

Mindset and Academic Performance

DOI: <https://doi.org/10.55707/ds-po.v39i2.129>

Prejeto 15. 11. 2023 / Sprejeto 28. 6. 2024

Znanstveni članek

UDK 159.922:378.091.212.6

KLJUČNE BESEDE: fiksna miselnost, razvojna miselnost, akademska uspešnost, študijski neuspeh

POVZETEK – Sodobni avtorji in raziskovalci, kot so Dweck, Duckworth, Peterson, Matthews in Kelly, opozarjajo, da ima prevladujoča miselnost velik pomen pri akademski uspešnosti. V ozadju je ideja, da ljudje s fiksno miselnostjo niso pripravljeni vložiti dodatnega truda v učenje, medtem ko ljudje s prevladujočo razvojno miselnostjo dosegajo boljše učne rezultate. Namen tega prispevka je predstaviti koncept fiksne in razvojne miselnosti skozi prerez dosedanjih ugotovitev in raziskav ter vpliv, ki ga imata ti dve miselnosti na akademsko uspešnost. S tem namenom smo izvedli lastno kvantitativno raziskavo, v kateri je sodelovalo 353 študentov iz treh slovenskih fakultet. Ugotovili smo, da obstaja statistično pomembna povezava med razvojno miselnostjo in študijsko uspešnostjo in da prevladujoča miselnost vpliva tudi na odnos do študijskega neuspeha.

Received 15. 11. 2023 / Accepted 28. 6. 2024

Scientific paper

UDC 159.922:378.091.212.6

KEYWORDS: fixed mindset, growth mindset, academic performance, academic failure

ABSTRACT – Contemporary authors and researchers such as Dweck, Duckworth, Peterson, Matthews, and Kelly point out the great impact of the prevailing mindset on academic performance. The underlying idea is that people with a fixed mindset are unwilling to put in extra effort into learning, while people with a growth mindset should achieve better learning outcomes. The purpose of the paper is to present fixed and growth mindsets through a cross-section of previous research and their impact on academic performance. We conducted our own quantitative research with 353 student respondents from three Slovenian faculties. In doing so, we used the questionnaire by Dweck (2017) to identify the prevailing mindset, to which we added questions to test our hypotheses and find answers to our research questions. We found that there is a statistically significant relationship between the growth mindset and academic performance as the prevailing mindset also influences the relationship with academic failure.

1 Introduction

Academic achievement depends not only on cognitive factors, such as intelligence or the amount of knowledge, but also on non-cognitive factors, such as motives, values, beliefs, attitudes towards oneself and learning, etc. One of the non-cognitive factors to which much recent research has been devoted is mindset, which Dweck (2017) describes as the student's degree of belief in the immutability of intelligence levels or the ability to develop his or her intelligence. A student with a fixed mindset is constrained by his or her beliefs and believes that people are born with special talents and that everyone has different abilities and levels of intelligence that cannot be improved with time, persistence and effort. A student with a growth mindset, on the other hand, has more free thoughts and beliefs about his or her own abilities. People with a strong growth mindset understand that some people have special talents and that intelligence varies from person to person but is also something that can be developed and increased through effort, learning and self-work.

Let us mention the general opinion on intelligence and talented people: “When discussing gifted students, an image that comes to mind is typically one of a hard-working and perhaps “nerdy” individual. The reality, however, could prove this viewpoint very wrong. Apart from academically thriving gifted individuals, many gifted students end up as underachievers or troublemakers, in spite of their talent ... or even show behavioural problems” (Matrić & Duh, 2019, p. 67).

Beliefs strongly shape us and influence performance in any activity, but especially in learning:

“Attitudes and beliefs have an important motivational function in one’s learning. Positive attitudes, interest and affection for school subjects imply better academic results, mostly through a higher commitment to learning” (Poredoš & Puklek Levpušček, 2017, p. 49).

However, for people with a dominant fixed mindset, success is evidence of intelligence or talent. With success, they affirm their natural talent. Failure, on the other hand, is a setback. Getting a bad grade, losing the game, getting fired, being rejected, etc. means that the person is just not smart or talented enough. They see hard work and the effort to learn as a bad thing, believing that talent does not require effort and hard work. According to Smiley et al. (2016), students with a fixed mindset tend to avoid new challenges where the risk of failure is greater than the chance of success. They avoid new experiences because of the fear of failure, give up on tasks more quickly, and focus more on the result (outcome) that confirms their identity, while the learning process itself does not mean much to them.

People with a dominant growth mindset, on the other hand, believe that effort pays off, that it is through effort and learning new things that we change our characteristics and develop. Failure, for people with a growth mindset, only means that they are not growing at the moment and not realising their full potential (Dweck, 2017; Smiley et al., 2016). Failure encourages them to try again because behind it is the belief that success is the result of effort. They come to terms with their own mistakes, with a desire to correct them. Mistakes are an essential part of learning. They accept challenges and see them as opportunities for personal growth. They persevere even in the face of failures and setbacks and keep trying. They focus more on the learning process than on the outcome itself (Cook et al., 2017).

2 The influence of mindset on academic performance

Dweck (2017) examined primary school students as they transitioned to secondary school, first testing whether students believed that their intelligence was developmental or fixed and had not changed over the years. Then she observed the students’ success in secondary school over the next two years. She found that the academic achievement of students with a predominantly fixed mindset declined, while the academic achievement of students with a predominantly growth mindset increased over the same period. Large differences were found in learning strategies and motivation. While students with a fixed mindset mainly memorised the study material by repeatedly reading the study

literature and notes, students with a growth mindset tried to understand it by first underlining important concepts and principles and only reviewing them during the learning process. Students with a fixed mindset never made “corrections” after the test (of the lower graded parts of the test), while students with a growth mindset did so very often and without external pressure.

The motivation of students with a fixed mindset decreased in direct proportion to the difficulty of the learning material or subject, as evidenced by their statements, such as “I am just not good at this” and “I hate this subject”. The motivation of students with a growth mindset remained the same or even increased with the difficulty of the learning material. Even when they encountered boring parts of the material, they made a learning plan, set higher goals, changed learning techniques, and tried new ones.

Students with a predominantly fixed mindset explained their lower grades with the statements “I am the stupidest in the class!” or “I am very bad at maths!”, confirming that the failure was the result of low intelligence. Some blamed others, especially the teachers: “He really does not know how to teach”, “The teacher is terribly boring”, “We did not copy it at all!”. So, they attributed the reasons for their failure mainly to external factors or looked for them outside themselves. Students with a predominantly growth mindset interpreted their lower grades in the following way: “I did not do my homework regularly”, “I studied for several tests at the same time”, “I did not study enough”, i.e., the causes of failure were attributed mainly to internal factors and insufficient effort (Yeager & Dweck, 2012).

Many other studies have also demonstrated a relationship between a growth mindset and performance (Aronson et al., 2002; Blackwell et al., 2007; Burnette et al., 2013; Cury et al., 2008; Devers, 2015; Good et al., 2003; Stipek & Gralinski, 1996; Tirri & Kujala, 2016; Yeager & Walton, 2011; Zeng et al., 2016). All these studies confirm a direct positive impact on students’ academic performance in primary and secondary education.

The mindset, as a non-cognitive factor of learning, can be connected to a certain extent with personality traits such as emotional stability, openness to experience, etc. “Regarding academic achievement, conscientiousness, openness to experience, emotional stability, and agreeableness are significant predictors of success” (Šafranjan et al., 2018, p. 116).

These traits also fall under “the basic personality dimension within the five-factor personality model: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. The basic dimensions of personality are, in fact, defined as non-cognitive, time-stable constructs that explain the largest part of the variance of individual differences” (Letić et al., 2016, p. 25). Except neuroticism, all are good predictors of academic achievement.

However, the impact of mindset on the academic performance of university students has not been adequately studied. Blackwell et al. (2007) and Romero et al. (2014) believe that students with a prevailing growth mindset are more likely to achieve better academic performance because they perceive difficult tasks as opportunities for self-improvement and self-development and are more likely to seek out challenging learning environments. Miller et al. (2013) also suggest that students with a growth mindset are more likely to focus on the learning process rather than the learning outcome itself.

Aronson et al. (2002) also suggest that a growth mindset could improve academic performance at university. However, Devers (2015), Bahnik and Vranka (2017) claim that there is no positive correlation between mindset and academic performance.

3 Factors for the development of a growth mindset

Many authors have studied the developmental factors of students and how they shape their mindset (Dweck, 2017; Kamins & Dweck, 1999; Mueller & Dweck, 1998). They focused primarily on feedback on academic performance and suggested that the ways in which educators and parents praise student performance represent implicit messages about the nature of intelligence. Specifically, praising a student's intelligence (e.g., attributes) implies that success is the result of his or her intrinsic qualities and promotes a fixed mindset, while praising effort (e.g., process) implies that success is the result of his or her behaviour (effort, progress, etc.) and promotes a growth mindset (Dweck, 1999; Kamins & Dweck, 1999). However, Gonida et al. (2006) found that students who had greater academic success exhibited a stronger growth mindset the following year, suggesting that students' academic experiences may also influence their growth mindset beliefs. The question of how the growth mindset may develop in students, which appears to have an important and positive influence on academic achievement, remains quite unclear and requires further investigation. However, the growth mindset and academic performance at universities and colleges also need further investigation. In our study, we will therefore focus on the question of whether students at colleges and universities with a predominant growth mindset show better academic performance and academic success compared to their peers with a fixed mindset.

4 Methodology

In our research, we used a combined questionnaire that consisted of three parts. The first part contained 8 questions about the dominant way of thinking, developed by Dweck (2017). The second part of the questionnaire consisted of 12 questions about academic performance, which we had developed ourselves on the basis of a literature review and by monitoring the specifics of assessing academic performance at selected faculties. We measured academic performance in the calendar year from 1 January 2022 to 31 December 2022. The third part of the questionnaire included demographic data such as age, gender, level of study, etc.

We pre-tested the questionnaire in a focus group, where 12 participants from three faculties participated. The focus group participants were evenly represented along the focal faculties, four from each faculty. Based on the results of the focus group, we improved the questionnaire by providing more precise instructions for filling it out.

The survey was conducted using the snowball method. We sent the research questionnaire to the deans of the faculties, requesting them to distribute it to all enrolled students.

The survey took place from 15 March to 15 April 2023.

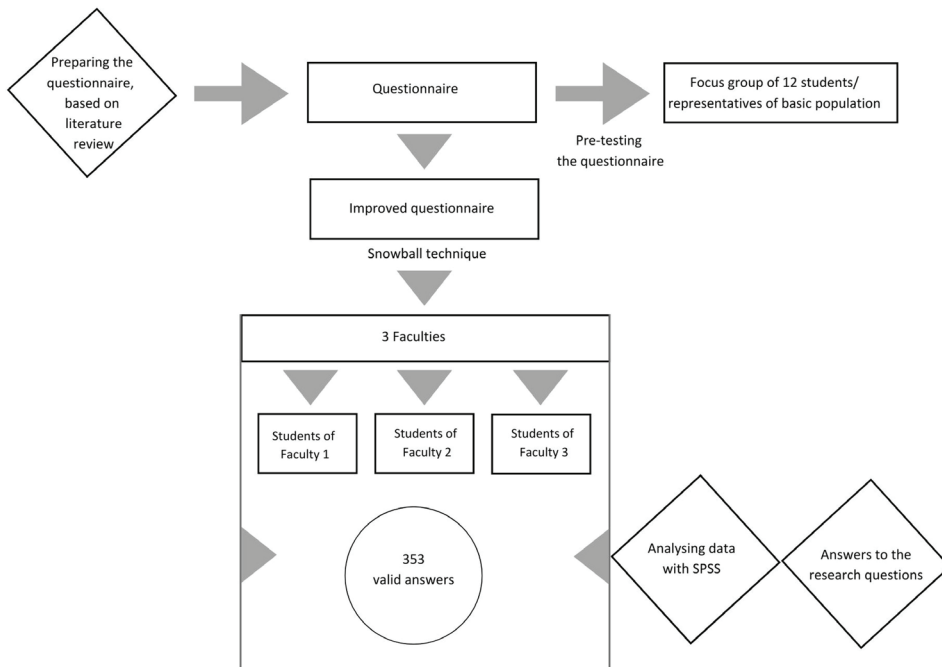
We analysed the obtained data with the SPSS program (Scientific Package for Social Science), where we used some basic statistics and factor analysis, K-means cluster analysis, the chi-square test and Mann-Whitney test for testing the hypotheses.

5 The sample

We conducted research on the mindset and academic performance of bachelor's and master's students at three faculties in Slovenia covering comparable fields of study – business management, law, and human resource management. The population included 2504 students (the number of all students at the three faculties combined). A total of 353 students responded to the questionnaire, a response rate of 14.1 per cent. A total of 83 men (24%) and 268 women (76%) participated in the survey, of whom 217 were undergraduates (63%) and 128 postgraduates (37%). A total of 60 participants were between 18 and 24 years old, 61 between 25 and 29 years, 44 between 30 and 34 years, 64 (the majority) between 35 and 39 years, 59 between 40 and 44 years, 46 between 45 and 59 years, and 19 respondents were older than 50 years. The age range of the respondents did not surprise us, as we had addressed the questionnaire to private faculties that organise part-time studies, which are generally attended by somewhat older, already employed individuals.

Figure 1

Graphical Representation of the Theoretical Research Design



Research questions

In the research, we sought answers to the two research questions.

- RQ1: Is there a statistically significant relationship between the prevailing mindset and academic performance?

Within RQ1, we formulated the following hypotheses:

- Students with dominant developmental thinking passed more exams during the assessment period.
 - Students with dominant developmental thinking chose to tackle the first exam period more often.
 - Students with a dominant growth mindset achieved a higher average exam score during the assessment period than students with a dominant fixed mindset.
- RQ2: Is there a statistically significant difference between the prevailing mindset and attitude towards academic failure?

Within RQ2, we formulated two hypotheses, namely:

- Students with a dominant developmental mindset attribute their possible academic failure to a greater extent to internal factors such as “I did not invest enough time in my studies” and “I did not try hard enough”.
- Students with a dominant fixed mindset attribute their possible failure in their studies to a higher degree to external factors such as “poor quality of lectures” and “the professor annoyed me”.

6 Results and interpretation

We conducted a factor analysis and a K-means cluster analysis in the SPSS program to divide the students into two groups, namely students with a dominant fixed mindset and students with a dominant growth mindset. For these analyses, we used the first part of the questionnaire with eight (8) statements. We used statements 2, 4, 6, 8 on an ordinal (Likert) scale for the fixed mindset and statements 1, 3, 5, 7 on an ordinal (Likert) scale for the dominant growth mindset (Table 1).

The closer the responses to statements 2, 4, 6, 8 come to “I fully agree”, the more the person exhibits a fixed mindset. The closer the responses to statements 1, 3, 5, 7 come to “I fully agree”, the more the person exhibits a growth mindset.

We used factor analysis to determine who is closer to a fixed mindset or a growth mindset, respectively, which gave us one variable out of eight (8) variables. Using cluster analysis, we then divided the respondents into two groups – one group of students with a fixed mindset and one group of students with a growth mindset.

Table 1*Factor Analysis*

	<i>Communalities</i>	<i>Initial</i>	<i>Extraction</i>
1	No matter how much intelligence we have, we can always change it quite a bit.	.236	1.677E-5
2	We can learn new things, but we cannot change our basic level of intelligence.	.234	.017
3	What I like most is the kind of work that makes me think.	.198	.280
4	What I like most is the kind of work I can do well without too much trouble.	.306	.367
5	I like work where I learn a lot, even if I make mistakes.	.125	.103
6	I like work that I can do without making any mistakes.	.198	.120
7	When tasks are difficult, I am simply drawn to/ interested in working more, not less.	.274	.404
8	When I am trying hard and putting a lot of effort into tasks, I don't feel very smart.	.101	.116

Note: Extraction Method: Maximum Likelihood. One (1) factor extracted. Four (4) iterations required.

With the results of the factor analysis and K-means cluster analysis, we obtained a new variable for two groups (on a nominal scale). In group 1 there are students with a dominant fixed mindset and in group 2 there are students with a predominant growth mindset. There are 145 students in group 1, and 208 students in group 2. The results positively surprised us, although we had expected that the growth mindset would prevail among several respondents. In our opinion, the reason for this is to be found in the institute of extra-curricular activities, which generally attracts students with clear goals, formed motives, and more life experiences.

Based on clustering, we further analysed our research questions by testing the null hypotheses.

RQ1: Is there a statistically significant relationship between the prevailing mindset and academic performance?

Under the first research question, we first checked whether there was a difference in the number of exams passed in the selected assessment period between groups of students. We hypothesised (H1) that students with a dominant growth mindset passed more exams than students with a dominant fixed mindset.

We noted that 260 students had successfully passed all exams during this period, with only 17 or 4.8% not passing any exams during the research period. Below, given the higher or poorer academic performance, we checked how many students in group 1 (fixed mindset) and group 2 (growth mindset) had successfully passed the exams in the first assessment period, which is shown in Table 2.

Table 2*Number of Exams Passed in the First Assessment Period According to Dominant Mindset*

		<i>Number of exams passed in the first assessment period</i>					<i>Total</i>
		<i>All</i>	<i>More than half</i>	<i>Half</i>	<i>Two or less</i>	<i>Not one</i>	
<i>Cluster Number of Case</i>	<i>1 Fixed Mindset</i>	95	31	6	5	8	145
	<i>2 Growth Mindset</i>	165	29	1	4	9	208
<i>Total</i>		260	60	7	9	17	353

We set up a null hypothesis, which was tested at the significance level of $p = 0.05$. The probability that the null hypothesis is correct is 0.0001, which is less than 0.05 (5%). Based on the chi-square test (.000), we have rejected the null hypothesis. The alternative hypothesis has been confirmed, i.e., students with a growth mindset pass more exams than students with a dominant fixed mindset. This result has also been confirmed with the Mann-Whitney test (Asymp. Sig.: .001; .000)

The average rank of the group of students with a fixed mindset is 191.50, while the group of students with a growth mindset has achieved a rank of 166.89. We again set up a null hypothesis, which we tested at the significance level of $p = 0.05$. The probability that the null hypothesis is correct is 0.004, which is less than 0.05 (5%). We have rejected the null hypothesis. The alternative hypothesis has been confirmed. Students with a growth mindset successfully pass multiple exams!

In examining the relationship between the dominant mindset and academic performance, we also tested the hypothesis of whether students who were classified as having a dominant growth mindset were more likely to tackle the first exam period. The hypothesis was tested using the Mann-Whitney test (Table 3).

Table 3*Mann-Whitney Test of the Number of Attempts in the First Exam Period*

<i>Number of exams you took (applied for) in the first exam period?</i>	<i>Cluster Number of Case</i>
	1 Fixed Mindset
	2 Growth Mindset
	<i>Total</i>
Mann-Whitney U	14949.000
Wilcoxon W	25534.000
Z	-.176
Asymp. Sig. (2-tailed)	.860

The average rank of the group of students with a fixed mindset is 176.19, while the group of students with a growth mindset has achieved a rank of 177.63. We set up a null hypothesis, which we tested at the significance level of $p = 0.05$. The probability that the null hypothesis is correct is 0.86, which is more than 0.05 (5%). We have confirmed the null hypothesis and rejected the alternative hypothesis. We did not find any significant differences between the growth mindset group and the fixed mindset group when testing during the first exam period (Table 3).

The rejection of this hypothesis did not surprise us. We believe that people with a prevailing fixed mindset tend to constantly reaffirm their intelligence, so the decision to tackle the second exam period would represent a failure for them.

However, we tested one more hypothesis to answer RQ1 and examine whether students with a growth mindset achieved a higher mean score than students with a fixed mindset during the examination period. To do this, we first examined the baseline statistics for the average grade variable, where we found that the average grade was pretty high, i.e., 8.73 (on a scale from 1 – failed to 10 – excellent) and the standard deviation was 0.823. We also note that the data are not normally distributed (skewness = -.803) and show asymmetry to the left. In the following, we therefore use the non-parametric Mann-Whitney test to test the given hypothesis.

Table 4

Mann-Whitey Test to Check the Average Grade of All Exams Passed

	<i>Cluster Number of Case</i>	<i>N</i>	<i>Mean Rank</i>	<i>Sum of Ranks</i>
<i>Average grade of passed exams</i>	<i>1 Fixed Mindset</i>	145	145.24	21060.00
	<i>2 Growth Mindset</i>	208	199.14	41421.00
	<i>Total</i>	353		
Mann-Whitney U	10475.000			
Wilcoxon W	21060.000			
Z	-4.982			
Asymp. Sig. (2-tailed)	.000			

The average rank of the group of students with a fixed mindset is 145.24, while the group of students with a developmental mindset has achieved a rank of 199.14. We set up a null hypothesis, which we tested at the significance level of $p = 0.05$. The probability that the null hypothesis is correct is 0.0001, which is less than 0.05 (5%). We have rejected the null hypothesis. The alternative hypothesis has been confirmed. Students with a growth mindset achieved a higher average grade in the assessment period. According to previous studies about the relationship between a growth mindset and academic performance in primary and secondary education (Aronson et al., 2002; Blackwell et al., 2007; Burnette et al., 2013; Cury et al., 2008; Devers, 2015; Dweck, 2017; Good et al., 2003; Stipek & Gralinski, 1996; Tirri & Kujala, 2016; Yeager & Walton, 2011; Zeng et al., 2016), we expected such a result and in our research we have confirmed that there is a statistically significant correlation between the growth mindset and higher academic performance at the university level too.

When we examine all three variables in relation to academic performance according to RQ1, we can see that there is a statistically significant relationship between mindset and academic performance. Although we did not find a statistically significant relationship between the number of attempts in the first exam period between groups of students, the other results clearly show that students with a dominant growth mindset are more successful than students with a dominant fixed mindset. The rejection of the second hypothesis supports the theoretical and research findings of previous authors on mindset and behaviour (Dweck, 2017). People with a fixed mindset tend to constantly reaffirm their intelligence (and superiority), so the decision to tackle the second exam period would actually represent a kind of failure for them.

RQ2: Is there a statistically significant difference between the prevailing mindset and attitude towards academic failure?

As part of RQ2, we checked whether students with a growth mindset attribute their possible academic failure to internal factors such as “I did not invest enough time in my studies” and “I did not try hard enough”. We also checked whether students with a fixed mindset attribute their possible academic failure to external factors such as “Poor quality of lectures” and “The professor doesn’t like me”. In the study, we used the basic cluster analysis and the chi-square test, and the hypothesis was finally verified with the Mann-Whitney test (Table 5).

Table 5

Mann-Whitney Test of Attitude towards Academic Failure

	<i>Cluster Number of Case</i>	<i>N</i>	<i>Mean Rank</i>	<i>Sum of Ranks</i>
<i>What do you think was the main reason for the potential lower success or failure in studies or exams last year?</i>	<i>1 Fixed Mindset</i>	143	186.79	26711.00
	<i>2 Growth Mindset</i>	201	162.33	32629.00
	<i>Total</i>	344		
Mann-Whitney U		12328.000		
Wilcoxon W		32629.000		
Z		-2.480		
Asymp. Sig. (2-tailed)		.013		

Note: Grouping Variable: Cluster Number of Case

The results of the basic cluster analysis show that most students attribute academic failure to the factors “I did not invest enough time in my studies” (a total of 187 students) and “I did not try hard enough” (a total of 80 students) and a bit less to the internal factor “I did not attend the lectures” (a total of 16 students). A total of 56 students attribute academic failure to the external factor “Poor quality of lectures” and only 2 students to the factor “The professor doesn’t like me”.

However, the chi-square test of cluster analysis (Value = 9.943a; Asymptotic Significance = 0.41) shows that there are differences between the fixed-mindset group and the growth-mindset group of students in terms of attributing the causes of academic failure. A total of 35% of students with a prevailing fixed mindset attribute their academic failure to external factors, and only 13% of students with a prevailing growth mindset.

The Mann-Whitney test shows that the average rank of the group of students with a dominant fixed mindset is 186.79, while the average rank of the group of students with a fixed mindset is 162.33 (Table 5). We set up a null hypothesis, which we tested at the significance level of $p = 0.05$. The probability that the null hypothesis is correct is 0.013, which is less than 0.05 (5%). We have rejected the null hypothesis. The alternative hypothesis has been confirmed. Students with a growth mindset attribute academic failure to internal factors, while students with a fixed mindset are more likely to attribute it to external factors.

With this result, we have confirmed the findings of Dweck (2017) and confirmed that students with a prevailing fixed mindset attribute potential failures to a greater extent to external factors and do not recognise their own potential weaknesses or mistakes. For fixed-mindset students a mistake represents a personal defeat and not an opportunity for improvement or an appeal to invest more time and effort in learning.

7 Conclusion

Using a sample of 353 bachelor's and master's students from three selected faculties in Slovenia, we have confirmed the existence of two dominant mindsets: the fixed mindset and the growth-oriented mindset, which, according to many authors such as Dweck (2017) and Yeager et al. (2019), represent an important non-cognitive factor of academic performance. During the exam period, 145 students (41.1%) were characterised by a fixed mindset, while 208 students (58.9%) were characterised by a growth mindset.

We next examined the variables related to academic performance in both groups: the number of exams passed during the assessment period, the number of exam attempts in the first assessment period, and the average grade obtained in all exams passed. We have found that students with a dominant growth mindset passed more exams during the assessment period than students with a dominant fixed mindset. This has been confirmed by the Mann-Whitney test between the two groups (Asymp. Sig. (2-tailed) = 0.004).

However, the results of the Mann-Whitney test showed that students with a dominant growth mindset scored higher, on average, than their counterparts with a dominant fixed mindset in all exams passed during the exam period (Asymp. Sig. (2-tailed) = 0.000).

As part of our Mindset and Academic Performance study, we were also interested in whether there was a statistically significant difference between the fixed vs. growth mindset and the attitude towards academic failure. We investigated the factors to which students attribute the causes of lower academic success or failure. We have created a cluster of internal factors such as "I did not invest enough time in my studies" and "I did not try hard enough", and a cluster of external factors such as "Poor quality of lectures" and "The professor doesn't like me". As a result of the factor and cluster analysis and

of the Mann-Whitney test (Asymp. Sig. (2-tailed) = 0.013), we have found that students with a growth mindset tended to attribute their possible academic failure to a higher extent to internal factors, while their peers with a fixed mindset tended to attribute their failure to a higher extent to external factors.

Our study thus confirms the findings of previous authors that there is a relationship between mindset and academic performance. During the exam period, students with a prevalent growth mindset passed more exams and also achieved a better overall grade point average. We have also found that there are statistically significant differences between mindset and attribution of causes for possible academic failure. While the growth-mindset group largely attributes their failure to internal factors over which we have control, the fixed-mindset group attributes the causes of their failure to a greater extent to external factors and looks for the culprit outside themselves.

Our results are comparable to that of a related study about motivation and academic performance. Šafrančič et al. (2018, p. 116) found that “self-disciplined, curious, sociable and achievement-oriented students are prone to success“.

Certain limitations of our research should be noted. The first limitation is certainly that participation in the survey was voluntary and probably attracted more motivated students who generally perform better academically. Another possible limitation is that despite the anonymity of the survey, not all students responded honestly. The third possible limitation is that despite the prior testing of the questionnaire, the questions were understood differently as the population consisted of students from three different faculties.

It should also be noted that more women participated in the survey, which might have influenced the results of the survey (24% of men and 76% of women). However, we should also mention that this ratio also reflects the actual gender ratio of the population. Last but not least, a limitation of the research is that the survey covered only three faculties and therefore the results cannot be generalised to the whole population of Slovenian students.

The non-cognitive performance factors certainly need additional and further research. In the area of academic performance, mindset seems to be at the top of the non-cognitive factors. Most research confirms the close relationship between the growth mindset and higher academic achievement. Therefore, this article would also like to encourage the academic and scientific community to further investigate the non-cognitive factors of achievement. Our next goal is to investigate the relationship between mindset and learning strategies, and mindset and academic procrastination. The goal of our further research is to develop more growth-mindset programmes.

Dr. Danijela Brečko

Prevladujoč način razmišljanja in akademska uspešnost

Študijski uspeh ni odvisen le od kognitivnih dejavnikov, kot je inteligentnost ali količina znanja, temveč tudi od nekognitivnih dejavnikov, kot so motivi, vrednote, prepričanja, odnos do sebe in učenja ... Eden izmed nekognitivnih dejavnikov, ki ima po

nedavnih raziskavah velik vpliv na študijsko uspešnost, je tudi prevladujoč način razmišljanja oz. prevladujoča miselnost (Mindset), ki je lahko fiksna ali pa razvojna. Fiksna in razvojna miselnost je v literaturi opisana kot učenčeva stopnja prepričanja o nespremenljivosti inteligenčnih ravni ali zmožnosti razvijanja svoje inteligentnosti.

Naj pa najprej omenimo splošno razmišljanje o inteligentnosti kot o nadarjenosti in talentih. "Običajno je podoba talentiranega učenca, ki nam pride na misel, podoba pridnega in morda "piflarskega" posameznika. Resničnost pa kaže, da je to stališče zelo napačno. Veliko učencev/študentov namreč kljub svojemu talentu ne uspe ali pa kažejo celo vedenjske težave" (Matrić in Duh, 2019, str: 67).

Inteligentnost in nadarjenost sta povsem drugi kognitivni dimenziji kot fiksna in razvojna miselnost.

Učenec s fiksno miselnostjo je omejen s svojimi prepričanji in verjame, da se ljudje rodimo s posebnimi talenti in da ima vsakdo različne sposobnosti in stopnjo inteligentnosti, ki pa jih ni mogoče izboljšati s časom, vztrajnostjo in trudom. Učenec z razvojno miselnostjo na drugi strani pa goji bolj svobodne misli in prepričanja o svojih sposobnostih. Ljudje z razvojno miselnostjo razumejo, da imajo nekateri ljudje posebne talente in nadarjenosti in da se inteligentnost razlikuje od osebe do osebe, vendar jo je mogoče razviti in povečati s trudom, učenjem in samostojnim delom.

Dweck (2017) je proučevala osnovnošolce ob njihovem prehodu v srednjo šolo, pri čemer je najprej preverila, ali učenci menijo, da je njihova inteligentnost razvojna ali fiksna in se z leti ne spreminja. Nato je opazovala uspeh dijakov v srednji šoli v naslednjih dveh letih. Ugotovila je, da je učni uspeh učencev s pretežno fiksno miselnostjo upadel, medtem ko se je učni uspeh učencev s pretežno razvojno miselnostjo v istem obdobju povečal.

Prepričanja nas močno oblikujejo in vplivajo na uspešnost pri kateri koli dejavnosti, še zlasti pa pri učenju. Za ljudi s prevladujočo fiksno miselnostjo je uspeh dokaz inteligence ali talenta. Z uspehom potrjujejo svoj naravni talent. Po drugi strani pa je neuspeh nazadovanje. Dobiti slabo oceno, izgubiti igro, biti odpuščen, biti zavržen ... pomeni, da oseba enostavno ni dovolj pametna ali nadarjena. Trdo delo in vlaganje truda v učenje vidijo kot nekaj slabega. Talent naj namreč ne bi zahteval truda in trdega dela. Smiley idr. (2016) menijo, da se učenci s fiksno miselnostjo po navadi izogibajo novim izzivom, kjer je tveganje za neuspeh večje od možnosti za uspeh. Zaradi strahu pred neuspehom se izogibajo novim izkušnjam, hitreje opustijo naloge in se praviloma osredotočajo na rezultat, ki potrjuje njihovo identiteto ter prepričanje o sebi, sam proces učenja pa jim ne pomeni veliko.

Ljudje s prevladujočo razvojno miselnostjo pa verjamejo, da se trud obrestuje, da s trudom in učenjem novih stvari spreminjamo svoje lastnosti in se razvijamo. Neuspeh za ljudi s prevladujočo razvojno miselnostjo pomeni le, da trenutno ne rastejo in ne uresničujemo svojega polnega potenciala. (Dweck, 2017; Smiley idr., 2016). Neuspeh jih spodbudi, da poskusijo znova, saj za njim stoji prepričanje, da je uspeh rezultat truda. Sprijaznijo se z lastnimi napakami, z željo, da jih popravijo. Napake so bistveni del učenja. Sprejemajo izzive in v njih vidijo priložnost za osebno rast. Vztrajajo tudi ob neuspehih in padcih ter poskušajo znova. Bolj se osredotočajo na učni proces kot na sam rezultat (Cook idr., 2017).

Tudi številne druge študije so pokazale povezavo med razvojno miselnostjo rasti in uspešnostjo (Aronson idr., 2002; Blackwell, 2007; Burnett idr., 2013; Cury idr., 2008; Devers, 2015; Good, 2003; Stipek idr., 1996; Tirri in Kujala, 2016; Yeager in Walton, 2011; Zeng idr., 2016). Vse te študije potrjujejo neposreden pozitiven vpliv razvojne miselnosti na učni uspeh učencev na stopnji osnovnega in srednješolskega izobraževanja.

Vpliv prevladujoče miselnosti na akademsko uspešnost študentov oz. njen vpliv na fakultetni stopnji pa še ni dobro raziskan. Blackwell idr. (2007) in Romero idr. (2014) verjamejo, da je večja verjetnost, da bodo učenci s prevladujočo razvojno miselnostjo dosegli boljši akademski uspeh, ker težke naloge dojemajo kot priložnosti za samoizboljšanje in samorazvoj ter bodo bolj verjetno iskali izzivov polna učna okolja. Miller idr. (2003) prav tako nakazuje, da se bodo učenci z razvojno miselnostjo bolj verjetno osredotočili na učni proces, ne pa na sam učni rezultat. Aronson idr. (2002) prav tako predlagajo, da bi načrtno spodbujanje razvojne miselnosti lahko izboljšalo akademsko uspešnost na univerzah. Devers (2015), Bahnik in Vranka (2017) pa trdijo, da ni pozitivne korelacije med miselnostjo in akademsko uspešnostjo.

Številni avtorji so preučevali dejavnike, ki vplivajo na razvoj miselnosti (Dweck, 2017; Kamins in Dweck, 1999; Mueller in Dweck, 1998). Osredotočili so se predvsem na povratne informacije o učni uspešnosti in predlagali, da načini, na katere vzgojitelji učitelji in starši hvalijo uspešnost učencev, predstavljajo implicitna sporočila o naravi inteligentnosti. Vselej naj bi poudarjali, da je uspeh rezultat truda, ne pa inteligentnosti same po sebi.

Vprašanje, kako se lahko pri študentih razvije razvojna miselnost, za katero se zdi, da pomembno in pozitivno vpliva na akademske dosežke, ostaja precej nejasno in zahteva nadaljnje raziskave. V naši raziskavi smo se zato osredotočili na vprašanje, ali študentje s prevladujočo razvojno miselnostjo kažejo boljši učni in akademski uspeh v primerjavi s svojimi vrstniki s fiksno miselnostjo. Na vzorcu 353 univerzitetnih in magistrskih študentov treh izbranih fakultet v Sloveniji smo potrdili obstoj dveh prevladujočih miselnosti: fiksne miselnosti in razvojne miselnosti oz. miselnosti, usmerjene v rast, ki po mnenju številnih avtorjev, kot so Dweck (2017), Yeager idr. (2019), predstavljajo pomemben nekognitivni dejavnik akademske uspešnosti.

Rezultati so pokazali, da je bila za 145 študentov (41,1 %) značilna fiksna miselnost, medtem ko je bila za 208 študentov (58,9 %) značilna razvojna miselnost. Nato smo v obeh skupinah preverili spremenljivke, povezane z učno uspešnostjo: število opravljenih izpitov v ocenjevalnem obdobju, število poskusov izpitov v prvem ocenjevalnem obdobju in povprečno oceno vseh opravljenih izpitov. Ugotovili smo, da so študentje s prevladujočo razvojno miselnostjo v opazovanem obdobju opravili več izpitov kot študenti s prevladujočo fiksno miselnostjo. To je potrdil Mann-Whitneyjev test med obema skupinama (Asymp. Sig.; 2-tailed = 0,004).

Statistično pomembne razlike med obema skupinama v številu pristopov k izpitu v prvem roku sicer nismo našli. Vendar pa so rezultati Mann-Whitneyjevega testa pokazali, da so študentje s prevladujočo razvojno miselnostjo v povprečju dosegli višje rezultate kot njihovi kolegi s prevladujočo fiksno miselnostjo pri vseh opravljenih izpilih v opazovanem študijskem obdobju (Asymp. Sig.; 2-tailed = 0,000).

Tako lahko ugotovimo, da obstaja statistično pomembna povezava med miselnostjo in učno uspešnostjo. Čeprav nismo našli statistično značilne povezave med številom

pristopov v prvem izpitnem roku med skupinami študentov, ostali rezultati jasno kažejo, da so študentje s prevladujočo razvojno miselnostjo rasti uspešnejši od študentov s prevladujočo fiksno miselnostjo. Rezultati pa v celoti podpirajo teoretične in raziskovalne ugotovitve prejšnjih avtorjev o miselnosti in vedenju (Dweck, 2017). Ljudje s fiksno miselnostjo so namreč nagnjeni k nenehnemu potrjevanju svoje inteligentnosti (in superiornosti), zato bi odločitev o drugem izpitnem obdobju zanje pravzaprav predstavljala svojevrsten neuspeh.

V okviru naše raziskave nas je zanimalo tudi, ali obstaja statistično pomembna razlika med fiksno in razvojno miselnostjo ter odnosom do učnega neuspeha. Raziskovali smo dejavnike, ki jim študentje pripisujejo vzroke za nižji študijski uspeh oziroma neuspeh. Oblikovali smo skupek notranjih dejavnikov, kot so "nisem vložil dovolj časa v študij" in "nisem se dovolj trudil" ter skupek zunanjih dejavnikov, kot so: "slaba kakovost predavanj" in "profesor me ne mara". Kot rezultat faktorske in klasterske analize ter Mann-Whitneyjevega testa (Asymp. Sig.; 2-tailed = 0,013) smo ugotovili, da so učenci z razvojno miselnostjo nagnjeni k temu, da svoj morebitni akademski neuspeh pripisujejo notranjim dejavnikom, njihovi vrstniki s fiksno miselnostjo pa svoj neuspeh v večji meri pripisujejo zunanjim dejavnikom.

Naša študija tako potrjuje ugotovitve prejšnjih avtorjev, da obstaja povezava med miselnostjo in akademsko uspešnostjo. Študenti s prevladujočo razvojno miselnostjo so opravili več izpitov in dosegli tudi boljše skupno povprečje ocen. Ugotovili smo tudi, da obstajajo statistično značilne razlike med miselnostjo in pripisovanjem vzrokov za morebiten akademski neuspeh. Medtem ko skupina razvojno mislečih svoj neuspeh v veliki meri pripisuje notranjim dejavnikom, nad katerimi imamo nadzor, skupina s fiksno miselnostjo vzroke za svoj neuspeh v večji meri pripisuje zunanjim dejavnikom in išče krivca zunaj sebe.

Opozoriti je treba tudi na nekatere omejitve naše raziskave. Prva omejitev je gotovo ta, da je bilo sodelovanje v anketi prostovoljno in je verjetno pritegnilo bolj motivirane študente, ki so na splošno bolj uspešni pri študiju. Druga možna omejitev je, da kljub anonimnosti ankete vsi študenti niso odgovorili iskreno. Tretja možna omejitev je, da so bila vprašanja kljub predhodnemu testiranju vprašalnika različno razumljena, saj so populacijo sestavljali študenti treh različnih fakultet.

Omeniti velja tudi, da je bilo v anketi več žensk, kar je lahko vplivalo na rezultate ankete (24% moških in 76% žensk). Vendar je treba omeniti, da to razmerje odraža tudi dejansko razmerje med spoloma v populaciji. Nenazadnje pa je omejitev raziskave tudi ta, da je anketa zajela le tri fakultete, zato rezultatov ni mogoče posplošiti na celotno populacijo slovenskih študentov.

Nekognitivni dejavniki uspešnosti vsekakor potrebujejo dodatne in nadaljnje raziskave. Na področju akademske uspešnosti se zdi, da je miselnost na vrhu nekognitivnih dejavnikov. Večina raziskav potrjuje tesno povezavo med razvojno miselnostjo rasti in višjimi akademskimi dosežki. Zato želimo tudi s člankom spodbuditi akademsko in znanstveno javnost k nadaljnjemu raziskovanju nekognitivnih dejavnikov študijske in akademske uspešnosti. V prihodnosti želimo raziskati razmerje med prevladujočo miselnostjo in učnimi strategijami ter miselnostjo in akademskim odlašanjem.

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