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EVALUATION OF APPROACHES TO LEARNING IN PHYSIOTHERAPY STUDENTS

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Abstract: The approach to learning associates the type of motivation and the type of learning strategies used by students, with an impact on the quality of learning. The adoption of pedagogical practices that promote the *deep approach,* associated with better academic results, justifies the importance of studying this variable. In this type of approach, students associate intrinsic motivation, i.e. their enjoyment and involvement in learning, with a deep strategy, which focuses above all on understanding and the relationship between concepts. The objectives were to explore the type of approach to learning of physiotherapy students and the psychometric characteristics of the Learning Process Inventory, 2nd version university level (IPA-u-v.2) in this population. The methodology involved administering the IPA-u-v.2 to 415 students from 7 Higher Education Institutions from all 4 years of the degree. Descriptive statistics, internal consistency and principal components were analyzed and the IPA-u-v.2 values were determined. The results show that students have higher scores for the *deep approach* and *the success approach* than for the *surface approach*, with higher average scores for intrinsic motivation and achievement motivation, as well as for the organization strategy and the deep strategy. The IPA--u-v.2 showed good internal consistency with a factor structure similar to the original. We conclude that the data support the use of the IPA u-v.2 in this population, and its application to other studies in the area that explore the type of *approach to learning* with the academic results and pedagogical practices used. It is hoped that this will help to adapt practices and improve the quality of learning in this population.
Keywords: approach to learning, physiotherapy, IPA-u-v-2

BACKGROUND

Research has shown that the type of motivation and the type of learning strategies used by students (combined in a variable called learning approach) can influence the quality of their learning, their performance or academic results, and that *the deep approach* seems to be associated with better results (Takase & Yoshida, 2021; Toraman et al, 2020). The concept of approach to learning involves an affective component, i.e. the student's motivation to learn, and a cognitive component, i.e. the strategy adopted to tackle learning tasks. Historically and over the last few decades, various authors have contributed to the evolution of the concept within the SAL model (*students' approaches to learning*) of Marton and Säljö (1976a, 1976b), revealing the 3 most common types of approach (Biggs, 1987, 2003; Entwistle & Ramsden, 1983; Marton Säljö, 1984; Vanthournout et al, 2014): the deep approach, which associates intrinsic motivation (involvement and enjoyment in learning) with the deep strategy, which includes understanding and relating concepts ; the surface approach which associates instrumental motivation (dependent on external pressure) with the surface strategy, which includes memorization and repetition; and the success approach which associates achievement motivation (getting high grades) with the organization strategy (managing study time). In the context of higher education, it is important to identify the type of approach to learning used by students in order to promote practices that facilitate the deep approach.

DESCRIPTION OF TEACHING PRACTICE

This study is part of an investigation into approaches to learning and their relationship with academic results. It falls within the scope of physiotherapy assessment and intervention in neurological conditions, integrated into

the curricular units of the 2nd year of the degree in physiotherapy at the Escola Superior de Setúbal of the Instituto Politécnico de Setúbal. The research includes several studies aimed at identifying physiotherapy students' approaches to learning, the strategies used and their relationship with the academic results obtained, teaching practices and the type of learning tasks. The study we are presenting concerns the initial phase of the research, the evaluation of approaches to learning in a sample of physiotherapy students. The methodology and evaluation therefore concern the use of the IPA-u-v.2 questionnaire and the results obtained.

OBJECTIVES AND TARGET AUDIENCE

Considering the above, the main objective was to explore approaches to learning in physiotherapy students, and to evaluate the psychometric characteristics of the IPA-u-v.2 in a sample of physiotherapy undergraduate students. This study involved 415 students from 7 Higher Education Institutions, 21.9% male, 78.1% female, with an average age of 21.01 (between 17 and 49) and distributed over the 4 years of the degree (29.2% of the 1st year, 19.3% of the 2nd year, 30.1% of the 3rd year and 21.4% of the 4th and final year).

METHODOLOGY

Based on the SAL (*students' approaches to learning)* model (Martin & Säljö, 1976a, 1976b), the type of approach to student learning can be categorized by assessing the type of strategies and type of motivations used by students in their learning process, with various methods and instruments being suggested in the literature (Asikainen & Gijbels, 2017; Biggs, 1978; Entwistle, 2009; Entwistle & McCune, 2004; Iddris et al, 2023; Marton & Säljö, 1976a, 1976b; Vanthournout, et al, 2014). In this case, we opted for a quantitative approach using an instrument developed by Duarte (2000): the IPA-u-v.2. The first contact with 8 Higher Education Institutions was made via telephone with the course coordinators of the physiotherapy degrees, and after authorization, detailed information and the link to the questionnaire were sent via email, transposed to the Google Forms platform (https://forms.gle/uyQTMArKRMRi49cS7) to allow online data collection. One institution was excluded because authorization was not obtained in time. Once the questionnaire had been completed at the end of the first semester, the data was exported to Excel and then to the IBM *Statistical Package of Social Sciences*, and statistical analysis was carried out (SPSS version 29). All ethical issues were ensured and the study was approved by the Specialized Deontology Committee of the Scientific Council of the Faculty of Psychology of the University of Lisbon and by the Specialized Research Ethics Committee of the School of Health of the Polytechnic Institute of Setúbal.

EVALUATION

The questionnaire used aims to characterize the type of approach to student learning, by assessing the type of strategies and motivations used by students in their learning process. It has 48 items spread over 6 dimensions (intrinsic motivation, instrumental motivation, achievement motivation, deep strategy, surface strategy and organizational strategy) assessed on a 5-point Likert scale (1 - never or rarely true for me; 2 - sometimes true for me; 3 - true for me half the time; 4 - often true for me; 5 - always or almost always true for me), 4 of which are rated inverted. It was developed and tested on university and secondary school students (Duarte, 2000, 2003-2004; Moreira et al., 2012) and proved to have good psychometric characteristics, namely good internal consistency in terms of the scales relating to motivations and strategies, and in terms of the

sub-scales relating to approaches to learning. In the analysis, the descriptive statistics of the different scales were calculated, the internal consistency of each scale was studied using the Cronbach's alpha coefficient and the effect of omitting each item on the alpha coefficient of the respective scale was analyzed. Subsequently, a factor analysis was carried out, based on principal component analysis, to check whether the factor structure previously found and tested by Duarte (2000, 2003-2004) remained stable in this sample population, and the internal consistency of the scales and sub-scales resulting from this analysis was assessed. The correlations between the type of strategies and the type of motivation were also calculated.

RESULTS, IMPLICATIONS AND RECOMMENDATIONS

The IPA-u-v.2 proved to have good internal consistency with values between .7 and .8 and a factor structure similar to the original (3 factors relating to the type of strategy and 3 factors relating to the type of motivation) although the 2nd order analysis (type of approach to learning) revealed that the scales were associated in only 2 factors, compatible in part with the deep approach and the superficial approach. In the first factor, intrinsic motivation is associated not only with the deep strategy, but also with the organizational strategy; in the second factor, instrumental motivation is associated with the surface strategy, as expected, but also with achievement motivation. This association had also appeared in previous studies (Duarte, 2000, 2003-2004; Moreira et al., 2012) and these approaches were called the depth-organization approach and the surface-achievement approach. In the present study, although the sample consisted of students from all four years of undergraduate study, the association in the 2nd order scales seems to be more in line with the structure found in secondary school students (Moreira et al., 2012). This may be due to the characteristics of the sample, but also to the demands of the curricula (in this case, the organizational strategy, focused on time management and study, is associated with the deep strategy and intrinsic motivation), or to the proximity of the assessment periods (since the collection took place at the end of the semester), which may explain the association of instrumental motivation, focused on the external pressure to meet the objective, with the motivation to obtain high marks, but at the expense of strategies such as memorization. However, when evaluating the correlation between the type of strategy and the type of motivation, the results show several statistically significant correlations (Table 1) of which we highlight the positive correlation between intrinsic motivation and the deep strategy and the positive correlation between instrumental motivation and the surface strategy, which support the theoretical assumptions of the deep approach and the surface approach.

When the IPA-u-v.2 was applied to this sample (Table 2), it was found that the students showed higher values for intrinsic motivation (mean 24.5 dp= 5.3; values between 10 and 40), followed by achievement motivation (mean 17.9 and dp = 6.1; values between 8-39), and instrumental motivation (mean 13.1 dp= 4.6; values between 8 and 34). They also show higher values on the scales of organizational strategy (mean 29.4 and SD = 5.9 and values between 12 and 40), and deep strategy (mean 28.9, SD = 5.1 values between 14 and 40), compared to surface strategy, which has the lowest mean value (22.9, SD = 3.7 and values between 14 and 33).

In the evaluation of the students' approaches to learning (Table 3), the deep approach showed higher values (mean 50.9; SD = 8.5; values between 9-73) as did the successful approach (mean 47.3; SD = 8.8; values betwe-

	Deep strategy	Superficial Strategy	Organizational Strategy	Intrinsic Motivation	Instrumental Motivation	Achievement Motivation
Intrinsic Motivation	**.486****	**-.233****	**.290****		**-.275****	
Instrumental Motivation	-.124*	**.286****	**-.241****	**-.275****		**.241****
Achievement Motivation	.112*	**.232****		.102*	**.241****	
Deep Strategy		**-.397****	**.154****			
Surface Strategy	**-.397****		-.097*			
Organizational Strategy	**.154****	-.097*				

Table 1. *Pearson*'s correlation for the 1st order scales (n=415)

* Significant at p<.05 **Significant at p<.01

	Minimum-maximum	Mean	Standard Deviation
Intrinsic Motivation	10 - 40	**24.5**	5.3
Achievement Motivation	8 - 37	17.9	6.1
Instrumental Motivation	8 - 34	13.0	4.6
Deep Strategy	14 - 40	**28.9**	5.1
Organizational Strategy	12 - 40	**29.4**	5.9
Superficial Strategy	14 - 33	22.9	3.7

Table 2. IPA u-v-2 values for type of motivation and type of strategy (n=415)

Note: the highest average values are in bold

	Minimum-maximum	*Mean*	*Standard Deviation*
Deep Approach	29 - 73	50.9	8.8
1st year	29 - 67	49.1	8.4
4th grade	38 - 70	**52.6**	7.3
Superficial Approach	23 - 63	35.9	6.7
*1st yea*r	26 - 63	**37.3**	6.9
4th grade	23 - 58	34.2	6.7
Successful Approach	20 - 73	47.3	8.8
*1st yea*r	20 - 71	**48.4**	9.1
4th grade	26 - 67	47.6	8.8

Table 3. IPA u-v-2 values for the type of approach to learning (n=415)

Note: the highest average values are in bold

en 20-73), compared to the superficial approach which showed the lowest values (between 22 and 63, mean 35.9 and SD = 6.7). Looking at the extremes, we see that 1st year students have higher values for the successful approach and the superficial approach, while 4th year students have higher values for the in-depth approach. This trend, especially the preferential adoption of the deep approach by students in advanced years, has already been identified by other authors (McDonalds et al, 2017; Iddris et al., 2023). However, the use of the success approach (which combines achievement motivation with the organization strategy) seems to be increasingly present over the different years, which merits particular attention to the teaching-learning strategies and pedagogical practices used in this context, what leads students to adopt this approach and what its relationship is with the academic results obtained.

CONCLUSIONS

The data from this study supports the theoretical assumptions of the SAL model in physiotherapy students, having identified various types of approach to learning in this sample. When the IPA-u-v.2 was applied, it was found that the students had higher average values for the deep approach and the success approach than for the superficial approach, with the 4th year students preferentially identifying the deep approach. The IPA-u-v.2 proved to have good internal consistency in terms of the scales, with values similar to those found previously (Duarte, 2000, 2003-2004; Moreira et al., 2012). In the factor analysis, the association between the type of motivation and the type of strategy was partly compatible with 2 types of approach, showing other associations: the deep approach revealed the association of intrinsic motivation with the deep strategy, but also with the organizational strategy, which is mainly focused on managing study time; and the superficial approach revealed the association of instrumental motivation with the superficial strategy, as expected, but also with achievement motivation, focused on the desire to get good grades. In a reading restricted to this sample, this fact suggests the possible adoption of more complex approaches, which may in part result from the characteristics of this sample, such as the demanding nature of the curricula, the proximity of assessment periods or the teaching practices and strategies used in the courses. As a limitation, and since this questionnaire is self-reported, we cannot ignore the possibility of bias in some of the answers. The desire to match a certain profile or behavior towards the learning process can influence the type of motivation and the type of strategies adopted, and consequently the students' responses. Other contextual factors may not have been considered, which is also a limitation and justifies a qualitative approach. Following on from this work, IPA-u-v.2 was integrated into a study with 2nd year physiotherapy undergraduate students in the context of physiotherapy in neurological conditions, which sought to relate the type of approach to learning with the academic results obtained, exploring in particular the type of motivation and strategies used by the students, through a mixed approach, using semi-structured interviews, in which the associated pedagogical practices were also identified. It is also suggested that studies be carried out focusing on specific learning tasks (associated, for example, with simulation as a recommended learning strategy for physiotherapy learning) and specific curricular units. It is hoped that similar studies will contribute to the identification of pedagogical practices that favor an in-depth approach and better student academic performance.

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