Fatma HAMDI & Ahlem KHEFACHA & Míra MAKAI & Beatrix SÉLLEI

The key of academic success – different keys to different faculties

Introduction

Engineering skills in a broader context

As the world continues to evolve, discoveries and research findings constantly shape our understanding of it. These advancements in knowledge help us adapt and develop innovative solutions to human challenges, however alongside the gained knowledge, individuals must also acquire new skills and experiences to keep up with the evolving labour market. The field of engineering is an excellent example of this, as engineers were required to be primarily proficient in their scientific, mathematics, and practical fields. In addition to that, nowadays, they are also expected to have a set of soft skills that encompasses problem-solving, effective communication, emotional intelligence, and leadership skills (Itani and Srour 2016; Kamaruzaman et al. 2019). The Accreditation Board for Engineers and Technology (ABET) also followed the flow of world development and nowadays emphasizes the importance and need for engineering students to be proficient in non-technical skills (Felder 1998).

In addition to the technical skills students and engineers will acquire in their curriculum, they are also expected to develop their soft skills. However, research shows a gap between the corporate needs and what students have learned (Kamaruzaman et al. 2019), which makes it the educational institution's responsibility to ensure their students' proper development and learning to meet the labour market requirements and avoid having a skills gap. A recent study of Gesun et al. (2021) shows that changing the approach in STEM undergraduate education in a transformative and sustainable way will be the only way to achieve "*engineering thriving* as a process by which engineering students develop optimal functioning in undergraduate engineering programs" (19p.). A recent experiment in a university in Russia where students learnt soft skills as a compulsory subject showed positive outcome with future employers appreciating the initiative (Romanenko et al, 2024).

Academic success vs. drop-out

Soft skills, including emotional intelligence, coordination, social influence or complex problem solving, are now considered not only a must-have for individuals and engineers in the job market (Kamaruzaman et al. 2019) but also play a crucial role during the educational phase of engineering students, especially their first year of engineering studies. Therefore, the better understanding and more intensive exchange between the academia and the job market is essential to reshape the education and curricula for students of the field in order to make them more likely to succeed in the long term (Barni de Campos, Martins de Resende & Borges Fagundes 2022).

Transitioning from high school to university can be a challenging, stressful, and transformative experience (Brooks and DuBois 1995; Pratt et al. 2000). The difference between these two environments requires students to learn to cope with the increased responsibility and independence. More responsibilities come with change that many students need help accepting and handling, which can harm their academic performance and raise their risk of dropping out.

Approximately one-third of students globally opt to drop out, making this a critical issue (Ulrich 2014; Baranyi et al. 2020). While universities must address students' drop-out issues, they must first assess the possible factors that might lead to such a decision. Traditionally, dropout investigations look into the previous achievements of students, such as their grades and non-cognitive characteristics, which can be a strong way to predict their success (Kumar et al. 2017; Alyahyan and Dustegor 2020).

While it can be a good predictor, other studies showed that considering psychological factors can also predict dropout and indicate potential interventions to improve academic performance and retention (Séllei et al. 2021).

Renewing our ways to define academic success of engineering students and broaden the traditional definitions by investigating multiple external (e.g. academic) and internal (personal or contextual) contributing factors might provide us with a more profound understanding of the phenomenon and also with more accurate actions overall (Gesun, 2021).

A few students might decide to shift their studies to another field, however, studies showed that most of them have a low level of soft skills (Muammar and Alhamad 2023; Shvedova et al 2022; Khefacha and Séllei 2023), which can result in difficulties in managing the change and lead them to leave the university.

As the study of Caeiro-Rodríguez et al. (2021) also shows, university students are expected to create sustainable, yet innovative solutions to complex problems that definitely goes beyond of technical knowledge and expertise or competencies and include many of the so called soft skills such as problem solving, strategic thinking teamwork or aquiring new skills.

This emphasizes the importance of having the mentioned soft skills, in addition to rather interpersonal examples of them, such as coping skills, stress management, emotional intelligence and considering psychological factors to predict academic success, failure, and university performance (Séllei et al. 2021).

Psychological attributes in the background of success and dropout

Differences in personality traits of students can be an accountable factor to take into consideration. Studies found a difference in students' personality traits in different areas of study, such as engineering or social sciences studies (Kline and Lapham 1992). Engineers, for example, had a high score on the mindedness factor; additionally, scientists students had the conformity and conscientiousness factors (Kline and Lapham 1992). Acknowledging that these factors might differ from one field of study to another is essential. There are studies that confirm that there is a personality difference between faculties (Morstain and Smart 1976). For example, students enrolled in engineering faculty were found to have a higher level of conscientiousness and conformity than other faculties (Kline and Lapham 1992).

Acknowledging the emotions effect on an engineering academic life is crucial for a successful educational journey and life (Lönngren et al. 2023). Emotional Intelligence (EI) was identified as one of the key soft skills that would help students thrive and succeed in their academic life (Parker et al. 2004; Yeo and Carter 2011; Chapin 2015). Daniel Goleman confirmed in 1995 in his book "Emotional Intelligence: Why it Can Matter More than IQ" and still confirms in 2024 in his new co-written book "Optimal" that EI is twice as important as Intelligence Quotient (IQ) for professional and personal success (Goleman 1995; Goleman and Cherniss 2024). Emotional intelligence encompasses the ability to be aware of our own and others' emotions and use that knowledge for interpersonal relationship management. It also brings in the ability to regulate emotions and influence others' motivation. Such a skill is an excellent addition for first-year engineering students who want to adapt to changes. Emotional ability refers to the ability to have control over our behavior, help with decision-making, and enhance general well-being/quality of life. Many studies showed that EI is one example of the possible factors that can affect academic achievement, providing support in predicting dropout rates (Parker et al. 2004; Lam and Kirby 2002; Jaeger 2003; Chapin 2015; Saklofske et al. 2012). However, emotional intelligence levels differ in natural sciences, social, and health studies at the University of Ataturk (Karaman Özlü et al. 2016). Another study also found a difference in the level of EI between law and governance students and education students in India (Kant 2019).

Other psychological factors can also impact student's academic outcomes. These mostly relate to well-being (Rüppel et al. 2015; Cárdenas et al. 2022; Upadyaya and Salmela-Aro 2013; Goodday et al. 2019). The first way is based on positive education and the Penn Resiliency Program (Seligman et al. 2009). On the other hand, many well-being-enhancing activities strengthen the individual's PERMA factors

(Kovich et al. 2023). The PERMA includes five factors that a person needs to flourish: positive emotions, engagement, relationship, meaning, and accomplishment (Seligman 2011). To focus on well-being is in accordance with United Nations Educational & Scientific & Cultural Organization's goal (2016).

Another main factor beyond success is the coping skills of students. Problem-focused coping strategies seem to be adaptive and enhance students' satisfaction, too (Alimoglu et al. 2011). Other studies found that academic coping is a mediator variable behind success (Kirikkanat and Soyer 2017; Saklofske et al. 2012; Khan 2023). Meanwhile, maladaptive coping strategies can change university life perception and failure in studies (McNaughton-Cassill et al. 2021).

Determining the psychological factors that can lead a student to drop out of university would allow universities to prevent such events. It is important to remember that these factors might differ from one faculty to another, even in the same university. We can see during the literature search and review that nursing, medicine, engineering, social sciences, economics, human sciences, and law fields have their journals to share educational topics, respectively. They differ in which soft skills are primarily important in their field.

This research aims to outline the difference between the aforementioned psychological factors linked to students' dropping out, depending on their field of study within one university, to offer characterized solutions to the universities.

Methodology

Research design
This study is a quantitative research using a list of psychological questionnaires. First-year bachelor engineering and economics students of 2020 and 2021 at the Budapest University of Technology and Economics were approached in a psychology class to volunteer for the study. Students were enrolled in different faculties within the university, and they were assured of the anonymity of the data collected. This paper focuses on analysing the possible differences between the factors of dropout and success depending on the faculty within one university.

To better understand the psychological factors that affect students' risk of leaving their studies, a set of surveys were shared with them. The original assessment battery contained more tools, the total approximate completion time required is 1h30 to 2 hours. This paper only presents the relevant questionnaires for this study's aspect, which contains five sets of psychological factors-related questionnaires and demographic data.

The demographic data contained questions about age, gender, family, and other living circumstances. We used the Emotional Intelligence Inventory, developed by Bar-On (Bar-On 1997a; 1997b). The test contains 121 items and uses a 6-point Likert-scale as a self-report, divided into 5 scales also divided in a total of 15 second level of subscales: intrapersonal scale (self-regard, emotional self-awareness, assertiveness, independence, and self-actualization), interpersonal scale (empathy, social responsibility, and interpersonal relationship), stress management scale (stress tolerance and impulse control), adaptability scale (reality-testing, flexibility, and problem-solving) and general mood scale (optimism and happiness). The PERMA Profiler allowed us to measure the positive source competencies, which represent the first holistic tool of well-being (Butler and Kern 2016). We used the 23-item questionnaire with 10-point Likert scales. It has seven subscales, five from the original PERMA structure: positive emotion, engagement, positive relationship, meaning or purpose in life, accomplishment, and two new factors of the refined model: negative emotion and physical health (Butler and Kern 2016). To measure the perseverance and passion to reach a long-term goal, we used the Grit-Short (Grit-S) questionnaire. This questionnaire contains 8 items answered using a Likert scale (Duckworth and Quinn 2009). On the behavioural level, we used the coping preferences test and the psychological immune system which focuses on mental and psychological aspect of stress management. Both tests were developed in Hungary by Oláh (Oláh 1995; 2005), contain 80 items each and are answered using a 4 points Liker-scale. The coping test measures a total of 8 coping

mechanisms; problem-focused strategies, support-finding strategies, and emotion-focused strategies (impulse control, emotion-focused actions, acting out, self-punishment, acquiescence, and attention diversion). The psychological immune system (pi) focus on the following 16 subscales; positive thinking, sense of control, sense of coherence, feeling of growth, challenge seeking, social source monitoring, goal orientation, self-efficiency, creativity, mobilizing skills, social source founding skills, learned optimism), mindfulness, synchronization skill, impulse control, irritability-control, and control of emotions.

For the success and dropout analysis we got students' educational data (credit, GPA) from the Central Learning Office.

This study used machine learning techniques, specifically the XGBoost algorithm, to analyze the most important psychological factors influencing student dropout within different university faculties. The XGBoost algorithm combines decision trees and live-variable analysis in the training process (Du 2022; Du et al. 2022). In order to consider interactions between features and get an understanding of feature impact, we chose to use SHAP (SHapley Additive exPlanations) values. This an approach that stems from game theory and is used to explain the output of any machine learning model. "It connects optimal credit allocation with local explanations using the classic Shapley values from game theory and their related extensions" (Lundberg and Lee 2017). For our model we decided to use the SHAP beeswarm plot to analyse the most important factors leading to student drop out. Features appearing on the y-axis of the plot are organized by their mean absolute SHAP values, which means they are in descending order of importance. Each point on the plot represents a student in the study. The position of each point on the x-axis shows the impact that feature has on the model's prediction for a given individual, in our case meaning that points on the left side of the axis impact dropout and points on the right side impact success.

Results

Sample description
We received 1097 answers from women and 1857 from men, totalling 2947 participants. The Budapest University of Technology and Economics contains different faculties that include engineering such as Mechanical engineering, Civil engineering, Electrical Engineering, and Informatics, and non-engineering such as the faculty of Economic and Social Sciences.
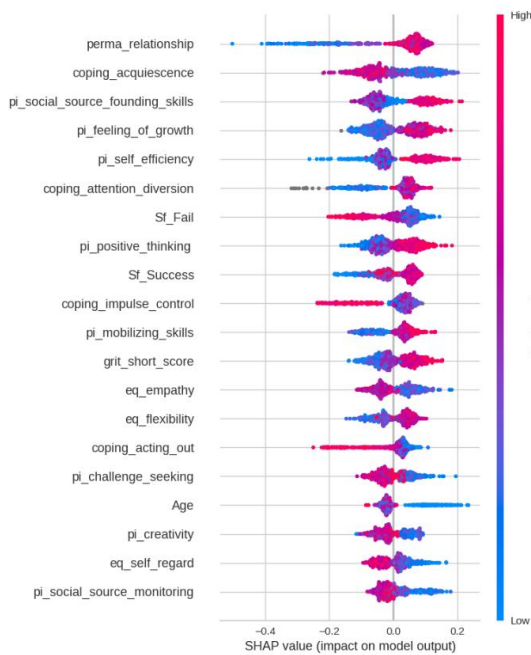
We analyzed the answers with two groups, the economics and engineering students, which encompass engineering faculties and natural science. In this paper, we merge the data of natural science students to the engineering subsample; they should be partly similar to engineering students because their field of science is the same. In the two subsamples, there is a higher number of male engineering students, and the opposite is a higher number of female students participating in this study from the faculty of economics and social science. The economics student subsample contain 844 records, with 517 female and 327 male respondents. The engineering subsample contains 2103 records, with 578 female and 1525 male respondents. These distributions represent the gender characteristics of the university faculties.

The average age at the time of completing the questionnaire was 20.65 years.

Analysis
As seen in figures 1 and 2, psychological factors do have some effect on the prediction of students' success alongside dropout as it can be seen that few possible factors have SHAP values stretching away from the 0 axes. The further it is from the 0 axis, the bigger impact it has. The SHAP values figures are both shown in order of the most important to the least important in terms of affecting dropout.

Fig. 1. **Economics students factors**   Fig. 2. **Engineering students factors**
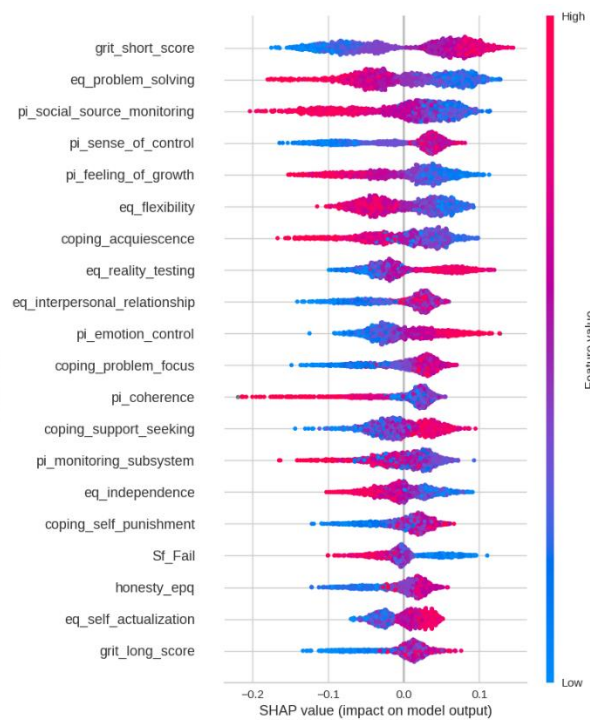
Source: Authors   *Source: Authors*

Table 1 shows the interrelation between the first 5 most important factors from the economics and engineering faculties regarding the level of value of the factors related to success and dropout.

Table 1. **Most important factors for economics and engineering affecting students' outcome**

	Engineering		Economics	
	Factors related to success	*Factors related to dropout*	*Factors related to success*	*Factors related to dropout*
High value	Grit Short score	EI Problem solving	PERMA relationship	Coping acquiescence
	Psychological immunity (PI) sense of control	PI social source monitoring	PI social source founding skills	
		PI feeling of growth	PI feeling of growth	
			PI self-efficiency	
Low value	EI Problem solving	Grit score	Coping acquiescence	PERMA relationship
	PI social source monitoring	PI sense of control		PI social source founding skills
	PI feeling of growth			PI feeling of growth
				PI self-efficiency

Source: Authors

In the case of the Faculties of Engineering and Natural Science, our analysis identified grit short score, problem-solving from the emotional intelligence framework, and psychological immunity social source monitoring, sense of control and feeling of growth factors. This suggests that factors related to student engagement and problem-solving skills are central to student persistence in engineering programs. Similar to the life of engineers.

The grit short score and psychological immunity sense of control, it is when they have a high value that they are most likely to succeed, while if they have a low value, they are most likely to fail or to drop out. The grit factor indicates the degree of perseverance and determination that makes one highly motivated and less

likely to give up in front of obstacles. Having a sense of control in their studies can maintain students' motivation as they take ownership of their results, allowing them to set realistic goals and effective study strategies. Low scores in these factors are most likely to drive them to drop out of their studies. The second most important factor after the grit score is the EI problem solving, where Figure 2 and Table 1 show that when they have a high value in it, they are most likely to fail and drop out of university. This might be explained by the fact that a high level of problem-solving can drive students into overconfidence, taking away their chance to be team players and focusing on finding a solution to a specific problem might lead them to have poor time management, which can lead to missed deadlines and project failures. This can drive them to have negative feelings about themselves. The results shows that having a high level of feeling of growth can push engineering students to drop out while it is the opposite for economics students whom having a high level would be an indication for success. This might be related with engineering curriculum, in which the expectation are very high even at the baseline.

For the Faculty of Economics and Social Sciences, our analysis found the following psychological factors to be the most important contributors to student success: PERMA relationship, psychological immunity source founding skills, feeling of growth, and self-efficiency scales. The high value of coping acquiescence contributes to dropout. These factors collectively shed light on the importance of a student's emotional well-being in student success and personal achievement as key features leading to dropout. For economics students, having a high level of acquiescence coping can be discouraging as social and economics students might not feel challenged, which can lead to boredom and procrastinating over their studies and lead to dropping out or letting control go. On the other hand, having a low level of self-efficiency can predict dropout as they wouldn't feel the additional value they are bringing, which might affect their self-confidence in their ability to succeed. A low level of relationship skills is also among the top 5 factors that can affect economics students ' reason. A low level of this skill can lead to miscommunication, isolation, and a sense of not belonging.

Discussion

The study demonstrates that although the psychological factors affecting student success and dropout in higher education may vary across different university faculties, highlighting the need for faculty-specific interventions to enhance student retention, it is unquestionable that it needs more and more attention from the educational system. The insights derived from our analysis can inform the development of targeted support programs and interventions to address attrition issues more effectively within each faculty to support students not only in broadening their professional knowledge and viewpoints but also their intra- and interpersonal set of skills to get profoundly prepared for the current challenges and for transitioning successfully to the labor market in the future.

The main differences came from the differences among the fields of study, such as social sciences and engineering. Social science students have a varied set of skills and different importance regarding psychological attributes. This can be seen in the example of the grit short score, which is the most critical factor affecting the success of engineering and natural science students; it is only the twelfth on the list of important features for social and economic sciences. On the other hand, while the feeling of growth is only one level different between economics and engineering students, it is interesting to note that they have opposite effects on both fields. A high value would predict dropout for engineering and natural science faculties, while it would be a predictor for success for social and economics faculty. This could be linked to the difference that social and economic science students are more theoretical, and engineering students have more applicable studies.

As an overall conclusion, it is safe to say, that having these competencies from the start of their studies would allow students to sharpen them throughout their studies and even develop new relevant ones, essential for university success. Furthermore, these presented skills seem to play significant part in their future job success as well, therefore, universities must rethink not only their curricula, but their approach altogether to somehow provide specified soft skill development training for their students in order to support their success in the long run in a more efficient and sustainable way.

Further research directions

The generalizability of this study is limited by the fact that we only analysed the students of one university, so in the future, it is worth working with national and international sampling. In the case of a sample with a larger number of elements, the differences between engineering faculties may also be the subject of further investigation.

References

- Alimoglu, Mustafa Kemal & Erol Gurpinar & Sumer Mamakli & Mehmet Aktekin (2011). Ways of Coping as Predictors of Satisfaction with Curriculum and Academic Success in Medical School. *Advances in Physiology Education* 35 (1): 33–38. https://doi.org/10.1152/advan. https://doi.org/10.1152/advan.00100.2010
- Alyahyan, Eyman, and Dilek Dustegor (2020). Predicting Academic Success in Higher Education Literature Review and Best Practices. *International Journal of Educational Technology in Higher Education* 17 (January). https://doi.org/10.1186/s41239-020-0177-7
- Baranyi, Máté & Marcell Nagy & Roland Molontay (2020). Interpretable Deep Learning for University Dropout Prediction. In *Proceedings of the 21st Annual Conference on Information Technology Education*, 13–19. SIGITE '20. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/3368308.3415382
- Barni de Campos, D. & Martins de Resende, L. M. & Borges Fagundes, A. (2022). The perception of organizational psychologists on the importance of soft skills for engineers. *Creative Education, 13*(8), 1715–1728. https://doi.org/10.4236/ce.2022.138171
- Bar-On, Reuven (1997a). *The Emotional Quotient Inventory (EQ-i): A Test of Emotional Intelligence.* Toronto, ON, Canada: Multi-Health Systems.
- Bar-On, Reuven (1997b). *The Emotional Quotient Inventory (EQ-i): Technical Manual.* Toronto, ON, Canada: Multi-Health Systems.
- Brooks, James H. & and David L. DuBois (1995). Individual and Environmental Predictors of Adjustment during the First Year of College. *Journal of College Student Development* 36 (4): 347–60.
- Butler, Julie & Margaret L. Kern (2016). The PERMA-Profiler: A Brief Multidimensional Measure of Flourishing. *International Journal of Wellbeing* 6 (3). https://doi.org/10.5502/ijw.v6i3.526
- Cárdenas, Diana & Finnian Lattimore & Daniel Steinberg & and Katherine J. Reynolds (2022). Youth Well-Being Predicts Later Academic Success. *Scientific Reports* 12 (1): 2134. https://doi.org/10.1038/s41598-022-05780-0
- Chapin, Krysta (2015). The Effect of Emotional Intelligence on Student Success. *Journal of Adult Education* 44 (1): 25–31.
- Du, Wei (2022). Application of Improved SMOTE and XGBoost Algorithm in the Analysis of Psychological Stress Test for College Students. *Journal of Electrical and Computer Engineering* 2022 (May): e2760986. https://doi.org/10.1155/2022/2760986
- Du, Xiaoming & Ying Chen & Xiaofang Zhang & Yu Guo (2022). Study on Feature Engineering and Ensemble Learning for Student Academic Performance Prediction. *International Journal of Advanced Computer Science and Applications* 13 (5). https://doi.org/10.14569/IJACSA.2022.0130558
- Duckworth, Angela Lee, and Patrick D. Quinn (2009). Development and Validation of the Short Grit Scale (Grit–S). *Journal of Personality Assessment* 91 (2): 166–74. https://doi.org/10.1080/00223890802634290
- Felder, Richard M (1998). Random Thoughts: ABET Criteria 2000: An Exercise in Engineering Problem Solving. *Chemical Engineering Education* 32 (2): 126–27.
- Gesun, J. S., et al. (2021). A Scoping Literature Review of Engineering Thriving to Redeine Student Success. *Studies in Engineering Education*, 2(2), pp. 19–41.
- Goleman, Daniel (1995). *Emotional Intelligence, Why It Can Matter More than IQ*. New York, NY, USA: Bantam Books.
- Goleman, Daniel & Cary Cherniss (2024). *Optimal: How to Sustain Personal and Organizational Excellence Every Day*. New York, NY, USA: HarperCollins Publishers.

- Goodday, Sarah Margaret & Daniel Rivera & Hannah Foran & Nathan King & Melissa Milanovic, Charles Dg Keown-Stoneman & Julie Horrocks et al. (2019). U-Flourish University Students Well-Being and Academic Success Longitudinal Study: A Study Protocol. *BMJ Open* 9 (8): e029854. https://doi.org/10.1136/bmjopen-2019-029854
- Itani, Mona, and Issam Srour (2016). Engineering Students' Perceptions of Soft Skills, Industry Expectations, and Career Aspirations. *Journal of Professional Issues in Engineering Education and Practice* 142 (1): 04015005. https://doi.org/10.1061/(ASCE)EI.1943-5541.0000247
- Jaeger, Audrey J. (2003). Job Competencies and the Curriculum: An Inquiry into Emotional Intelligence in Graduate Professional Education. *Research in Higher Education* 44 (6): 615–39. https://doi.org/10.1023/A:1026119724265
- Kamaruzaman, Mohd & R. Hamid & A. Mutalib & M. Rasul (2019). *Comparison of Engineering Skills with IR 4.0 Skills*. International Association of Online Engineering. https://www.learntechlib.org/p/218027
- Kant, Ravi (2019). Emotional Intelligence: A Study on University Students. *Journal of Education and Learning (EduLearn)* 13 (4): 441–46. https://doi.org/10.11591/edulearn.v13i4.13592
- Karaman Özlü & Zeynep, Gülçin Avşar & Kübra Gökalp & Serap Ejder Apay & Özlem Şahın Altun & Afife Yurttaş (2016). Comparison of the Emotional Intelligence Levels of Students Receiving Education in Different Fields. *Education Research International* 2016 (November): e8508153. https://doi.org/10.1155/2016/8508153
- Khan, Mehjabeen (2023). Academic Self-Efficacy, Coping, and Academic Performance in College. *International Journal of Undergraduate Research and Creative Activities* 5 (1). https://doi.org/10.7710/2168-0620.1006
- Khefacha, Ahlem & Beatrix Sellei (2023). Engineering Students Emotional Intelligence And Neuro-Linguistics Programming (NLP) As Developmental Tool. https://doi.org/10.21427/W0X3-B872
- Kirikkanat, Berke & Makbule Kali Soyer (2017). A Path Analysis Model Pertinent to Undergraduates' Academic Success: Examining Academic Confidence, Psychological Capital and Academic Coping Factors. *European Journal of Educational Research* volume–7–2018 (volume7-issue1.html): 133–50. https://doi.org/10.12973/eu-jer.7.1.133
- Kline, Paul & Sharon L. Lapham (1992). Personality and Faculty in British Universities. *Personality and Individual Differences* 13 (7): 855–57. https://doi.org/10.1016/0191-8869(92)90061-S
- Kovich, Melissa K. & Vicki L. Simpson & Karen J. Foli & Zachary Hass & Rhonda G. Phillips (2023). Application of the PERMA Model of Well-Being in Undergraduate Students. *International Journal of Community Well-Being* 6 (1): 1–20. https://doi.org/10.1007/s42413-022-00184-4
- Kumar, Mukesh, A Singh & Disha Handa (2017). Literature Survey on Educational Dropout Prediction. *International Journal of Education and Management Engineering* 2 (March): 8–19. https://doi.org/10.5815/ijeme.2017.02.02
- Lam, Laura Thi & Susan L. Kirby (2002). Is Emotional Intelligence an Advantage? An Exploration of the Impact of Emotional and General Intelligence on Individual Performance. *The Journal of Social Psychology* 142 (1): 133–43. https://doi.org/10.1080/00224540209603891
- Lönngren, Johanna & Inês Direito & Roland Tormey & James L. Huff (2023). Emotions in Engineering Education. In *International Handbook of Engineering Education Research*, 156–82. Routledge. https://library.oapen.org/bitstream/handle/20.500.12657/76013/9781000897432.pdf?sequence=1#page=179
- Lundberg, Scott M & Su-In Lee (2017). A Unified Approach to Interpreting Model Predictions. In *Advances in Neural Information Processing Systems*. Vol. 30. Curran Associates, Inc. https://proceedings.neurips.cc/paper/7062-a-unified-approach-to-interpreting-model-predictions.pdf
- McNaughton-Cassill Mary E. & Stella Lopez & Cory Knight & Jessica Perrotte & Nicholas Mireles & Carolyn K. Cassill & Stephanie Silva & Aaron Cassill (2021). Social Support, Coping, Life Satisfaction, and Academic Success Among College Students. *Psi Chi Journal of Psychological Research* | EBSCOhost. June 1, 2021. https://doi.org/10.24839/2325-7342.JN26.2.150

- Morstain, Barry R. & John C. Smart (1976). Educational Orientations of Faculty: Assessing a Personality Model of the Academic Professions. *Psychological Reports* 39 (3_suppl): 1199–1211. https://doi.org/10.2466/pr0.1976.39.3f.1199
- Muammar, Omar M. & Kawla A. Alhamad (2023). Soft Skills of Students in University: How Do Higher Education Institutes Respond to 21st Century Skills Demands? *Journal of Educational and Social Research* 13 (2): 174. https://doi.org/10.36941/jesr-2023-0041.
- Oláh, Attila (1995). Coping Strategies among Adolescents: A Cross-Cultural Study. *Journal of Adolescence* 18 (4): 491–512. https://doi.org/10.1006/jado.1995.1035
- Oláh, Attila (2005). Érzelmek, Megküzdés És Optimális Élmény. *Trefort Kiadó*.
- Parker, James D. A. & Laura J. Summerfeldt & Marjorie J. Hogan & Sarah A. Majeski (2004). Emotional Intelligence and Academic Success: Examining the Transition from High School to University. *Personality and Individual Differences* 36 (1): 163–72. https://doi.org/10.1016/S0191-8869(03)00076-X
- Pratt, Michael W. & Bruce Hunsberger & S. Mark Pancer & Susan Alisat & Colleen Bowers & Kathleen Mackey, Alexandra Ostaniewicz & Evelina Rog & Bert Terzian & Nicola Thomas (2000). Facilitating the Transition to University: Evaluation of a Social Support Discussion Intervention Program. *Journal of College Student Development* 41 (4): 427–41.
- Romanenko, Y. N. & Stepanova, M. & Maksimenko, N. (2024). Soft skills: students and employers crave. *Humanities and Social Sciences Communications*, *11*(1), 1-8.
- Rüppel, F. & Sebastian Liersch & U. Walter (2015). The Influence of Psychological Well-Being on Academic Success. *Journal of Public Health* 23 (1): 15–24. https://doi.org/10.1007/s10389-015-0654-y
- Saklofske, Donald H. & Elizabeth J. Austin & Sarah M. Mastoras & Laura Beaton & and Shona E. Osborne (2012). Relationships of Personality, Affect, Emotional Intelligence and Coping with Student Stress and Academic Success: Different Patterns of Association for Stress and Success. *Learning and Individual Differences*, Noncognitive Skills in Education: Emerging Research and Applications in a Variety of International Contexts, 22 (2): 251–57. https://doi.org/10.1016/j.lindif.2011.02.010.
- Seligman, Martin E. P. (2011). *Flourish: A Visionary New Understanding of Happiness and Well-Being*. Simon and Schuster.
- Seligman, Martin E. P. & Randal M. Ernst & Jane Gillham & Karen Reivich & and Mark Linkins (2009). Positive Education: Positive Psychology and Classroom Interventions. *Oxford Review of Education* 35 (3): 293–311. https://doi.org/10.1080/03054980902934563
- Séllei, Beatrix & Nóra Stumphauser & Roland Molontay (2021). Traits versus Grades—The Incremental Predictive Power of Positive Psychological Factors over Pre-Enrollment Achievement Measures on Academic Performance. *Applied Sciences* 11 (4): 1744. https://doi.org/10.3390/app11041744
- Shvedova, Yaroslava & Elizaveta Korotetska & Darya Kashkabash (2022). Soft skills: analysis of development in higher education acquires and ways of implementation in the educational process. *Scientific notes of the pedagogical department*, no. 51 (December): 78–94. https://doi.org/10.26565/2074-8167-2022-51-10
- Ulrich, Heublein (2014). Student Drop-out from German Higher Education Institutions. *European Journal of Education* 49 (4): 497–513. https://doi.org/10.1111/ejed.12097
- UNESCO Strategy on Education for Health and Well-Being: Contributing to the Sustainable Development Goals. (2016). United Nations Educational, Scientific and Cultural Organization. 2016. https://unesdoc.unesco.org/ark:/48223/pf0000246453
- Upadyaya, Katja & Katariina Salmela-Aro (2013). Development of School Engagement in Association With Academic Success and Well-Being in Varying Social Contexts. *European Psychologist* 18 (2): 136–47. https://doi.org/10.1027/1016-9040/a000143
- Yeo, Chu-May Amy & Steve Carter (2011). Predictive Emotional Intelligence and Its Relationship with Academic Success. *International Journal of Economics and Business Research* 3 (5): 479–93. https://doi.org/10.1504/IJEBR.2011.042313.