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A Correlation Analysis on Academic Motivation Developed, and Its Relationship with Gender and Year of Study among Undergraduate Physiotherapy Students in Malaysia

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ABSTRACT

Background and Objective: Academic motivation plays an essential role in students' learning and educational improvement. However, research that focuses on students' motivation in health science disciplines, especially on physiotherapy students, is scarce. Therefore, this study aims to identify the most predominant type of academic motivation developed, and its relationship with gender and year of study in physiotherapy students in Malaysia.
Methods: A total of 353 students from public and private universities were included in this cross-sectional study. Academic Motivation Scale – College Version (AMS-C 28) was used to measure academic motivation of subjects and Depression, Anxiety and Stress Scale – 21 Items (DASS-21) was used to assess mental health of subjects.
Results: The highest mean motivation score was observed for item 3 (5.83 ± 1.23) while lowest mean score was observed for item 26 (2.20 ± 1.50). Significant gender differences were observed in 12 items. Significant differences were observed for items 13, 18, and 25 when comparing mean rank motivation scores across years of study (p-values .046, .005, and .003 respectively).The motivation type that displayed the highest total frequency is EMID (n= 159).There was a significant (p= .025) weak negative relationship between gender and academic motivation (r= -0.14).There was a non-significant (p= .471) moderate negative relationship between year of study and academic motivation (r= -0.46).The prevalence of depression, anxiety, and stress were found to be 46.74% , 59.77%, and 35.97% respectively.
Conclusion: The most predominant type of motivation developed by physiotherapy undergraduates in Malaysia, mainly among those from peninsula Malaysia, is extrinsic motivation regulated through identification. Gender was found to be significantly correlated to academic motivation, where females are more likely to develop more intrinsic forms of motivation. However, the strength of the relationship is weak. There was no significant correlation between year of study and academic motivation among physiotherapy undergraduates in Malaysia. Certain measures should be implemented in order to enhance and maintain high academic motivation levels which would subsequently lead to better academic success and student wellbeing.

***Keywords*:** Academic motivation, physiotherapy, correlation, gender, year of study

INTRODUCTION

Motivation can be described as the process by which purpose-oriented behaviours are generated and perpetuated by an internal force (1). It is classified into two types: intrinsic and extrinsic motivation. Intrinsic motivation is manifested through internal elements, whereas external motivation is manifested through external elements. In the academic context, motivation is referred to as the cause of behaviours that are related to academic functioning and success. This includes the amount of effort that students put forth into their studies, the effectiveness of their work regulation, and their persistence when faced with challenges in their studies (2). It is an important aspect in the academic development of students as it influences learning strategies and behaviours, academic performance, and academic achievements. The linkages between motivation, the process of learning, and achievements have previously been widely established(3)(4). Research has consistently shown that students who are motivated in their studies have higher likelihood to perceive learning and education as valuable. Moreover, they seem to enjoy the act of learning and learning-related activities much more than students who are not motivated. On the other hand, students who lack motivation academic-wise are not only more likely to disengage with school in general, but also become underachievers and drop out of school(5).In recent years, an increase in the dropout rates from tertiary education has been observed globally including Malaysia. According to 2012 statistics, 17.5% of the total students who have enrolled in tertiary education in Malaysia have dropped out in 2012 (6). While many factors can influence one's decision to discontinue with their tertiary education, namely the lack of financial and social support, lack of motivation has been identified as one of the primary reasons (7). It is very common to encounter motivational problems in education.

In health science education, a student's academic performance can be affected by a wide array of factors like the gender, nationality, interest in studies, the time spent on social networking, and unsurprisingly, the motivation to learn have all been said to have influences on one's academic performance(8)(4). Highlighting on motivation, it helps students to become good professionals, to achieve the long-term goal of obtaining a professional career in healthcare(9). However, studies which focus on assessing health science students' motivation in learning, especially among students undertaking physiotherapy programme, is scarce. Previously, only few studies investigated the motivation and engagement levels of physiotherapy students (10)(11). In the study by Edgar (2014), it was found that gender played a part in the difference in motivation level between physiotherapy students. However, when compared with other studies that used medical students, gender was found to have no influence in motivation (1). In addition, the study by Edgar (2014) did not report on the effect of year of study on physiotherapy students' academic motivation. However, other studies on medical students have shown that year of study has influences on academic motivation; although it remains unclear whether it is a strong or weak influence, and whether the relationship is positive or negative. Thus, there is a need to investigate on the relationship of gender and year of study on academic motivation in physiotherapy students. Furthermore, the subject of academic motivation among physiotherapy students has never been investigated in an eastern population before. Hence, there is a need for studies on academic motivation in physiotherapy students that centres on eastern populations, such as in Malaysia.

Since motivation plays a fundamental part in the process of learning and academic improvement, it is crucial for educators to understand the motivation level of their students so that effective approaches can be implemented to educate students

based on their needs and to successfully keep each student motivated in their studies. Hence, the objective of this study is to determine the type of motivation developed, and to determine the relationship between gender and year of study among undergraduate physiotherapy students in Malaysia. The Alternate hypothesis were: 1. The most predominant type of motivation developed is extrinsic motivation – identified regulation.2. There is a significant relationship between gender and the type of motivation developed. 3. There is a significant relationship between year of study and the type of motivation developed by undergraduate physiotherapy students in Malaysia.

METHODOLOGY

This study obtained ethical approval by the Scientific and Ethical Review Committee (SERC) of UTAR (U/SERC/171/2020 No. 8). This cross-sectional design was conducted electronically through an online survey from 5 November 2020 to 26 November 2020. Simple random sampling method was utilized for this study. Respondents were undergraduates who were studying Bachelor of Physiotherapy in Malaysia. They were recruited from public and private institutions that offered the study programme. The sample size was calculated to be 375 after accounting for 10% of non-response rate. A total of 414 responses were received and 353 of them which met the inclusion and exclusion criteria were used for data analysis. The inclusion criteria were male and female individuals who were: studying in Bachelor of Physiotherapy in Malaysia and within the age range of 19 to 25 years. The exclusion criteria were when reported other nationality and worked a part-time job while studying.

Academic Motivation Scale – College Version (AMS-C 28)

This scale created by Vallerand et al. (1989) utilized to assess the academic motivation of students in tertiary education(12). It assessed seven different types of motivational orientations which include intrinsic motivation towards knowledge, accomplishments, and stimulation, as well as external, introjected and identified regulations, and finally amotivation. The items were rated on a seven-point Likert scale. The 28 items were classified into seven subscales.

Depression, Anxiety and Stress Scale – 21 Items (DASS-21)

This scale created by Lovibond and Lovibond (1995) was used to examine the frequency of psychological morbidities, emotional states of depression, anxiety and stress. The scale consisted of 21 items which were divided into three subscales: depression, anxiety, and stress. Along with the scale was an instruction to rate using a four-point scale how much each of the items applied to the participants over their past week.

Procedure

Public and private institutions offering Bachelor of Physiotherapy programme were contacted to explain about the study and to request for permission that would allow their students to participate in this study. Once permission was granted, invitation links to the study were sent to the students through email. In addition, invitations to the study were also sent through social media. The invitation link led to an online questionnaire that contained three parts: a demographic data form, AMS-C 28, and DASS-21. The purpose of the study was stated in the first page of the questionnaire, followed by the informed consent form. The personal data protection statement was also stated in the second page. The participants responses were not shared to others. Reminders to the fill in the questionnaire were sent out every seven days for two weeks.

Data Analysis and Statistical Test

The collected data were analyzed with IBM Statistical Package for the Social

Science (SPSS) software version 23. Descriptive statistics were used to determine the baseline characteristics of the respondents. The distribution of the AMS-C 28 motivation scores was tested for normality with Kolmogorov-Smirnov and Shapiro-Wilk tests. Mann-Whitney U test was utilized to find the mean rank motivation score difference between genders. Kruskal-Wallis test was used to find the mean rank motivation score difference between years of study. For significant findings determined by a p-value of less than 0.05, further analysis via pairwise post hoc test was performed to determine which of the year groups differ significantly from one another. To analyse the correlation between gender and type of academic motivation developed, and between year of study and type of academic motivation developed, Spearman's rank-order correlation test was utilized. The psychological morbidities for each subscale of DASS-21 were determined by totalling the number of respondents. The confidence interval was set at 95%.

RESULT

Demographic Data

A total of 353 undergraduate physiotherapy students were included in this study. Among the respondents, 346 (98.02%) of them are Malaysians while 7 (1.98%) of them have different nationalities. Out of the 353 students, 269 (76.20%) were females while 84 (23.80%) were males. The mean age was 21.18 ± 1.52 years.

Distribution of Data

Both Kolmogorov-Smirnov and Shapiro-Wilk tests revealed that the motivation scores are not normally distributed. Thus, non-parametric tests will be used for data analysis.

AMS-C 28 Analysis

Distribution of respondents by answers to AMS-C 28

From Figure 1 it can be analysed that all items except items 5, 12, 19, 21, and 26, the option "corresponds a lot" has the highest frequencies. Upon closer inspection, these items were found to represent the subscales for intrinsic motivation and extrinsic motivation.

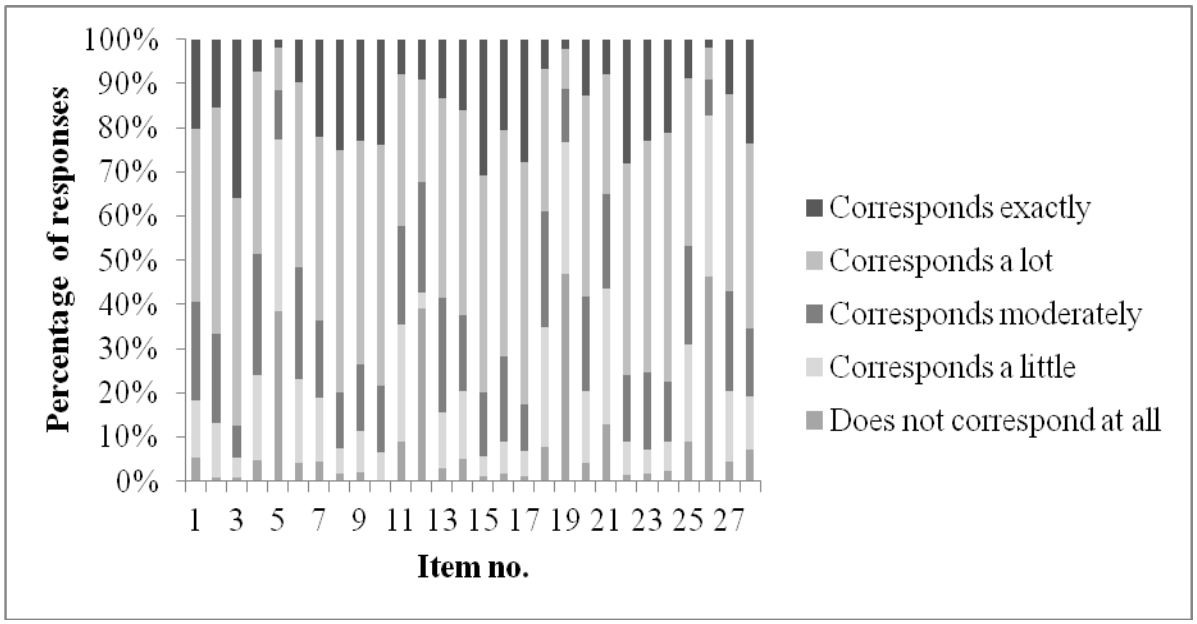

Figure 1: Distribution of respondents by answers to AMS-C 28

Component analysis

Figure 2 shows the mean scores for all items of the AMS-C 28. The highest mean score was observed for item 3 (5.83 ± 1.23) with the statement "Because I think that a college education will help me better

prepare for the career I have chosen." and the lowest mean score was observed for item 26 (2.20 ± 1.50) with the statement "I don't know; I can't understand what I am doing in school.".

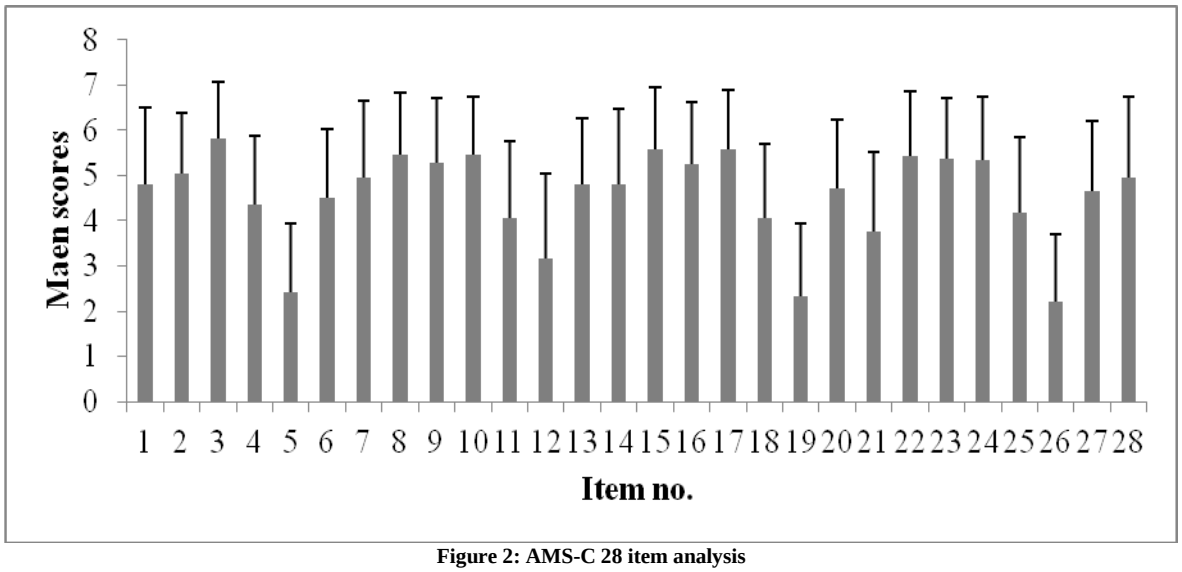

Figure 2: AMS-C 28 item analysis

Mean rank scores per gender

The mean rank score difference for the AMS-C 28 items between male and female respondents is presented in Figure 3. Twelve items were observed to have statistically significant differences. Females were observed to have higher mean rank scores for all statistically significant items except for item 5 and 19 which measured amotivation.

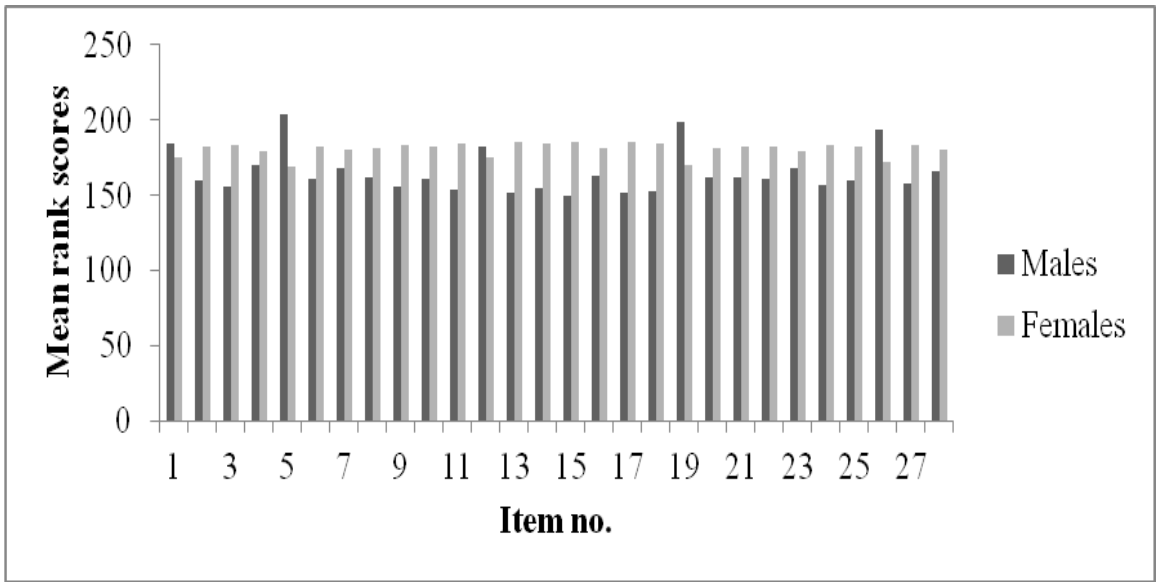

Figure 3: AMS-C 28 items mean rank scores per gender

Mean rank scores across years of study

Figure 4 shows the mean rank motivation scores for the AMS-C 28 items across years of study from year one to year four. Statistically significant differences were observed for the items 13, 18, and 25 when the mean rank motivation score was compared across years of study (p-values .046, .005, and .003 respectively).

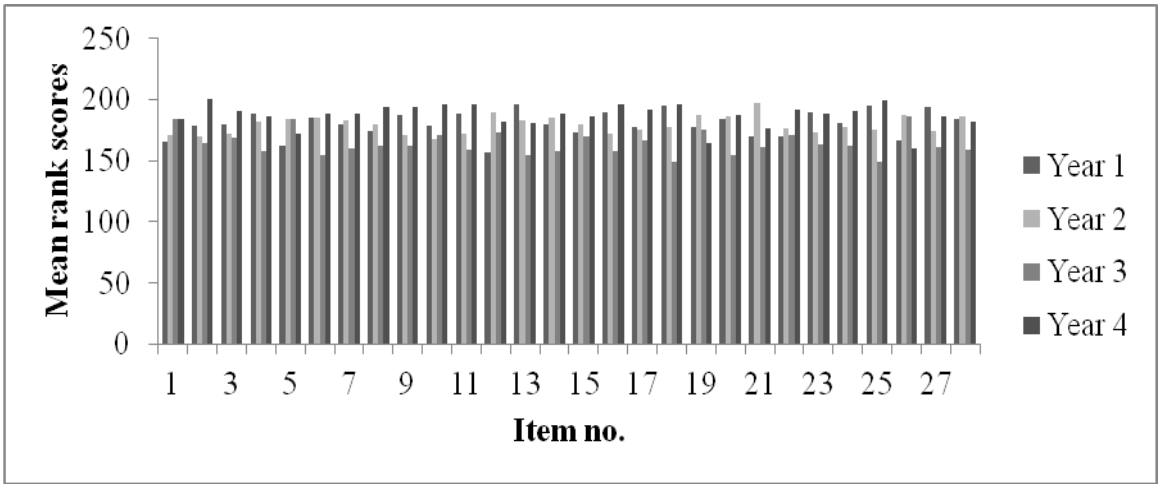

Figure 4: AMS-C 28 items mean rank scores across years of study

Motivation type according to year of study and gender

The frequency of motivation type developed per gender and year of study is presented in Table 1 and illustrated in Figure 5. The motivation type that displayed the highest total frequency is EMID (n= 159). When the motivation type was compared between genders and across year of study, EMID remained to be the motivation type with the highest frequency.

Table 1: Frequency of motivation type according to year of study and gender

Type of motivation	Year 1 (n=101)		Year 2 (n=153)		Year 3 (n=141)		Year 4 (n=122)		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
IMTK[a]	6	19	11	20	8	22	5	22	113
IMTA[b]	1	3	2	11	1	3	3	9	33
IMES[c]	3	6	2	3	0	3	0	9	26
EMID[d]	8	26	9	39	14	32	6	25	159
EMIN[e]	1	8	4	14	3	8	2	11	51
EMER[f]	4	15	9	22	8	33	6	21	118
AMOT[g]	0	1	3	4	4	2	0	3	17
Total	23	78	40	113	38	103	22	100	517

[a] Intrinsic motivation – to know, [b] Intrinsic motivation – towards achievement, [c] Intrinsic motivation – to experience stimulation, [d] Extrinsic motivation – identified, [e] Extrinsic motivation – introjected, [f] Extrinsic motivation – external regulation, [g] Amotivation

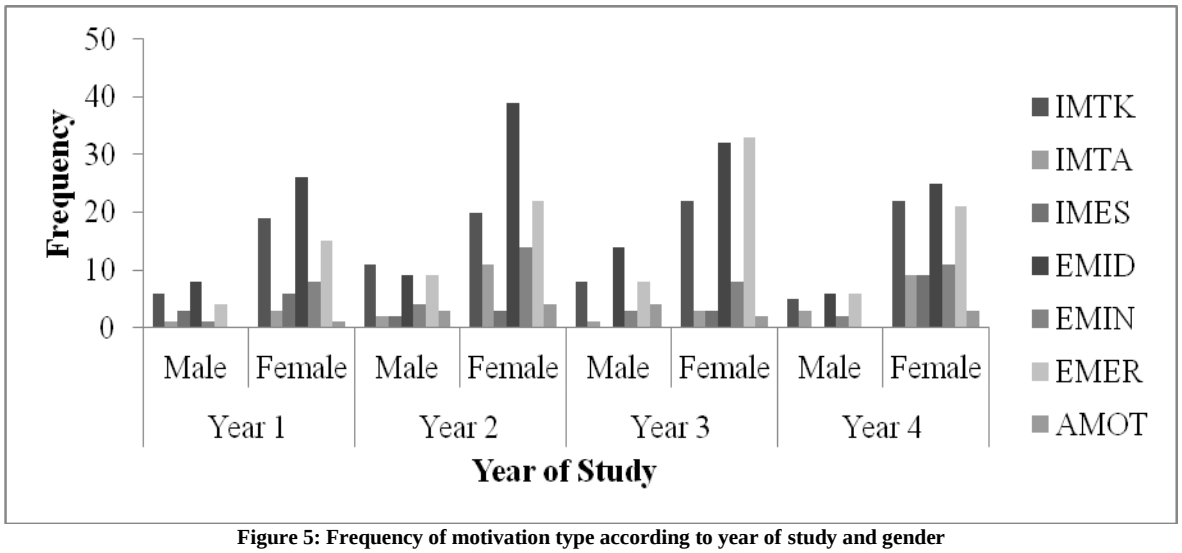

Figure 5: Frequency of motivation type according to year of study and gender

DASS-21 Analysis

On analysis, it was observed that 46 (13.03%) had mild depression, 65 (18.41%) of them were moderately in depression, 35 (9.92%) of them were severely depressed, and 19 (5.38%) were very severely in

depression. For the subscale "anxiety"37 (10.48%) of had mild anxiety, 73 (20.68%) had moderate anxiety, 50 (14.16%) had severe anxiety, and 51 (14.45%) respondents had very severe anxiety. It was also observed that 47 (13.31%) had scored mild on this scale, 47 (13.31%) respondents had scored moderate, 28 (7.93) respondents had scored severe, and 5 (1.42 %) of the respondents had scored very severe. The percentage of depression, anxiety, and stress were 46.74%, 59.77%, and 35.97% respectively.

Correlation between Gender, Year of Study, and Type of Academic Motivation Developed

The results reveal that there was a weak negative relationship between gender and academic motivation (r= -0.14) and that the relationship was significant (p= .025) (Table 3). There is no correlation between year of study and the type of academic motivation developed among the physiotherapy students in Malaysia. Table 2 is graphically represented in Figure 6 and Figure 7.

Table 2 Correlation between gender, year of study, and type of academic motivation type developed (*p < 0.05.)

Relationships of interest	Correlation value, r	p-value
Relationship between gender and academic motivation type	-0.14	.025*
Relationship between year of study and academic motivation type	-0.46	.471

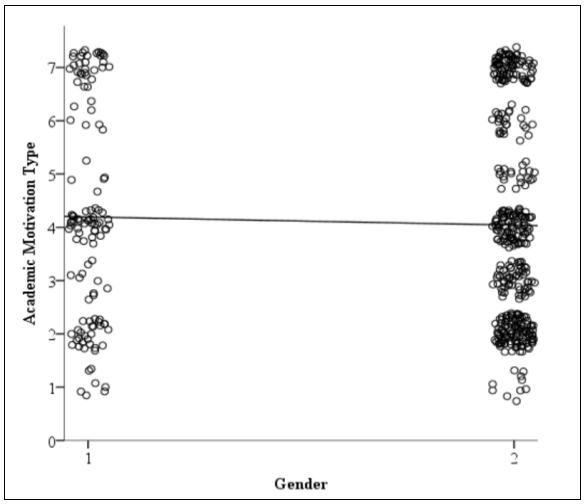

Figure 6 Relationship between gender and academic motivation type

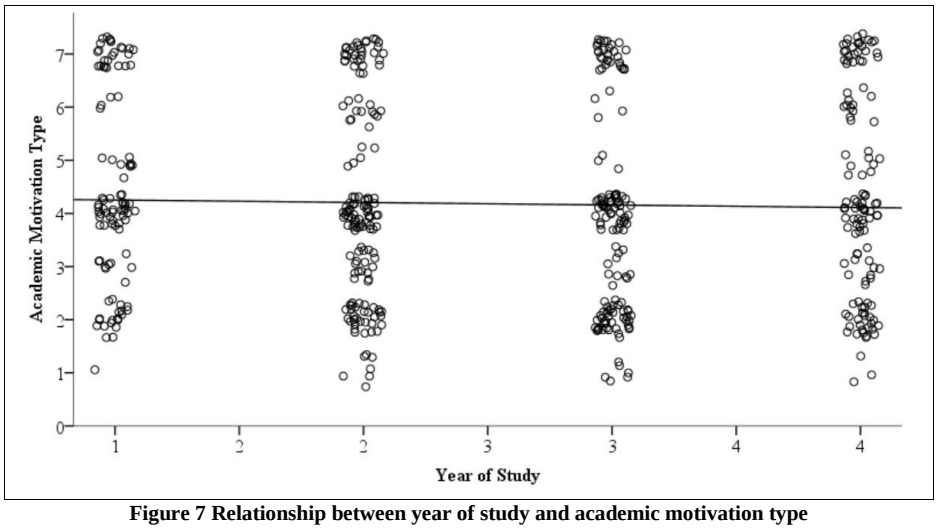

Figure 7 Relationship between year of study and academic motivation type

DISCUSSION

In support of the first alternate hypothesis, the most predominant type of academic motivation among physiotherapy undergraduates in Malaysia was extrinsic motivation regulated through identification. The finding remains true even when the most predominant motivation type was compared between genders and across years of study. This is consistent with previous findings which demonstrated that extrinsic motivation – identified regulation was the most predominant academic motivation among health science students from other countries (1) This study found similarities with Völkening et al's (2010) findings indicating the same motivation type was most predominant among German

occupational therapy and physiotherapy students (10). This could perhaps be due to the idea that all physiotherapy students, like other health science students, share the same viewpoints regardless of culture in that they generally orientate more towards their studies and future careers. Apart from extrinsic motivation, this study observed that most students also receive high intrinsic influences on their academic motivation and were minimally influenced by amotivation. In terms of gender, females scored significantly higher on intrinsic and extrinsic motivation measures whereas males scored significantly higher on amotivation measures. One reason which can support this finding is the differences in mental health between genders. Studies have shown that a student's state of mental health is linked to their academic motivation. Most studies have indicated that the deterioration of mental health, particularly high levels of depression, anxiety, and stress, leads to the deterioration of academic motivation (13)(14). Interestingly however, Elmelid et al. (2015) discovered that anxiety was positively correlated with academic motivation. It was presumed that students who had high levels of anxiety were more motivated because they believe that it is important to be academically successful, on the other hand, students who had lower anxiety levels were less motivated because they worry less about academic success. This could possibly explain why the females in this study displayed higher levels of motivation, as this study observed that the prevalence of anxiety among female students was staggeringly higher than male students. Edgar (2014) seemed to support this claim, that female physiotherapy students who had higher motivational levels displayed higher levels of anxiety. On the other hand, male physiotherapy students with lower motivational levels displayed lower levels of planning, task management and persistence, as well as a higher rate of disengagement from studies compared to females.

In terms of year of study, year 3 students were discovered to have scored significantly lower on intrinsic motivation measures compared to year 1 and year 4 students. Sarkis et al., (2020) also observed similar findings in their study(15). When the authors compared the scores for controlled motivation and amotivation across five years of medical program, they found that fourth year students had the highest scores. The differences in motivation levels between study years may once again be explained by the differences in mental health of these students. In this study, year 3 students reported having the highest frequency of psychological morbidities when compared between years. They had the highest prevalence for depression, anxiety, and stress compared to students from other years. Interestingly, this study observed no significant differences in motivation level between year 1 and year 4 students. This finding seems to contrast those observed in previous studies which found significant differences in motivation level as the study year progresses. In study by Sarkis et al. (2020) reported that fifth year students showed the lowest level for autonomous motivation. In addition, fifth year students also showed higher levels of controlled motivation and amotivation compared to first year students. Mental health can have effects on students' motivation levels. Thus, perhaps that is why the difference in motivation levels among these two study years was not significantly evident in this study. In addition, the students from both of these study years may share the same rate of burnout. Although no data exists on the burnout rate among physiotherapy undergraduates, Enoch et al.(2013) had identified that burnout is a factor that has substantial role on students' motivation in learning(16).

In support of the second alternate hypothesis, this study observed that there is a significant relationship between gender and type of academic motivation developed, although the correlation is weak. This means that female physiotherapy students

are more likely to develop intrinsic motivation as compared to male physiotherapy students. This finding was found to be consistent with previous findings. These studies also reported that gender was significantly correlated with motivation and that female students have higher motivation level overall compared to male students (17)(18). The reasons fora weak correlation is because both male and female physiotherapy students are equally influenced by similar motivators, such as the societal pressures for a tertiary qualification in a knowledge-based economy, or perhaps because they share the similar learning styles, which is a factor that has been linked to academic motivation(19). This seems to be true to some degree, as it was found in multiple studies that learning styles are not associated with gender. In one study, it was observed that the learning style preferences were not significantly associated with gender among physiotherapy students in Malaysia (20). Dissanayaka (2014) also found that in a sample of Sri Lankan physiotherapy students, there were no significant differences on learning style preferences when results were compared between genders(21). Furthermore, Milanese et al. (2013) also observed a similar finding in that the learning styles did not significantly differ between genders among Australian physiotherapy students(22). Thus, the similarities in learning styles between male and female physiotherapy students may explain why gender was not correlated with academic motivation.

This study observed that there is no significant relationship between year of study and the type of academic motivation developed. The finding indicates that physiotherapy students from all four years of study are equally likely to develop intrinsic motivation. Thus, the third alternate hypothesis is rejected. It was found that intrinsic motivation has a higher probability to diminish as the year of study progresses(15)(17). The lack of a significant relationship between year of study and motivation may again be explained by the students' learning styles. Milanese et al. (2013) supported this claim, as they found that the learning styles of physiotherapy students were consistent across all years of study(22). Thus, physiotherapy students across all years of study have the same likelihood of developing intrinsic motivation perhaps because of their similar learning styles.

Study Limitations

The study results could not be generalized as most of the participants were from institutions located in peninsula Malaysia. Thus, future research that aims to investigate on motivation among the same population should be consider focusing solely on East Malaysian students. Besides, this study utilized a cross-sectional design, that the students from each year were not followed over a period of time. Thus, the trend in motivation levels across years of study could not be established. It could be speculated that the students from year 3 who were observed to have lower motivational levels had low levels of motivation since the beginning of their studies. Hence, future research could utilize a longitudinal study to find out how students' motivation changes overtime. Lastly, this study did not address the variable socioeconomic status which was found to have influences on academic motivation (23).

CONCLUSION

In conclusion, the most type of motivation developed by physiotherapy undergraduates in Peninsular Malaysia is extrinsic motivation regulated through identification. Gender was found to be significantly correlated to academic motivation. There was no significant correlation between year of study and academic motivation developed. Certain measures should be implemented in order to enhance and maintain high academic motivation levels which would subsequently lead to better academic success and student wellbeing.

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