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## **BASIC PSYCHOLOGICAL NEEDS AS SOURCES OF ACADEMIC MOTIVATION FOR STUDYING ANATOMY**

**ABSTRACT:** According to the Self-Determination Theory, basic psychological needs are the basis of motivation and personal growth. Since little is known about how these mechanisms function in the studying of anatomy, a subject in the study of medicine that serves as a cornerstone for the successful practice of virtually any medical profession, the aim of

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this research was to determine the role of basic psychological needs in attaining academic motivation in this context. This study has been carried out on a sample of 197 first year medical students (73% female participants, ages 18 to 25). Five multiple hierarchical regression analyses were performed in which the predictor variables in the first model were satisfaction of basic psychological needs for autonomy, competence and relatedness, the frustrations of these needs were placed in the second model, and the criterion variables were various forms of academic motivation to study anatomy: intrinsic motivation, identified motivation, introjected motivation, external motivation and amotivation. Obtained results indicated that the basic psychological need for autonomy had significance in predicting variance of most types of motivation, while the need for competence played a role only in controlled types of motivation, whereas any significance of the need for relatedness in studying anatomy was indicated. The results were discussed in the context of other relevant studies and the methods by which the optimal types of motivation may be further enhanced in the study of anatomy are considered.

**KEYWORDS:** medical studies, anatomy, Self-Determination Theory, academic motivation, basic psychological needs

## **Introduction**

Upon starting medical studies, students are often confronted with many significant challenges, such as encountering novel and complex subjects and the passing of corresponding complex and important exams. One of the first of these subjects and exams is anatomy, a core subject students take in the first year of their studies. This subject often functions as a critical milestone for many students, with some being unable to advance to subsequent academic years due to failure to pass the associated examination which can result in a corresponding decline in student motivation for learning. Since academic motivation is crucial for achieving academic excellence, examining it, particularly in the context

of complex subjects, is essential. Understanding the sources of motivation that are sensitive to external influences, such as the different motivational styles in teaching, can help anatomy teachers refine their educational approaches, ultimately fostering an optimal learning environment.

From the students' perspective, mastering anatomy largely determines whether a student will become a medical doctor or not (Smith & Mathias, 2011), which endows the subject with gravity, and places great responsibility on teachers. Students at the beginning of their studies, unlike third- or fourth-year students, generally have a committed learning approach (Cebeci et al., 2013) that correlates with autonomous forms of academic motivation (Vansteenkiste et al., 2004). The results of relevant studies indicate that at the beginning of their studies, when anatomy is the leading subject, the motivation for learning of medical students is at a very high level (Shankar et al., 2013). Thus, it is crucial that the preconditions for this kind of motivation be determined, so that it can be cultivated and sustained even in later years of study, especially as motivation has been shown to decline over time, with learning styles moving from deep to superficial (Cebeci et al., 2013). The aim of our research was to determine the preconditions for realizing different forms of motivation to study anatomy. Among the predictors of various forms of motivation, the satisfaction and frustration of basic psychological needs were selected, as they are fundamental determinants in the development of optimal motivation. The theoretical framework of this paper is the Self-Determination Theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2017), one of the leading current motivational theories. Unlike other motivational theories, it offers a range of motivational types systematically arranged along a motivational continuum.

According to Self-Determination Theory (SDT), motivation is a complex, multi-layered psychological phenomenon. SDT challenges the traditional dichotomy of motivation by proposing that, in addition to varying in intensity, motivation also varies in type or form (Ryan & Deci, 2017). It distinguishes three primary types of motivation: *amotivation* (a state of lacking motivation), *external motivation* (behavior driven by external factors to achieve specific goals), and *intrinsic motivation* (a natural inclination for exploration, assimilation, and overcoming challenges). SDT further identifies several forms of external motivation. *Ex-*

*ternal regulation* involves behavior controlled by external rewards or demands. *Introjected regulation* reflects partial internalization of external demands, resulting in behavior driven by internal pressures rather than full self-acceptance (Deci & Ryan, 1985). *Identified regulation* represents a form of extrinsic motivation where individuals adopt behaviors because they find them personally valuable and important. *Integrated regulation* is the most self-determined form of extrinsic motivation, where behaviors are fully integrated into the self (Ryan & Deci, 2000).

Several factors can influence the motivation of medical students: these are variables that can be influenced (manipulable), such as basic psychological needs for autonomy, competence, and relatedness; and variables that cannot be manipulated such as age, gender, ethnicity (unmanipulable) (Kusurkar et al., 2012). Sub-theory of SDT, Basic Psychological Needs theory points out the significance of basic psychological *needs for autonomy* (each individual's need for independence, for making their own autonomous decisions, and the right to their own opinions), *competence* (the need of every individual for a personal feeling of aptitude in overcoming challenging situations and obstacles) and *relatedness* (each individual's need for realising safe and close relationships that contribute to the feeling of warmth and affiliation) as essential for optimal human growth and development (Deci & Ryan, 1985; Ryan & Deci, 2017). All three are considered organismic, meaning that their satisfaction is realized through a dialectical relationship between the individual and one's environment. The theory suggests that the innate motivation for studying directly depends on the satisfaction of these three basic psychological needs, but its growth depends on whether the individual's environment supports the satisfaction of the three basic needs (Vansteenkiste & Ryan, 2013). Instead of the earlier practice of distinguishing three basic psychological needs as unique dimensions, with negative poles representing frustration and positive satisfaction, we now find that it is necessary to consider needs frustration and satisfaction as separate constructs (Chen et al., 2015; Vansteenkiste & Ryan, 2013; Šakan, 2020). Along with this, the effects of the need frustration and its lack of satisfaction are very different in their quality and intensity, in the sense that the frustration of a need is significantly worse for psychological functioning than lack of the satisfaction of a need.

Previous studies have consistently demonstrated the relationship between basic psychological needs and various forms of academic motivation (i.e., Šakan et al., 2020). However, to our knowledge, no research has specifically examined this relationship within the Serbian student population, particularly among medical students focusing on a single subject. Historically, research on academic motivation in medical education has predominantly addressed it as an implicit aspect of curricular reform, with a focus on cognitive and metacognitive outcomes (Kursukar et al., 2012). Recent literature, however, indicates a shift toward examining motivation itself, particularly its autonomous aspects, as key factors in curriculum development and improving educational quality (Baldwin et al., 2012; Kursukar et al., 2012). Given these trends, it is crucial to investigate motivation and its sources among medical students, who are the future practitioners in the field. Based on previous research and theory, it was expected that the satisfaction of basic psychological needs would predict autonomous types of motivation (such as intrinsic and identified), whereas the frustration of basic psychological needs would predict more controlled types of motivation (such as external and introjected) as well as amotivation.

## **Material and Methodology**

### **Participant Sample and Procedure**

The sample consisted of 197 first year medical students of the Faculty of Medicine University of Novi Sad (73% female) aged between 18 and 25 ( $AS = 19.13$ ,  $SD = .89$ ). The research was performed during regular anatomy classes during the second semester of the 2019/2020 school year. This research had been approved by the Ethical committee of the Faculty of Medicine Novi Sad, University of Novi Sad, 01-39-111/1, September 17, 2019. The participants had been informed about the research procedures and its purpose and been provided additional information about the protection of their anonymity.

## Instruments and Variables

The Academic Motivation Scale (Échelle de Motivation en Éducation) (Vallerand et al., 1989) questionnaire was used. It had previously been translated from French to Serbian and had been validated (Šarčević & Vasić, 2013; Šarčević, 2015). The questionnaire was modified by the addition of one stem placed at its beginning, “*Why do you study anatomy?*,” with the purpose of contextualizing the measurement. In this research the original version that captures five aspects of academic motivation: *intrinsic motivation* (ex. ...*for the pleasure I experience when I discover new things never seen before*), *identified motivation* (ex. ...*because eventually it will enable me to enter the job market in a field that I like*), *introjected motivation* (ex. ...*to prove to myself that I am capable of passing my anatomy course*), *external motivation* (ex. ...*in order to obtain a more prestigious job later on*), and *amotivation* (ex. ...*I once had good reasons for learning anatomy; however, now I wonder whether I should continue*) was employed. The questionnaire contained 28 items, and the students registered their answers on a five-point scale (1 = I completely disagree to 5 = I completely agree). The internal consistency of the scales was satisfactory, ranging from  $\alpha = .70$  to  $\alpha = .89$ . Variables have been calculated as mean values, with higher scores representing more pronounced characteristics.

The Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS) (Chen et al., 2015) is a questionnaire that was developed on the foundations of the Self-Determination Theory, and it measures the *satisfaction* and *frustration of the basic psychological needs for autonomy, competence, and relatedness*. The questionnaire had already been previously translated to the Serbian language and validated, showing excellent psychometric properties (Šakan, 2015; Šakan, 2020). The questionnaire contained 24 items, and the participants could register their answers on a five-point scale by marking one of the answers (1 = I completely disagree to 5 = I completely agree). Internal consistency of the scales for this sample was satisfactory, with reliability coefficients ranging from  $\alpha = .76$  to  $\alpha = .85$ . As with the first questionnaire, variables have been calculated as mean values, with higher scores indicating more pronounced characteristics.

## Data analysis

First, descriptive statistics measurements were implemented and the correlations between all variables included in the study were calculated. The main body of analysis comprised five multiple hierarchical regression analyses, where: in the first block were the predictors - the *satisfaction of the basic psychological needs for autonomy, competence, and relatedness*; and in the second block variables were frustrations of the aforementioned needs; while the criterion in each of the five analyses were the types of academic motivation for studying anatomy: *intrinsic motivation, identified motivation, introjected motivation, external motivation, and amotivation*. In data analysis SPSS IBM version 22 was used.

## Results

In Table 1 correlations between types of academic motivation and the satisfaction and frustration of basic psychological needs are presented, as well as results of descriptive statistics.

Table 1

*Descriptive statistics and correlation*

Scale	1	2	3	4	5	6	7	8	9	10	11
1. <i>Intrinsic motivation</i>	1										
2. <i>Identified motivation</i>	.35**	1									
3. <i>Introjected motivation</i>	.29**	.17*	1								
4. <i>External motivation</i>	.09*	.20**	.52**	1							
5. <i>Amotivation</i>	-.16**	-.29**	.13	.12	1						
6. <i>Autonomy need satisfaction</i>	.29**	.38**	.03	.02	-.28**	1					
7. <i>Autonomy need frustration</i>	-.10	-.11	.25**	.22**	.41**	-.29**	1				
8. <i>Competence need satisfaction</i>	.18*	.26**	.09	.17*	-.16*	.41*	-.16*	1			
9. <i>Competence need frustration</i>	-.14*	-.12	.21**	.12	.26**	-.28**	-.44**	-.34**	1		
10. <i>Relatedness need satisfaction</i>	.09	.18*	.13	.12	-.12	.28**	-.12	.13	-.02	1	
11. <i>Relatedness need frustration</i>	-.01	-.17*	.06	.03	.25**	-.25**	.40**	-.06	.30**	-.44**	1
M	3.68	4.62	3.54	3.28	1.21	4.31	2.00	4.24	1.65	4.64	1.54
SD	.54	.43	.95	.87	.39	.51	.75	.49	.59	.44	.52

Note: M – mean value; SD – standard deviation; \*  $p < 0,05$ ; \*\*  $p < 0,01$ .

In Table 2 the results of the hierarchical multiple regression analyses are presented, where the predictors of *intrinsic motivation* are the *satisfaction of the basic psychological needs for autonomy, competence, and relatedness*, as well as their *frustration* counterparts. The tested models were significant and explained 10% of the variance of *intrinsic motivation* to study anatomy, while the introduction of the second model did not cause any significant change in this percentage.



Table 2

*Variance proportion ( $R^2$ ), their change ( $\Delta R^2$ ), and the statistical significance of the change ( $\Delta F$ ) (dependant variable: intrinsic motivation)*

Model	$R^2$	$\Delta R^2$	$\Delta F$
1. model: Satisfaction of the basic psychological needs for autonomy, competence, and relatedness	.09	.08	6.52
2. model: Frustration of the basic psychological needs for autonomy, relatedness, and competence	.10	.08	.77

*Note.* For all models  $p < .01$ .

Only the *satisfaction of the basic need for autonomy* was indicated as statistically significant partial predictor (Table 3). Those students whose *need for autonomy* was more satisfied demonstrated a greater *intrinsic motivation* for studying such a subject.

Table 3

*Partial contributions of basic psychological need satisfaction and frustration (dependant variable: intrinsic motivation)*

Predictor	Model 1 (B)	Model 2 (B)
Satisfaction of the basic psychological need for autonomy	.27**	.28**
Satisfaction of the basic psychological need for competence	.07	.03
Satisfaction of the basic psychological need for relatedness	.01	.06
Frustration of the basic psychological need for autonomy		.01
Frustration of the basic psychological need for competence		-.09
Frustration of the basic psychological need for relatedness		.10

\*  $p < .05$ ; \*\*  $p < .01$ .

The same models were tested and showed statistical significance explaining 17% of *identified motivation* for studying anatomy variance (Table 4), but the increase of the percentage of explained variance was insignificant when the second model was introduced. Out of partial predictors only the *satisfaction of the basic psychological need for autonomy* was statistically significant (Table 5).

Table 4

*Variance proportion ( $R^2$ ), their change ( $\Delta R^2$ ), and the statistical significance of the change ( $\Delta F$ ) (dependant variable: identified motivation)*

Model	$R^2$	$\Delta R^2$	$\Delta F$
1. model: Satisfaction of the basic psychological needs for autonomy, competence, and relatedness	.16	.15	12.63
2. model: Frustration of the basic psychological needs for autonomy, relatedness, and competence	.17	.15	.67

Note. For all models  $p < .01$ .

Table 5

*Partial contributions of basic psychological need satisfaction and frustration (dependant variable: identified motivation)*

Predictor	Model 1 (B)	Model 2 (B)
Satisfaction of the basic psychological need for autonomy	.31**	.33**
Satisfaction of the basic psychological need for competence	.12	.14
Satisfaction of the basic psychological need for relatedness	.07	.03
Frustration of the basic psychological need for autonomy		.07
Frustration of the basic psychological need for competence		.02
Frustration of the basic psychological need for relatedness		-.10

\*  $p < .05$ ; \*\*  $p < .01$ .

The same model used in the above analyses was used in predicting *introjected motivation*. The chosen predictors explained 13% of the *introjected motivation* variance, while the second model explained most of the variance criterion (Table 6). The results of this analysis at the level of predictors demonstrated that the greatest impact was seen regarding the *basic psychological need for autonomy frustration*, followed by the *frustration of the basic psychological need for competence* (Table 7).

Table 6

*Variance proportion ( $R^2$ ), their change ( $\Delta R^2$ ), and the statistical significance of the change ( $\Delta F$ ) (dependant variable: introjected motivation)*

Model	$R^2$	$\Delta R^2$	$\Delta F$
1. model: Satisfaction of basic the psychological needs for autonomy, competence, and relatedness	.02	.01	1.51
2. model: Frustration of the basic psychological needs for autonomy, relatedness, and competence	.13	.09	7.48

Table 7

*Partial contributions of basic psychological need satisfaction and frustration (dependant variable: introjected motivation)*

Predictor	Model 1 (B)	Model 2 (B)
Satisfaction of the basic psychological need for autonomy	-.04	.07
Satisfaction of the basic psychological need for competence	.09	.16
Satisfaction of the basic psychological need for relatedness	.13	.11
Frustration of the basic psychological need for autonomy		.23**
Frustration of the basic psychological need for competence		.19*
Frustration of the basic psychological need for relatedness		-.02

\*  $p < .05$ ; \*\*  $p < .01$ .

The tested models were statistically significant in predicting *external motivation* (Table 8) and explained 12% of *external motivation* for studying anatomy. The greatest percentage was explained by the second model that included the *frustration of the three basic psychological needs*. *External motivation* for studying anatomy was shown to be predicted by the *satisfaction of the need for competence* and by the *frustration of the need for autonomy* (Table 9).

Table 8

*Variance proportion ( $R^2$ ), their change ( $\Delta R^2$ ), and the statistical significance of the change ( $\Delta F$ ) (dependant variable: external motivation)*

Model	$R^2$	$\Delta R^2$	$\Delta F$
1. model: Satisfaction of the basic psychological needs for autonomy, competence, and relatedness	.04	.03	3.07
2. model: Frustration of the basic psychological needs for autonomy, relatedness, and competence	.12	.09	5.28

Table 9

*Partial contributions of basic psychological need satisfaction and frustration (dependant variable: external motivation)*

Predictor	Model 1 (B)	Model 2 (B)
Satisfaction of the basic psychological need for autonomy	-.09	.01
Satisfaction of the basic psychological need for competence	.19*	.24**
Satisfaction of the basic psychological need for relatedness	.12	.09
Frustration of the basic psychological need for autonomy		.24**
Frustration of the basic psychological need for competence		.12
Frustration of the basic psychological need for relatedness		-.04

\*  $p < .05$ ; \*\*  $p < .01$ .

The last model explained 20% of *amotivation* variance, most significantly explained by the second block of the predictors, the *frustration of psychological needs* (Table 10). The *satisfaction of basic psychological need for autonomy* was shown to have a significant impact on the model in the first part, but this significance dissipated when needs frustrations were introduced into the model. In the second model, only the *frustration of the basic psychological need for autonomy* was observed as a significant predictor (Table 11).

Table 10

*Variance proportion ( $R^2$ ), their change ( $\Delta R^2$ ), and the statistical significance of the change ( $\Delta F$ ) (dependant variable: amotivation)*

Model	$R^2$	$\Delta R^2$	$\Delta F$
1. model: Satisfaction of the basic psychological needs for autonomy, competence, and relatedness	.08	.07	5.96
2. model: Frustration of the basic psychological needs for autonomy, relatedness, and competence	.20	.17	9.27

Note. For all models  $p < .01$ .

Table 11

*Partial contributions of basic psychological need satisfaction and frustration (dependant variable: amotivation)*

Predictor	Model 1 (B)	Model 2 (B)
Satisfaction of the basic psychological need for autonomy	-.25**	-.11
Satisfaction of the basic psychological need for competence	-.05	-.04
Satisfaction of the basic psychological need for relatedness	-.04	-.01
Frustration of the basic psychological need for autonomy		.31**
Frustration of the basic psychological need for competence		.06
Frustration of the basic psychological need for relatedness		.08

\*  $p < .05$ ; \*\*  $p < .01$ .

## Discussion and Conclusion

The aim of this research was to investigate the role of basic psychological needs, the basis of motivation and personal growth, in predicting academic motivation for learning anatomy on a sample of medical students. The initial results of the descriptive statistics indicated that autonomous forms of motivation for studying anatomy are dominant in first year medical students, foremost among them *identified motivation*, followed by *intrinsic motivation*. This suggests that motives of internal source push students to study anatomy, firstly in their likely recognition of the significance of anatomy as a subject seeing as how it is formative for their future practice, but also out of their personal interest in the substance of the subject itself. Controlled types of motivation, as *external* and *introjected* motivation were somewhat lower, while *amotivation* was the least expressed form of motivation. Such results imply that medical students are self-directed and are primarily strongly and internally motivated to study anatomy, which represents a solid basis for the further development of these forms of motivation in the continuing course of their studies. The results of the principal analysis showed that all tested models were significant, and the model explained the greatest percentage of *amotivation* variance followed by *identified*, *introjected*, and *external motivation* respectively, while the model explained *intrinsic motivation* variance the least.

In explaining autonomous forms of motivation (*intrinsic and identified motivation*), out of all tested predictors the only significant one was the *satisfaction of the need for autonomy*. These results indicate that those students who perceive that they have the right to their own opinion, thusly the right to make their own choices, have higher motivation to study because of personal reasons and because of their perception of anatomy course as important for their personal growth and development. These results were largely expected, because the *need for autonomy* is noted as an important wellspring for *intrinsic motivation* (Chen et al., 2015; Ryan & Deci, 2017). In the context of learning anatomy, this result is of special significance because it indicates the ways in which the lecturers can help students develop optimal motivation – by intensifying the feeling of autonomy. The autonomous motivational

style of a teacher is one of the most researched motivational styles in recent literature (Reeve et al., 2002; Reeve et al., 2004; Reeve & Jang, 2006). Although some teachers are themselves predisposed to use this motivational style, techniques and strategies that characterise it can be learned and practiced (Reeve, 2009). This style has exhibited very good results in intensifying and maintaining *intrinsic motivation* in students, therefore it is highly recommended (Neufeld & Malin, 2021).

The results of the second regression analysis revealed that *introjected motivation*, a form of controlled motivation, is explained by autonomy frustration and competence frustration. This suggests that when students experience autonomy frustration, feeling controlled by external forces and internal conflicts, and competence frustration, characterized by insecurity and learned helplessness, their motivation to learn anatomy becomes non-optimal. They may be driven to study primarily to avoid negative emotions like guilt or shame, or to gain self-esteem and approval from themselves or others. *Introjected motivation* stems from social pressures and expectations, which, in this case, could be parental or teacher expectations of students enrolled in highly competitive programs. These findings align with previous studies showing that this form of motivation is associated with less optimal individual outcomes (Assor et al., 2009). In the context of an anatomy course, *introjected motivation* is likely to emerge when students face more challenging material that induces cognitive fatigue. Although *introjected motivation* was measured as a one-dimensional construct in this research, its dual nature is often noted in the literature. Specifically, it encompasses both the need to avoid guilt (e.g., studying to avoid feeling bad for neglecting responsibilities) and the desire to enhance self-worth (e.g., studying to prove the ability to overcome challenging subjects) (Assor et al., 2009). Since guilt avoidance tends to lead to less optimal outcomes than self-worth enhancement, future research should examine both aspects more thoroughly in the context of studying anatomy.

*External motivation*, according to the obtained results, can be explained by both competence satisfaction and autonomy frustration. Since *external motivation* is a controlled form of motivation – where individuals learn primarily due to external incentives like rewards or grades – the significance of autonomy frustration is expected, as it re-

flects a sense of limited freedom and feeling controlled. Regarding competence satisfaction, we could argue that externally motivated students studying anatomy for reasons like securing a 'respectable job' or financial stability must feel personally competent to achieve such challenging goals. Although these students are also under pressure, they are likely to view education as a series of unavoidable obligations to reach their objectives, rather than as a source of stimulation, personal development, or growth. A Slovenian study (Puklek Levpušček & Podlesek, 2019) found that external motivation is as prevalent as internal motivation, and because it correlates with career choices, it is considered necessary.

Results of this study revealed that frustration of the basic psychological need for autonomy is the sole predictor of *amotivation* in learning anatomy. This may be explained by the fact that students who feel under pressure or highly controlled are often unwilling to study and at risk of disengaging. The frustration of autonomy has also been shown to significantly explain amotivation in younger adolescents studying mathematics (Šakan, 2020). The term 'amotivation' was first introduced by Deci and Ryan (1985) to describe an individual's lack of intentionality in their actions. Later, they explained that *amotivation* can arise from external factors – such as conflicts between an individual and their environment – or from internal struggles, where external pressures conflict with the self (Deci & Ryan, 1990; Koestner et al., 1996). According to this view, extreme *amotivation* results from feelings of incompetence in certain life domains, akin to Seligman's concept of learned helplessness. Internal amotivation, however, emerges when a person feels unable to resolve internal conflicts or integrate external pressures. Despite these distinctions, most research, including this study, has focused on *amotivation* as a general construct (Koestner et al., 1996; Vallerand et al., 1989; Vallerand et al., 1999). Future research should aim to develop a more nuanced understanding of *amotivation* for learning anatomy, examining its various forms in greater depth.

One question that arises when explaining academic motivation, based on both this research and other studies of the local population, is the apparent absence of the need for relatedness in the educational context for both younger individuals (Šakan, 2020; Šarčević, 2017) and



older respondents, such as college students. Results of descriptive statistics of this study suggest that this need is satisfied in students, yet it did not emerge as a significant factor in the proposed models of academic motivation. This finding may have two explanations. First, it is possible that students do not view the feeling of relatedness as important in the context of learning anatomy. However, this contradicts numerous studies that emphasize the importance of relatedness as a key factor in motivation (Jones et al., 2004; Niemiec & Ryan, 2009; Sheldon & Filak, 2008; Wellborn et al., 1988), suggesting an alternative explanation. The second explanation is methodological: while relatedness was measured as a general need, motivation was measured specifically within the context of an anatomy course. This could mean that students feel connected and secure in a general sense, but do not associate this feeling with their academic experiences. In any case, the importance of relatedness in academic life should not be overlooked, and further research using more targeted methodologies, particularly those that assess affective functioning, is needed.

In recent times, anatomy instruction has undergone several changes in its transition from traditional education to modern education performed with the help of digitalized content (Srđić-Galić et al., 2017). In order to ensure that the study material from this subject is best absorbed by the students, it is necessary to increase student autonomous motivation for its study. Due to the obtained results highlighting the importance of satisfying basic psychological needs for optimal academic motivation in learning anatomy, recommendations for teaching anatomy include: adapting material to students' needs; encouraging responsibility for independent learning; creating appropriate challenges; providing clear structure and constructive feedback; offering emotional support and recognizing negative emotions (e.g., frustration); clarifying less engaging activities; allowing sufficient choice; and using supportive language, emphasizing 'should' or 'could' over 'must' or 'demand' (Kursukar et al., 2011; Neufeld & Malin, 2021; Malin, 2015; Ten Cate et al., 2011).

Although the Self-Determination Theory is well represented in studying motivation in education, research in the domain of medical studies is limited, so this paper contributes to the development of theory

in this domain. More specifically this paper contributes to understanding contextual motivation for studying anatomy, which is often perceived as one of the most challenging subjects in medical studies. In addition to the theoretical significance of this paper, it is intended that it could be used to help formulate and improve the teaching and studying of anatomy.

The relatively low percentage of explained variance in all tested models found in this research shows that only about a fifth of the variance of different types of academic motivation in studying anatomy were explained by the selected predictors, signifying that other relevant variables must be considered in further research. Among them could be those variables that Kusrkar et al. (2011) call “unchangeable,” such as socio-demographic characteristics, and other traits from the domain of individual psychological functioning (learning styles, identity, emotional regulation of stress, personality traits, and so on). Also, the general impact of these results is limited bearing in mind that the sample was drawn from only one generation of medical students, so further, similar research should be extended to other generations of students.

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