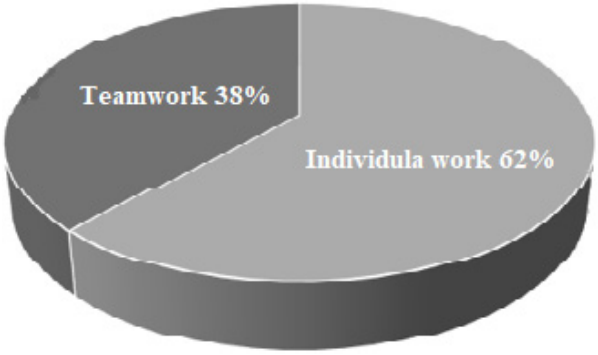
To achieve the proposed research objectives – specifically, highlighting the differences in motivation between students who prefer teamwork and those who prefer individual work, as well as assessing the possible differences in academic engagement between students who prefer to work in teams versus those who prefer to work individually – we formulated the following research hypotheses:

**Hypothesis 1:** There is a difference in intrinsic motivation among students based on their preferred study and work mode.

**Hypothesis 2:** There is a difference in extrinsic motivation among students based on their preferred study and work mode.

**Hypothesis 3:** There is a difference in academic engagement among students based on their preferred study and work mode.

**Fig. 1. Preferred Work Mode of Students in the Studied Sample.**




Using the items from the developed questionnaire, we identified the composition of the research sample based on the preferred study and work modes of the students, namely: individually or in teams. The results are presented in Figure 1.

The data analysis reveals that 62% of the students in the research sample prefer to study and work individually, while only 38% prefer to study and work in teams.

Verification of the value distributions for the variables analyzed in the study indicated that these distributions deviate significantly from the normal distribution curve. The obtained results are presented in Table 1.

**Table 1. Results of the Normality Test.**

| Variables | Normality Test Kolmogorov-Smirnov | Normality Test Shapiro-Wilk |
|---|---|---|
| Academic engagement of students | P = 0,013 | P = 0,001 |
| Intrinsic motivation for knowledge | P = 0,000 | P = 0,000 |
| Intrinsic motivation for achievement | P = 0,000 | P = 0,000 |
| Intrinsic motivation for experiencing stimulation | P = 0,000 | P = 0,000 |
| Extrinsic motivation for identification | P = 0,000 | P = 0,000 |
| Extrinsic motivation for introjection | P = 0,000 | P = 0,000 |
| Extrinsic motivation for regulation | P = 0,000 | P = 0,000 |

Considering the results obtained from the analysis of the distribution of values for the dependent variables studied, we concluded that it is necessary to apply non-parametric statistical tests to verify the three working hypotheses [14, 21].

To test the first hypothesis, we applied the Mann-Whitney non-parametric test to determine whether there are differences in intrinsic motivation for knowledge, achievement, and stimulation between students who work individually and those who prefer studying and working in teams. The results obtained are presented in Table 2.

**Table 2. Differences in Types of Intrinsic Motivation Based on Work Mode.**

| Variable | Value U | Mean Ranks (mr) | Sum of Ranks (Σ) | Significance (P) | Differences |
|---|---|---|---|---|---|
| Intrinsic motivation - knowledge | 2115,50 | mr 1 = 69,49<br>mr 2 = 83,89 | Σ 1 = 6393,50<br>Σ 2 = 4781,50 | P = 0,041 | Presence of differences |
| Intrinsic motivation - accomplishment | 2177,50 | mr 1 = 70,17<br>mr 2 = 82,80 | Σ 1 = 6455,50<br>Σ 2 = 4719,50 | P = 0,082 | Absence of differences |
| Intrinsic motivation - experience stimulation | 1901,50 | mr 1 = 67,17<br>mr 2 = 87,54 | Σ 1 = 6179,50<br>Σ 2 = 4995,50 | P = 0,005 | Presence of differences |

*Note: 1 – individual work mode, 2 – teamwork mode.*

Continuing with the verification of the second hypothesis by applying the non-parametric Mann-Whitney test, we checked whether there are differences in the extrinsic motivation of identification, introjection and regulation between students who prefer to study and work individually compared to those who prefer to study and work in the team. The results obtained are presented in table no. 3.

**Table 3. Differences in Types of Extrinsic Motivation Based on Mode of Work.**

| Variable | Value U | Mean Ranks (mr) | Sum of Ranks (Σ) | Significance (P) | Differences |
|---|---|---|---|---|---|
| Extrinsic motivation - identification | 2058,00 | mr 1 = 68,87<br>mr 2 = 84,89 | Σ 1 =6336,00<br>Σ 2 = 4839,00 | P = 0,025 | Presence of differences |
| Extrinsic motivation - introjection | 2289,50 | mr 1 = 71,39<br>mr 2 = 80,83 | Σ 1 = 6567,50<br>Σ 2 = 4607,50 | P = 0,192 | Absence of differences |
| Extrinsic motivation - regulation | 2005,00 | mr 1 = 68,29<br>mr 2 = 85,82 | Σ 1 = 6283,00<br>Σ 2 = 4892,00 | P = 0,016 | Presence of differences |

*Note: 1 – individual work mode, 2 – teamwork mode.*

To test the last hypothesis, we applied the non-parametric Mann-Whitney test to identify whether there are differences in academic engagement between students who work individually compared to those who work in teams. The results obtained are presented in table no. 4.

**Table 4. Differences in Academic Engagement of Students Based on Mode of Work.**

| Variable | Value U | Mean Ranks (mr) | Sum of Ranks (Σ) | Significance (P) | Differences |
|---|---|---|---|---|---|
| Academic engagement | 2107,50 | mr 1 = 69,41<br>mr 2 = 84,03 | Σ 1 =6385,50<br>Σ 2 = 4789,50 | P = 0,044 | Presence of differences |

*Note: 1 – individual work mode, 2 – teamwork mode.*

**Discussions**

The results of this research highlighted the fact that there are statistically significant differences in some of the facets of intrinsic motivation between students who prefer to study and work in a team compared to those who prefer to work individually. Concretely, differences were revealed in the intrinsic motivation for knowledge and in the intrinsic motivation for experiencing the stimulation, while no statistically significant differences were revealed for the intrinsic motivation to achieve. Analyzing the average of the ranks obtained, we observe that students who prefer teamwork report a higher level of intrinsic motivation for knowledge and intrinsic motivation for experiencing the stimulation, having a higher level of positive feelings in the process of working together with colleagues during the time of the activity of learning and exploring new aspects and knowledge.

From the point of view of extrinsic motivation, the obtained results highlight the fact that the extrinsic identification motivation and, respectively, the extrinsic regulation motivation are at a higher level in students who work preferentially in teams, while the extrinsic motivation of introjection shows no differences significant between the two groups of students analyzed. These results highlight the fact that students who prefer to work in teams engage more in the activity, to obtain the rewards of completed goals, compared to students who work individually. Similarly, students who work in teams engage more in activities with peers, experiencing this engagement as chosen rather than imposed, identification being a self-determined type of extrinsic motivation.

One of the significant results obtained from this study pertains to the validation of the third hypothesis, which indicates that teamwork contributes to a stronger engagement of students in the academic environment. According to the results, the level of academic engagement among students who prefer to study and work in teams is significantly higher than that of students who prefer to work individually.

The explanations we formulate regarding the results obtained are based on the premise that teamwork stimulates and motivates students more effectively than individual work, through the connections that form between team members as they work together to achieve shared goals. These cognitive and emotional connections serve as powerful motivational factors, positively influencing the academic engagement of students.

**Conclusions**

In recent years, there has been a noticeable decline in academic engagement, partially attributed to the transition to new educational formats necessitated by the pandemic and post-pandemic periods. The results obtained from this research on the impact of teamwork on the motivation and academic engagement of students highlight that collaborative work yields significantly superior outcomes. Specifically, the study indicates that teamwork fosters a higher level of motivation and academic involvement compared to individual work.

We conclude that certain aspects of intrinsic and extrinsic motivation – specifically intrinsic motivation for knowledge and stimulation, as well as extrinsic motivation for identification and regulation – along with academic engagement, show higher values among students who prefer to study and work in teams. This underscores the idea that teamwork provides multiple benefits for personal development through the educational process.

These findings are significant for their practical implications in the academic environment, helping educators identify new teaching and assessment methods. The conclusions drawn from this research indicate that teamwork significantly enhances students' motivation and academic engagement.

Although the study was limited by a relatively small number of participants and the focus on a specific group of students from a single faculty, it outlines a potential future research direction. This could involve diversifying the sample and increasing its size to validate and refine the results obtained.

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