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**UNDERSTANDING STUDENT MOTIVATION:
DIFFERENCES BETWEEN GENERAL AND GIFTED
STUDENT POPULATIONS**

***Abstract:** The study investigated motivation differences between general and potentially gifted students and among genders within these groups. The study used teacher assessments to assess motivation, focusing on task commitment as part of the motivation domain. The study occurred during the 2021/2022 school year in Croatia and involved assessing 1602 students, 442 of whom were identified as potentially gifted. The findings revealed that potentially gifted students showed higher overall motivation scores, especially in using*

additional knowledge sources and consistently completing tasks. Gender differences indicated that female students were significantly more motivated than male students within the general population, while no difference was observed for the potentially gifted population. The study further reveals a strong correlation between motivation and achievement across multiple fields in the general population, and a moderate correlation in the gifted population. The study highlights the need for tailored motivational strategies and the importance of teacher perceptions in shaping educational outcomes.

Keywords: *academic achievement, gender differences, natural sciences, task commitment, teacher assessments*

INTRODUCTION

Motivating students to learn in school is a major concern for educators today, as fostering student motivation is one of the most significant challenges in achieving quality education (Filgona et al., 2020). Educators have increasingly focused on identifying the elements that impact students' academic performance (Suhaini et al., 2020). This highlights the recognition of the significant role motivation plays in a student's educational journey. Besides motivation, a review of the literature indicates that factors such as intelligence, school environment, teaching methods, and student engagement play significant roles in academic achievement (Givvin et al., 2001; Orhan Özen, 2017; Riswanto & Aryani, 2017; Dević, 2019; Tokan & Imakulata, 2019; Suhaini et al., 2020). This study will specifically examine the role of students' motivation and its impact on achievements across one or multiple fields.

Motivation is one of the most essential elements of learning (Filgona et al., 2020). It has many definitions, but it is often defined as a force, intrinsic drive, or state of mind that moves a person toward one or more objectives and sustains their efforts over time, also guiding individuals' behaviour and attitudes, inspiring them to seek new knowledge, pursue learning, and achieve specific goals (Orhan Özen, 2017; Filgona et al., 2020; Vu et al., 2022). Students' motivation is reflected in their choice of learning activities, time and effort, persistence in completing tasks, and ability to overcome learning obstacles (Filgona et al., 2020).

Motivation has a multi-dimensional structure, and the number of dimensions varies. For this study, the dualistic theory was chosen. In the dualistic theory, psychologists distinguish between two types of motivation: internal (intrinsic) and external (extrinsic) (Reiss, 2012). Students with high external motivation are more focused on outcomes, such as grades or rewards, than on the activity itself, often driven by external pressures, such as the fear of shame or punishment (Clinkenbeard, 2012; Orhan Özen, 2017; Filgona et al., 2020; Leenknecht et al., 2021). External motivation has also been linked to various outcomes,

including burnout and poor well-being (Leenknecht et al., 2021). On the other hand, students with high internal motivation are driven by interest and curiosity (Clinkenbeard, 2012; Orhan Özen, 2017), focusing on tasks because they find them enjoyable or personally meaningful (Filgona et al., 2020; Leenknecht et al., 2021). This type of motivation is linked to academic success (Augustyniak, 2016), perseverance, and well-being (Leenknecht et al., 2021), and previous research has shown a positive relationship between high levels of internal academic motivation and academic success (Noels et al., 1999; Gottfried & Gottfried, 2004). Internal academic motivation is characterised by curiosity, persistence, and a willingness to tackle challenging and new tasks (Gottfried et al., 2005). It can be enhanced by meeting students' autonomy, competence, and relatedness needs (Orhan Özen, 2017; Leenknecht et al., 2021) and by creating a supportive environment that recognises and supports their efforts (Leenknecht et al., 2021). In practice, teachers should encourage students to give input about the lesson content, allow them to take initiative and explore, provide guidance and assistance during exercises, offer feedback, outline the lesson's objectives, share their expectations, bring energy and enthusiasm to the lessons, demonstrate care for their students, listen to and acknowledge what students are saying, etc. In contrast, they should avoid pressuring students to act or think in a specific way, being distanced or distracted (Cents-Boonstra et al., 2021). Most individuals are driven by internal and external motivations, with the dominance of each varying depending on the activity (Clinkenbeard, 2012).

Motivation impacts achievement in two ways. It influences the number of academic behaviours, such as effort and persistence. It can also enhance the quality of these behaviours by encouraging effective learning strategies, such as adaptive meta-cognitive techniques (Vu et al., 2022). Most students are motivated by internal and external factors, with their motivation levels varying depending on the activity. Both types of motivation have a positive influence on achievement (Vu et al., 2022). Given the importance of motivation in academic success, teachers should focus on encouraging and nurturing students' motivation. Encouraging student motivation is an integral part of a teacher's instructional strategy aimed at achieving consistent and high-quality learning outcomes (Filgona et al., 2020). Understanding teachers' perceptions of student motivation is crucial because they impact their actions, influencing their classroom strategies and efforts (Hardré et al., 2008; Hardré & Sullivan, 2009). Practical strategies to enhance motivation include employing digital teaching methods, providing teacher appreciation, offering assistance, allowing ample study time, fostering positive teacher-student interactions, and conducting formal assessments (Koka & Hein, 2003; Hardré & Sullivan, 2009; Suhaini et al., 2020; Leenknecht et al., 2021).

The challenge for educators lies in assessing student motivation, a private, subjective experience that is difficult to observe directly (Lee & Reeve, 2012).

Task commitment, the outward manifestation of a motivated student (Skinner et al., 2009), is easier to assess because it is objective and involves easily observed behaviours like student engagement (Lee & Reeve, 2012), which is associated with students' motivation to learn (Cents-Boonstra et al., 2021). Empirical studies have confirmed that teachers can reasonably judge their students' task commitment (Givvin et al., 2001; Hardré et al., 2008; Skinner et al., 2009; Lee & Reeve, 2012; Brandmiller et al., 2024). Task commitment can be defined as the energy that is directed into a specific problem (task) or a specific area of performance (Šimić Šašić et al., 2020). Renzulli (2016) explains that task commitment results from the combined effect of internal and external motivation, in which external factors enhance confidence and increase engagement, increasing internal motivation.

Task commitment is a key component defining giftedness (Renzulli, 2005; Renzulli, 2016; Renzulli & Reis, 2018; McCoach & Flake, 2018). Giftedness can be defined in many ways. This study used Renzulli's three-ring model of giftedness, which is determined by above-average general or specific abilities, creativity, and task commitment (Renzulli, 2005; Renzulli & Reis, 2018). Task commitment was later replaced with the word motivation, a broader term that includes task commitment (Phillips & Lindsay, 2006). All three characteristics must be present in a person to make them gifted. However, their domination can vary depending on the activity, especially for task commitment (motivation) and creativity (Renzulli & Reis, 2018; 2021). For example, a person can be highly motivated at the beginning of the task; then the motivation can be less intense, and at the end again at a high level. Some factors that motivate gifted students are challenging tasks that are consistent and appropriate, interactions with intellectually equal or superior students, an opportunity to explore areas of interest, participating in extracurricular activities, and praise from teachers (Phillips & Lindsay, 2006). Several studies have found that gifted students have a higher intrinsic motivation or interest than nongifted peers (Bergold et al., 2020; Jurišević, 2024) overall and for the STEM field (Bergold et al., 2020)

To conclude, motivation is one of the crucial factors in learning for both the general population of students and potentially gifted students. A deeper understanding of students' motivation could help teachers provide cognitive and emotional support to their students. While numerous studies have examined motivation, research is still needed to differentiate between general student populations and potentially gifted students. In addition, using teacher assessments provides insights into how teachers perceive and interpret student motivation, which is essential since teacher perceptions can influence their instructional practices and the support they provide to students. Even though this study is context-specific to Croatia and natural sciences, it adds to the overall understanding of student motivation for the general population and potentially gifted students. The findings could inform educational practices,

leading to more effective strategies for motivating both groups of students and ultimately enhancing their academic success.

This study aims to examine the differences in motivational levels between general student and potentially gifted student populations, as well as the differences in motivation between genders within both groups. Additionally, the study will explore the impact of motivation on achieving outstanding results in one or multiple fields.

The research questions addressed in this study are:

- 1) What is the difference in assessed motivation levels between the general student population and the potentially gifted student population?
- 2) Is there a significant difference in motivation levels between genders within the general and potentially gifted populations?
- 3) What is the level of correlation between motivation and achievement in one or more fields?

METHODOLOGY

This study was part of a more extensive study within the Croatian Science Foundation project Learning Biology in an Epidemiologically Adapted Research Environment. Before the study began, the Ministry of Science, Education, and Youth granted ethical approval. The school principal provided consent for their school to participate in the study, and the parents gave consent for students to participate. The study explores the motivation of two student populations: the general and potentially gifted students.

The research was carried out during the 2021/2022 school year. 67 teachers (100.00% female) volunteered to assess their students' potential giftedness. The high percentage of female teachers was expected, given the gender ratio of teachers in Croatia (Croatian Bureau of Statistics, 2023). A total of 1602 students (45.50% male, 54.50% female) were assessed. 371 students (48.50% male and 51.50% female) were in lower secondary education (the first four grades of elementary school), and 611 (49.75% male, 50.25% female) were in higher secondary education (the last four grades of elementary school), while 620 (39.52% male, 60.48% female) were in high school. This proportion of students is due to the context of the research, which was focused on Nature and Biology, taught by subject teachers in lower secondary education. The proportion of male and female students is similar to the average of male (51.00%) and female (49.00%) students enrolled in that school year (Ministry of Science and Education, 2024). A larger number of female students could be because most high school teachers who participated in the study teach in gymnasiums with more female students (63.19%; Ministry of Science and Education, 2024).

Teachers assessed the students using the "Scales for assessing potential giftedness" (Vrbanović et al., 2021). In this study, the internal consistency of

the scale was re-evaluated, showing a high reliability ($\alpha = 0.97$), confirming its appropriateness for use in this context. In the study, only part of the gathered data will be used. The first part of the scale gathered demographic data (gender and grade) and teacher assessment of outstanding results in one or more fields. The second part consisted of a series of positively worded statements arranged in several subscales that assessed different characteristics of gifted students: competence in natural sciences, creativity, and motivation. Teachers utilised a Likert-type scale to assess the extent to which each statement applied to each student, using a scale from 1 (does not apply at all) to 5 (completely applies) or 0 if they cannot assess. For the interpretation of results, the following intervals using the average were used (Alkharusi, 2022): 11.80, very low, 1.81–2.61, low, 2.62–3.42, moderate, 3.43–4.23, high level, and 4.24–5.0, very high. Students who achieved results above the third quartile for all three subscales were considered gifted. Only the general results were used for this study: 442 (27.6%) students were assessed as potentially gifted in natural sciences.

The study mainly focused on the Subscale of Motivation, a part of the “Scales for assessing potential giftedness” (Vrbanović et al., 2021). The subscale consisted of seven statements assessing intrinsic and extrinsic motivation, including school and extracurricular activities. Teachers assessed motivation based on their observations and understanding of students’ behaviours related to motivation dimensions such as task persistence, interest, and initiative. The maximum score for the Subscale was 35 points. The data were deemed suitable for factor analysis based on KMO and Bartlett’s test results. The scale’s reliability was assessed using internal consistency testing and demonstrated high reliability (Table 1).

Table 1

KMO and Bartlett’s tests for the Subscale of Motivation

		Subscale of motivation (7)
Cronbach’s Alpha		0.91
KMO Measure of Sampling Adequacy		0.88
Bartlett’s Test of Sphericity	Approx. Chi-Square	8055.08
	df	21
	Sig.	0.00

Principal Components Analysis with Varimax rotation and Kaiser Normalisation identified one factor with an eigenvalue greater than 1.00, accounting for 66.40% of the total variance, as shown in Table 2.

Table 2

One-factor solution for the Subscale of Motivation Principal Component Analysis (n=1602).

Mark	Statement	factor
D.4.1.	The student shows exceptional interest in teaching content.	0.77
D.4.2.	The student uses additional sources of knowledge (books, films, documentaries, magazines, etc.) on his own initiative.	0.84
D.4.3.	The student is motivated primarily by their interests and secondarily by evaluation.	0.74
D.4.4.	The student is happy to participate in additional activities (making posters/presentations, herbaria...).	0.86
D.4.5.	The student performs assigned tasks regularly.	0.72
D.4.6.	The student is intensely focused on a task for a long time.	0.88
D.4.7.	The student is persistent when solving a task in which he shows interest, regardless of surrounding distractions.	0.88

After factor analysis, the normality of the collected data was assessed by analysing the skewness and kurtosis values. A reference point of an absolute skewness value of ≤ 2 or an absolute kurtosis value of ≤ 4 was used to determine significant normality (Mishra et al., 2019; Table 3). As a result, it was concluded that the sample distribution was approximately normal, making parametric tests appropriate for data analysis.

Table 3

Skewness and kurtosis for the mean results of each statement

Mark	Skewness		Kurtosis	
	value	SD	value	SD
D.4.1.	-0.74	0.06	0.95	0.12
D.4.2.	-0.34	0.06	-1.01	0.12
D.4.3.	-0.34	0.06	-1.06	0.12
D.4.4.	-0.86	0.06	-0.04	0.12
D.4.5.	-0.92	0.06	0.17	0.12
D.4.6.	-0.67	0.06	-0.55	0.12
D.4.7.	-0.66	0.06	-0.65	0.12
Overall	-0.34	0.06	-0.81	0.12

The t-test for independent samples was used to compare overall motivation scores between male and female students and scores for individual statements within populations. Each item within the Subscale of Motivation was analysed separately to determine which specific motivational behaviours most strongly distinguished potentially gifted students from the general population and contributed to higher achievement across domains. The Pearson product-moment correlation test was used to explore the effect of overall motivation scores and scores for each item on achieving outstanding results in one or more fields. Guidelines from Cohen (2013) were used to interpret the magnitude of a correlation.

RESULTS AND DISCUSSION

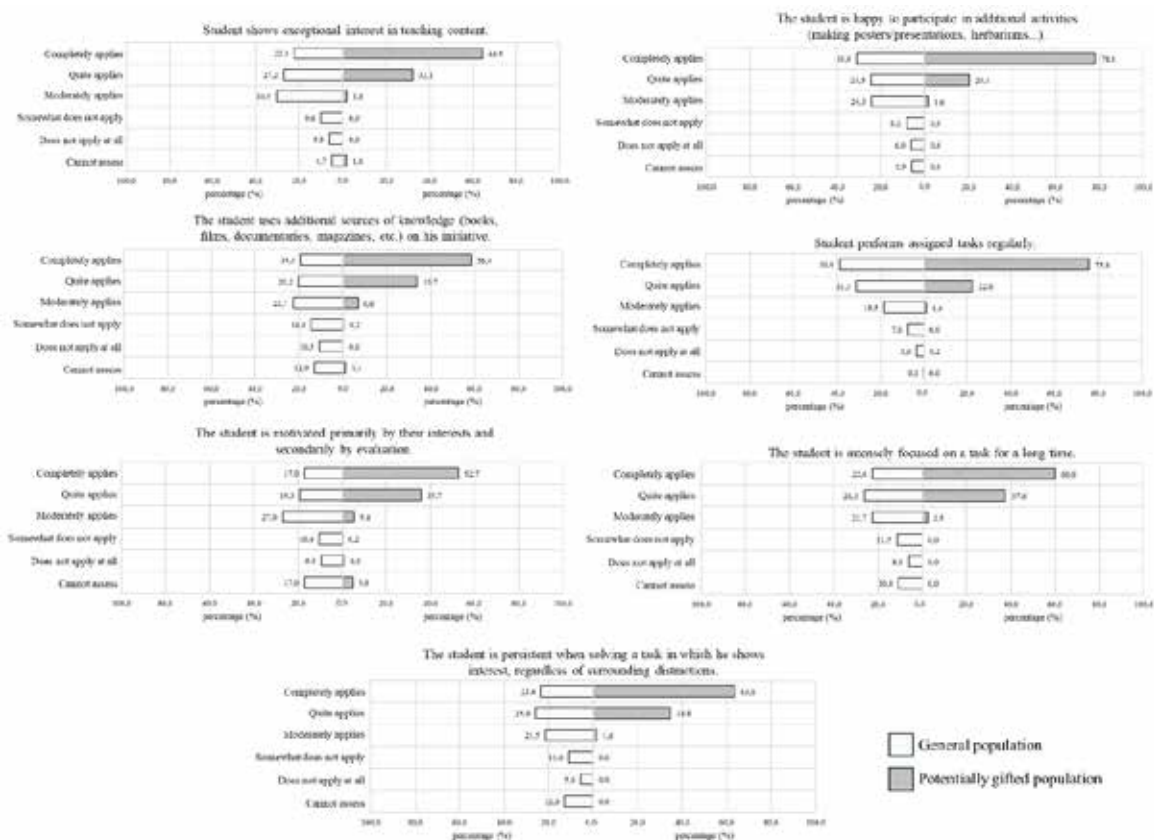
In the general student population (n=1602), motivation scores were moderate (M=19.10, SD=8.51), with an overall score of 62.86%. In comparison, in the potentially gifted student population (n=442), motivation scores were high (M=31.97, SD=2.62), with an overall score of 91.34%. This difference agrees with previous research (Clinkenbeard, 2012; Garn et al., 2010; Clinkenbeard, 2012; Hornstra et al., 2020). In addition, better average results for gifted students are expected, given that for students to be assessed as potentially gifted, they needed to have a score for the Subscale of Motivation above the third quartile (Vrbanović et al., 2021). Overall, the moderate motivation level of the general student population could be due to the proportion of students from different grades, with more students from lower secondary education and higher secondary education. Jurišević et al. (2024) state that as all students age, their motivation declines. A high motivation score, regardless of age, is found for potentially gifted students because they maintain a higher degree of motivation than non-gifted peers (Jurišević et al., 2024).

Most of the general student population participates in additional activities (55.50%) and regularly performs tasks (70.20%; Figure 1). Meanwhile, only 25.90% of students in the general population use additional sources of knowledge. In comparison, almost all potentially gifted students participate in additional activities (98.50%) and regularly perform tasks (98.40%). These results confirm participation in extracurricular activities as one factor that motivates potentially gifted students who are often interested in one or several hobbies and spend much time pursuing those activities (Phillips & Lindsay, 2006). In addition, these results align with the PISA 2015 results, which show that most students agreed that making an effort in science subjects at school is worthwhile for their future (OECD, 2016). Some differences within the populations could be explained by different teaching methods that could motivate or demotivate students, as described in the Introduction. When looking at the percentages of students for whom the teacher could not assess each characteristic, it is evident that for the general student population, teachers struggled the most with an assessment of internal motivation (17.00%), using additional sources of knowledge (12.90%),

and persistence in solving tasks (12.60%). In comparison, for the potentially gifted population, teachers struggled with assessing internal motivation (5.00%), but for a smaller number of students. Research has shown that gifted students have higher motivation and interest in STEM fields (Bergold et al., 2020), which they clearly express more, and teachers can easily notice. Overall, teachers could assess most students' motivation (task commitment) within both groups, which aligns with the literature (Lee & Reeve, 2012). The struggle to assess internal motivation could be because it is a private experience within each student that does not have to be shown on the outside (Lee & Reeve, 2012).

Figure 1

Frequencies of assessment scores for the general (N=1602) and potentially gifted (N=442) student population for the Subscale of Motivation



The average student assessment within the general population regarding showing exceptional interest in teaching content, using additional sources of

knowledge, internal motivation, focusing on a task for an extended period, and persistence when solving a task was moderate (Table 4). The moderate average assessment for additional sources of knowledge, internal motivation, and focusing on a task for an extended period could be explained by higher percentages of students for whom the teachers could not assess that particular characteristic. If teachers could not assess that characteristic, that student would be given zero points and, as a result, have a lower overall average score. Interestingly, that was not a factor in showing exceptional interest in teaching content. This may be the result of the pandemic still influencing educational approaches. In comparison, the average assessment for participation in additional activities and performance of assigned tasks was considered high. This could be influenced by the teachers' inclusion of additional activities in lessons. When teachers frequently offer additional activities to their students, a higher average participation is expected compared to teachers offering fewer activities. The lowest average score overall in the general population was assessed for students' internal motivation, and the highest was for performing tasks regularly.

Table 4

Descriptive results for the Subscale of Motivation within the general student population (N=1602)

Statement	M	SD
The student shows exceptional interest in teaching content.	3.36	1.33
The student uses additional sources of knowledge (books, films, documentaries, magazines, etc.) on his own initiative.	2.85	1.64
The student is motivated primarily by their interests and secondarily by evaluation.	2.73	1.68
The student is happy to participate in additional activities (making posters/presentations, herbaria...).	3.49	1.45
The student performs assigned tasks regularly.	3.94	1.11
The student is intensely focused on a task for a long time.	3.15	1.57
The student is persistent when solving a task in which he shows interest, regardless of surrounding distractions.	3.13	1.63

In the potentially gifted population, the average student assessment for all statements was considered very high (Table 5). The lowest average score in the potentially gifted population was assessed for students' internal motivation.

Even though internal motivation got the lowest score, it was still in the high interval and higher than the general population. Gifted students, on average, show a higher level of internal motivation compared to those students who are not identified as gifted (Garn et al., 2010; Clinkenbeard, 2012; El Khoury & Al-Hroub, 2018; Bergold et al., 2020; Hornstra et al., 2020), especially related to academic tasks (Pfeiffer et al., 2018), while showing similar levels of performance goals, i.e. external motivation (Hornstra et al., 2020). The differences in average scores for the statements can be explained by the fact that gifted students are a heterogeneous group, so the specific motivation cannot be determined entirely objectively because regular classes can often act as a demotivator for gifted students and result in inappropriate behaviour if it is not adapted to them, i.e. if it does not provide them with enough challenges (El Khoury & Al-Hroub, 2018). In addition, the general and potentially gifted populations may have overall motivation scores influenced by teacher assessment, which could differ from student assessment.

Table 5

Descriptive results for the Subscale of Motivation within a potentially gifted population (N=442)

Statement	M	SD
The student shows exceptional interest in teaching content.	4.56	0.78
The student uses additional sources of knowledge (books, films, documentaries, magazines, etc.) on his own initiative.	4.47	0.79
The student is motivated primarily by their interests and secondarily by evaluation.	4.24	1.19
The student is happy to participate in additional activities (making posters/presentations, herbaria...).	4.76	0.46
The student performs assigned tasks regularly.	4.74	0.50
The student is intensely focused on a task for a long time.	4.57	0.54
The student is persistent when solving a task in which he shows interest, regardless of surrounding distractions.	4.62	0.52

Comparison of motivation regarding gender revealed that assessed female students' motivation scores (M=23.16, SD=8.74) were significantly higher ($t=-2.63$, $df=1600$, two-tailed $p<0.00$) than those of male students (M=22.04, SD=8.19) within the general population. In comparison, no significant difference was found between male (M=31.68, SD=2.64) and female (M=32.16,

SD=2.57) students within the potentially gifted population. A literature review provides different views on the influence of the gender variable on motivation. Some research indicates that boys achieved better results on the motivation scale than girls (Preckel et al., 2008; Hong & Aquí, 2004), especially within the population of gifted students (Preckel et al., 2008; Ziegler et al., 1996). Other research indicates that girls achieved better results on the motivation scale (Hong & Aquí, 2004).

As evident from Table 6, in the general population and the population of potentially gifted students, female students were assessed as more enthusiastic about participating in additional activities, consistently completed assigned tasks, maintained an intense focus on tasks for extended periods, and demonstrated greater persistence in solving tasks of interest, even when faced with surrounding distractions. PISA 2015 research has found that female students are more concerned than male students about properly recognising their efforts at school (OECD, 2017). This may be why their motivation was more evident to the teachers. In contrast, male students were assessed as more driven by personal interest (internal motivation) in the potentially gifted population. This may also be influenced by the need for female students to receive recognition, which may give the impression to teachers that they are more externally motivated.

Table 6

Comparison of motivational assessment according to gender within the general student population (N=1602) and potentially gifted population (N=442)

Mark	Population	Gender	N	M	SD	Result
D.4.1.	General	Male	729	3.35	1.25	t=-0.37
		Female	871	3.38	1.40	df=1592.69 p>0.05
	Potentially gifted	Male	173	4.52	0.72	t=-0.94
		Female	269	4.59	0.81	df=440 p>0.05
D.4.2.	General	Male	729	2.80	1.58	t=-1.00
		Female	871	2.88	1.68	df=1600 p>0.05
	Potentially gifted	Male	173	4.45	0.85	t=-0.37
		Female	269	4.48	0.75	df=440 p>0.05

Table 6 (continued)

Mark	Population	Gender	N	M	SD	Result
D.4.3.	General	Male	729	2.77	1.59	t=0.90
		Female	871	2.70	1.75	df=1587.33 p>0.05
	Potentially gifted	Male	173	4.40	0.93	t=2.40
		Female	269	4.14	1.32	df=436.14 p<0.05
D.4.4.	General	Male	729	3.34	1.39	t=-3.77
		Female	871	3.61	1.49	df=1600 p<0.05
	Potentially gifted	Male	173	4.67	0.53	t=-3.23
		Female	269	4.83	0.40	df=295.62 p<0.05
D.4.5.	General	Male	729	3.77	1.15	t=-5.64
		Female	871	4.08	1.05	df=1490.32 p<0.05
	Potentially gifted	Male	173	4.60	0.60	t=-4,35
		Female	269	4.83	0.40	df=270.68 p<0.05
D.4.6.	General	Male	729	3.02	1.55	t=-3.13
		Female	871	3.27	1.59	df=1600 p<0.05
	Potentially gifted	Male	173	4.50	0.55	t=-2.42
		Female	269	4.62	0.54	df=440 p<0.05
D.4.7.	General	Male	729	2.99	1.61	t=-3,10
		Female	871	3.24	1.64	df=1600 p<0.05
	Potentially gifted	Male	173	4.54	0.52	t=-2,50
		Female	269	4.67	0.51	df=360.29 p<0.05

The Pearson product-moment correlation test results indicate a significantly large positive correlation ($r=0.71$, two-tailed $p < 0.05$, $N=1602$) between overall motivation scores and the ability to achieve outstanding results in multiple fields among the general population. A significant medium positive correlation ($r=0.31$, two-tailed $p < 0.05$, $N=1602$) was found between overall motivation scores and the achievement of outstanding results in one field among the general population. In comparison, analysis of the potentially gifted population revealed

a significant medium positive correlation ($r=0.36$, two-tailed $p<0.05$, $N=442$) between overall motivation scores and the ability to achieve outstanding results in multiple fields. A significantly small negative correlation was found between the overall motivation scores and achievement of outstanding results in one field ($r=-0.13$, two-tailed $p<0.05$, $N=442$). Research has proven a positive correlation between motivation and achieving exceptional success in the natural sciences, i.e., motivation, regardless of natural talent and potential giftedness, is essential for achieving exceptional results (Pfeiffer et al., 2018). Based on the literature review, Orhan Özen (2017) concluded that motivation has a positive, low-level effect on student achievement. In addition, empirical research supports these findings (Supratno & Mochamad, 2021). The lower correlation between motivation and achievement in the potentially gifted population may be because those students have above-average cognitive abilities linked with achievement (Bergold et al., 2020). The variations in motivation assessments can explain the differences between these results. This study used teacher assessment, while in most other studies, student assessments were used.

The analysis of individual statements revealed that intense focus and persistence when solving tasks have the greatest effect on achieving outstanding results in multiple fields within both populations (Table 7). In line with these results, Renzulli (2016) states that one of the key ingredients that characterise the work of gifted people is their ability to fully devote themselves to a specific problem for an extended period. In the general population, using additional sources of knowledge has the largest effect on the ability to achieve outstanding results in one field. On the other hand, frequently performing assigned tasks has a moderate negative effect on achieving outstanding results in one field within the potentially gifted population.

Table 7

The Pearson product-moment correlation test results for the general population ($N=1602$) and the potentially gifted population ($N=442$)

Mark	Population		Achieves outstanding results in multiple fields	Achieves outstanding results in one field
D.4.1.	General	Pearson Correlation	0.48**	0.13**
		Sig. (2-tailed)	0.00	0.00
	Potentially gifted	Pearson Correlation	0.19**	-0.16**
		Sig. (2-tailed)	0.00	0.00

Table 7 (continued)

Mark	Population		Achieves outstanding results in multiple fields	Achieves outstanding results in one field
D.4.2.	General	Pearson Correlation	0.61**	0.36**
		Sig. (2-tailed)	0.00	0.00
	Potentially gifted	Pearson Correlation	0.13**	0.11*
		Sig. (2-tailed)	0.01	0.02
D.4.3.	General	Pearson Correlation	0.56**	0.32**
		Sig. (2-tailed)	0.00	0.00
	Potentially gifted	Pearson Correlation	0.05	0.07
		Sig. (2-tailed)	0.32	0.14
D.4.4.	General	Pearson Correlation	0.56**	0.21**
		Sig. (2-tailed)	0.00	0.00
	Potentially gifted	Pearson Correlation	0.24**	0.02
		Sig. (2-tailed)	0.00	0.73
D.4.5.	General	Pearson Correlation	0.46**	0.08**
		Sig. (2-tailed)	0.00	0.00
	Potentially gifted	Pearson Correlation	0.26**	-0.39**
		Sig. (2-tailed)	0.00	0.00
D.4.6.	General	Pearson Correlation	0.67**	0.28**
		Sig. (2-tailed)	0.00	0.00
	Potentially gifted	Pearson Correlation	0.36**	-0.20**
		Sig. (2-tailed)	0.00	0.00
D.4.7.	General	Pearson Correlation	0.67**	0.29**
		Sig. (2-tailed)	0.00	0.00
	Potentially gifted	Pearson Correlation	0.38**	-0.19**
		Sig. (2-tailed)	0.00	0.00

** . Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).

While this study provides valuable insights into student motivation, the results should be considered with the study's limitations. The study relied solely on teacher assessments, which may be subjective, as first impressions can influence teachers' perceptions of students' potential and motivation. Teachers' initial judgment can influence teachers' perception of students' characteristics, regardless of students' efforts and changes in behaviour over time (Givvin et al., 2001). Future studies should combine student assessments and teacher assess-

ments to eliminate possible subjectivity. In addition, the research was carried out during the COVID-19 pandemic, which led to changes in teaching styles and use of digital learning. Teaching methods during the pandemic had a different effect on student motivation. Jurišević et al. (2024) found that gifted students showed three patterns of motivation: increase, no change, and decrease, depending on their characteristics and preferences for learning. Future studies should consider teaching styles when assessing students' motivation.

CONCLUSION

Analysis of teacher assessments showed that teachers could easily assess most of the characteristics included in the Subscale of Motivation. The results indicate that potentially gifted students exhibit higher motivation levels than general students, which aligns with previous empirical research findings (Clinkenbeard, 2012; Garn et al., 2010; Clinkenbeard, 2012; Bergold et al., 2020; Hornstra et al., 2020; Jurišević, 2024). In addition, the use of additional sources of knowledge and regularly performing tasks were especially dominant within a potentially gifted population (>98.00%). These findings highlight the importance of offering different learning materials and sources for gifted students. Gender variations were also apparent, with female students demonstrating more consistent engagement and male students displaying greater intrinsic motivation within the potentially gifted student population. A large, significant correlation was found between motivation and achievement in multiple fields for the general student population, while a medium correlation was found for achievement in one field. For the potentially gifted students, the correlation was moderate in both cases. The findings highlight the importance of implementing tailored motivational strategies to address diverse students' requirements and emphasise the influence of teacher perceptions on educational success.

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RAZUMIJEVANJE MOTIVACIJE UČENIKA: RAZLIKE IZMEĐU OPĆE I POTENCIJALNO DAROVITE POPULACIJE UČENIKA

Sažetak: Cilj istraživanja bio je utvrditi razlike u motivaciji između opće populacije učenika i populacije potencijalno darovitih učenika, kao i razlike među spolovima unutar tih skupina. U istraživanju su korištene procjene učitelja, s naglaskom na ustrajnost u izvršavanju zadataka kao važnoj sastavnici motivacije. Istraživanje je provedeno tijekom školske godine 2021./2022. u Hrvatskoj i obuhvatilo je procjenu 1 602 učenika, od kojih je 442 identificirano kao potencijalno darovito. Rezultati su pokazali da potencijalno daroviti učenici iskazuju višu razinu motivacije, osobito u upotrebi dodatnih izvora znanja i dosljednosti u obavljanju zadataka. U općoj populaciji učenice su bile značajno motiviranije od učenika, dok u populaciji potencijalno darovitih učenika razlike nisu utvrđene. Utvrđena je i snažna povezanost između motivacije i školskog postignuća u općoj populaciji te umjerena povezanost u populaciji potencijalno darovitih učenika. Dobiveni rezultati upućuju na važnost prilagodbe motivacijskih strategija različitim skupinama učenika i ističu ulogu učiteljskih procjena u oblikovanju obrazovnih ishoda.

Ključne riječi: školski uspjeh, spolne razlike, prirodoslovlje, ustrajnost u obavljanju zadataka, učiteljske procjene

