STRENGTH OF MOTIVATION AMONG MEDICAL STUDENTS IN A PRIVATE MALAYSIAN MEDICAL SCHOOL

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PRIVATE MALAYSIAN MEDICAL SCHOOL

ABSTRACT

Over the last two decades, the importance of motivation in academic success has been on the rise, acknowledging the void in medical education. However, a lack in research on the factors influencing motivation among medical students in Malaysia still exists. The aim of this project is to analyse the strength of motivation among medical students in a private Malaysian medical school. The validated and reliable, revised version of the Strength of Motivation for Medical School (SMMS-R) questionnaire, was used for this research project. The participants consisted of medical students from Year 1 to Year 5 of a private Malaysian medical school. In conclusion, the pattern of strength of motivation saw two groups of students, those who were motivated to succeed academically and those who were not, though the number was negligible in the latter group. Students entered the medical programme with a high level of motivation which increased at a fairly constant rate over the years. Though females were seen to have a higher motivation level it was not a significant finding. The results did not show any relationship between level of strength of motivation and educational background. Lastly, the cumulated grade point average (CGPA) was not a predictor of motivation as there were students of moderate to strong motivation among the low CGPA results group. This work may inform policies and guidelines, and influence medical educators that students' motivation levels should not be concluded based on age, gender, high school examination scores or educational background. Furthermore, it addresses the gap in knowledge about motivation among medical students in Malaysia.

Keywords: motivation, medical students, motivational factors, academic performance

KEBERKESANAN MOTIVASI DENGAN PELAJAR PERUBATAN DI SEBUAH SEKOLAH PERUBATAN SWASTA DI MALAYSIA

ABSTRAK

Sepanjang dua dekad yang lalu, pentingnya motivasi dalam kejayaan akademik semakin meningkat, mengakui kekosongan dalam pendidikan perubatan. Walau bagaimanapun, kekurangan penyelidikan mengenai faktor-faktor yang boleh mempengaruhi motivasi di kalangan pelajar perubatan di Malaysia masih wujud. Tujuan projek penyelidikan ini adalah untuk menganalisis kekuatan motivasi di kalangan pelajar perubatan di sebuah sekolah perubatan swasta Malaysia. Borang soal selidik *Strength of Motivation for Medical School* (SMMS-R) telah digunakan untuk projek penyelidikan ini. Para peserta terdiri daripada pelajar perubatan dari Tahun 1 hingga Tahun 5 dari sebuah sekolah perubatan swasta Malaysia. Sebagai kesimpulan, corak kekuatan motivasi menunjukkan dua kumpulan pelajar, mereka yang bermotivasi untuk berjaya secara akademik dan mereka yang tidak; para pelajar memasuki program perubatan dengan tahap motivasi tinggi and meningkat pada kadar yang agak berterusan sepanjang tahun; walaupun pelajar wanita menunjukkan tahap motivasi yang lebih tinggi, ia bukanlah satu penemuan penting; hasilnya tidak menunjukkan sebarang hubungan antara tahap kekuatan motivasi dan latar belakang pendidikan and akhir sekali, purata gred yang diperolehi (CGPA) bukan merupakan peramal motivasi kerana terdapat pelajar yang bermotivasi sederhana dan tinggi di kalangan pelajar yang mempunyai CGPA yang rendah. Diharap bahawa hasil penyelidikan ini akan membantu dalam pembentukkan dasar-dasar dan garis panduan, dan juga mempengaruhi pendidik perubatan bahawa tahap motivasi pelajar tidak boleh ditentukan berdasarkan umur, jantina, skor peperiksaan sekolah atau latar belakang pendidikan. Tambahan pula, ia membincangkan jurang dalam pengetahuan tentang motivasi di kalangan pelajar perubatan di Malaysia.

Kata kunci: motivasi, pelajar perubatan, faktor motivasi, prestasi akademik

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LIST OF SYMBOLS AND ABBREVATIONS

CPGA: Accumulation Grade Point Average

GPA: Grade Point Average

SDT: Self Determination Theory

SMMS-R: Strength of Motivation for Medical Schools (revised) questionnaire

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CHAPTER 1: INTRODUCTION

1.0   The educational system of Malaysia

As Malaysia moves towards becoming a developed nation by 2020, one of its challenges is to reach a doctor-population ratio of 1:400 (Quek, 2011) as the population continues to grow. The projected population by 2020 is 33 million. As of October 2018, Malaysia currently has approximately 50,000 doctors. In order to reach this ratio, Malaysia would require 82,500 doctors. As per the reports, Malaysia requires more doctors to meet the projection.

In saying so, doctors are in the business of Medicine, which is one of the most esteemed professions that require highly competent people. According to the research in medical education, students who decide to embark on a career in Medicine are highly motivated. (Wilson, 2009)

Research in education has shown that positive attitude, beliefs and motivation improve learning (Ferguson, James, & Madeley, 2002). Students with better motivation usually perform better in school grades (Paul R Pintrich, 2003). From an educator's prospective, motivation is probably the most important factor that educators can target in order to improve learning (K. C. Williams & Williams, 2011). However, it has been shown that showed that motivation toward science learning declines as the grade level increase (GÜVERCİN, Tekkaya, & Sungur, 2010).

One among the nine challenges that Malaysia faces to become a developed country by 2020, is to establish a scientific and progressive society and a society that is innovative and forward-looking (Islam & Ismail, 2011). In order to make Malaysia a developed nation by 2020, Malaysia has put science and technology in the forefront

of education in Malaysian schools and universities. With this national goal, science has been given an even more prominent position in the curriculum at every level. It is because science and technology are viewed by every industrialized country as the fundamental force behind economic development. The 9th Malaysia Plan aimed at a 60:40 percent enrolment objective in higher-level science and arts. In this connection, the former Prime Minister stated that the ratio from 25:75 in 2000 to 42:58 in 2014 between science-based and non-science-based education should be increased by 60:40 (Yeoh & Ierardi, 2015).

According to the Malaysia Education Blueprint (Ministry of Education, 2016) 60 per cent of students in the Malaysian education system should be encouraged to take up studies in science, technology, engineering and mathematics and make it a career choice. Reference was made to intrinsic motivation in connection with career motivation in science based subjects (Yeoh & Ierardi, 2015).

Several disturbing study reports were however produced concerning decreasing motivation, interest, capacity and achievement of scientific learners in Malaysia, which also appears in the United States and Europe. (Jack & Lin, 2014; Osborne, Simon, & Collins, 2003; Simpson & Steve Oliver, 1990; Vedder-Weiss & Fortus, 2012; Yeoh & Ierardi, 2015)

Malaysia was in the bottom third, with 55 out of 74 nations (Yeoh & Ierardi, 2015) in its 2009 International Student Assessment Program (Cui et al., 2018). In the 2012 PISA study, Malaysia ranked in the lowest third in 52 out of 65 nations in relation to others involved. Overall, the average 15 year-old Malaysian student scored low in science and mathematics subjects as compared to the other OECD (Al-Janabi et al., 2018) countries. It was also noted that the girls performed statistically better than the

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boys (OECD, 2013). The PISA report made waves in the Ministry of Education and the Malaysian Education Blueprint, 2013-2025 was born to spearhead the current educational scenario and raise it up to within the top third in international assessments (Grapragasem, Krishnan, & Mansor, 2014) .

The current implementation of the country's strategic plan puts high expectation on the science students to achieve Malaysian's vision and mission especially in the area of science and technology.

However, reports on the performance in science learning and especially students' lack of interest as well as their declining ability to do science (Kong, 1993; Luan, 2009) has led to much concern.

Thus, it is timely to conduct more research at all levels of education, on the affective domain particularly investigations on medical students' strength of motivation and motivation to academic achievement which incorporates their beliefs, values, interests, attitudes, self-efficacy, self-determination, and anxiety.

Challenges of private medical schools will be to enrol students who are highly motivated. The deterring factors will be the cost of programme and the ranking of the medical school. Applicants to medical schools can be generally divided into 3 groups. The first group of students are those who do well academically and are better motivated (Paul R Pintrich, 2003). They generally apply for a place with a scholarship, to well established and ranked universities. The second group are those who do not obtain admission in to well established and ranked universities and apply to public medical school rather than a private medical school. The last batch will be those who do not obtain admission to either.

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Private medical schools then receive these students who may not be as motivated as the first two groups of students, as their fresh batch of Year 1 students. Being turned down by well-established and ranked universities overseas and locally may already demotivate these students. If not coached and encouraged well, this group of students may fail examinations, become more demotivated and eventually either scrap through their examination with lots of help from their educator or continue to fail and eventually drop out. They are also those who welcome their circumstances with open arms and continue to be motivated and excel in their academic career.

Motivation drives an individual towards behavioural change and achievement (Grolnick & Ryan, 1987; A. Maslow, 1970). However, in order to achieve success, whether academically or otherwise, there must also be focus in life and willingness to learn, and self-determined to be successful in all tasks undertaken.

Academically, motivation is an important foundation for development. This sort of motivation is an important psychological dimension in human learning and development.

1.1 The importance of motivation

Research has constantly discovered that students with academic motivation tend to embrace tertiary education and enjoy learning-related activities (Eccles & Wigfield, 2002; Barry J Zimmerman, 2000a, 2008). It promotes individuals to take action to attain the objectives they set for themselves or to meet their needs or expectations. There have been studies that have recognized lack of motivation as a main cause of failure (A. Wigfield, Lutz, & Wagner, 2005).

1.2   What is motivation

There is a lack of a significant overarching definition for 'motivation' which is regarded as a complicated psychological phenomenon.

According to a world's leading online encyclopaedia, motivation is said to be derived from the Latin word 'movere' which means move ("Motivation and Motivation Theory", 2019). A management website claims motivation to be derived from the word 'motive' which implies needs, wants or drives (Juneja P, 2019).

Therefore, most authorities on motivation define motivation as a force or drive that is from within that allows an individual to act in a voluntary manner in order to achieve a desired goal that brings about success.

Motivation can be said to be a theoretical concept applied to any part of life, used to explain the beginning, direction and strength of a goal-oriented behaviour (Brophy, 2013).

Motivation can also be regarded as a process, instead of a goal, that when triggered by an appropriate stimulus leads to intense activities which may not be otherwise present (Ten Cate, Snell, Mann, & Vermunt, 2004).

1.3   Motivation in education

Motivation has been accepted as a desire to learn that comes from within an individual. It is a set of purpose driven activities that are started and maintained. It

can be seen as a structure that causes an individual to want to replicate a behaviour (D. A. Cook & Artino, 2016; A. Maslow, 1970).

Aristotle and Plato and Woolfolk identified motivation as a physical energy that is logical and related to emotion (Tohidi & Jabbari, 2012; Woolfolk, Hoy, & McCune-Nicolich, 1980). This emotional component which can be a persuasive feeling, can be cultivated from within that stimulates, gives direction and promotes educational motivation was the readiness to undertake and continue a desired behavioural outcome to be achieved. It can be called as energy, a drive or a force. It is this energy that promotes individuals to face challenges and keeps them going or stimulated to achieve their goals or objectives. In other words it stimulated directional movement.

1.4   Factor affecting motivation

Motivated is the reason why individuals to behave as such to achieve their goals. There is positive and negative motivation. Anxiety and tension can be a form of positive motivation that rekindles the positivism and can be reapplied (D. A. Cook & Artino, 2016). The negative motivation such as expectation and fear that a desired outcome will not be achieved can be a stronger motivation for survival (Li, Bunk, & Smidt, 2017).

A high level of motivation improves students' academic achievements and learning as it is linked. The factors that affect motivation have to be identified to be able to improve motivation. Studies have shown that these factors can be intrinsic and extrinsic factors, meaning to say, factors from within an individual and those circumstances surrounding the individual, respectively (Stegers-Jager, Cohen-Schotanus, & Themmen, 2012; Geoffrey C Williams, Ronald B Saizow, & Richard

M Ryan, 1999b). Circumstances surrounding an individual that affect motivation are the classroom climate, the increasingly negative school experience such as poor facilities and services in the institutes of higher learning, beliefs and perceptions of educators, family and social values and characteristics of academic duties. External benefits such as academic awards, recognition and fame among educators and peers may persuade lowly motivated students to engage in teaching and learning activities. Factors from within an individual that affect motivation are the individual's capacity to belief in work effort and awareness of the value of motivation

1.5   How are students motivated

The way in which college students are motivated is still unknown. What is known, however, is that motivation leads to behavioural changes and determines direction, strength and persistence of behaviour to achieve academic success (Sevinc, Ozmen, & Yigit, 2011).

All three domains of learning, namely, cognition, affection and performance are essential components of efficient and effective teaching and academic achievement. To improve motivation, educators must look at it as a need and they must be willing to address all three domains. It is also vital to understand what educators perceive of motivation and how they relate to strategies and motivating behaviour in order to understand their students' motivation.

1.6   Motivation among medical students

The two most important variables affected by motivation are learning and academic performance. Selection for medical school has also been identified to boosts students motivation (Hulsman et al., 2007).

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Research has shown that medical students are more motivated compared to students who are studying other subjects. So motivation is taken as an important attribute in medical students but it is currently understudied (R. Kusurkar, T. J. Ten Cate, M. Van Asperen, & G. J. M. t. Croiset, 2011).

There is absence of a direct relationship, neither a mechanism to link motivation and selection of medical students. However, there were studies that showed a correlation between motivation and academic achievement. Motivation is linked indirectly to academic performance via deep learning strategies (Artino, La Rochelle, & Durning, 2010; R. Kusurkar, T. J. Ten Cate, C. Vos, P. Westers, & G. J. A. i. h. s. e. Croiset, 2013; Stegers-Jager et al., 2012).

1.7   Strength of motivation

There have been many studies on motivation and it has been noted that quality of motivation is the more valuable for educational results than the level of motivation (Geoffrey C Williams et al., 1999b).

The increased level of motivation in students is due to the commitment and contribution to the teaching and learning environment. Active and extremely motivated students engage spontaneously in teaching learning activities not expecting external benefits (E. A. Skinner & Belmont, 1993)

1.8   Operational definition

Sieving through the rich literature on motivation, it has come to light that there are many definitions of variables that are possible, such as academic, management,

encyclopaedia and dictionary definition. However, an operational definition which is the specification of how variables are defined and measured in this study has not been identified. Therefore, the following definitions have been coined to suit this research.

Academic motivation

The definition for academic motivation used in this thesis will be that of McClelland et al, which states that a student's desire (as reflected in approach, persistence, and level of interest) regarding academic subjects when the student's competence is judged against a standard of performance or excellence.

Academic performance

Good academic performance in the context of this study is defined as having obtained at least 4As, and Bs for the rest of the subjects, no Cs and no failed subjects.

Moderate academic performance is defined as having obtained 3A, any number of Bs, no Cs and no failed subjects.

Poor academic performance is defined as having no As, no Bs, any number of Cs, Ds, Es or Fs.

Academic success

As this research about the measurement of strength of motivation and how students fare academically, academic success is defined as students with high grades, i.e As and Bs, and test scores more than 75%. An A is equivalent to 80% and above and B is equivalent to 75% to 79%.

Academic years

The academic years here means the period of the year when during which students attend university, usually from the beginning of September to the end of July or beginning of August.

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Educational background

Generally, educational background refers to all of the education the individual has undergone before a particular point in time when the educational background is requested for. In this research, educational background will refer to the last examination the student did before starting the MBBS program.

High SMMS-R score

High score in the SMMS-R questionnaire is defined as a score of 50 to 75.

Strength of motivation

Upon reviewing the literature the definition for strength of motivation as used in the research on effects of age, gender and educational background on strength of motivation for medical school (Kusurkar, Kruitwagen, ten Cate, & Croiset, 2010) is used here. Strength of motivation is defined as "the student's readiness to start and continue medical training regardless of sacrifices, setbacks, misfortune or disappointing perspectives".

Strength of Motivation score

Strong strength of motivation is defined as having a score of 50 to 75

Moderate strength of motivation is defined as having a score 26 to 49

Weak strength of motivation is defined as having a score 16 to 25

Amotivated strength of motivation is defined as having a score 0 to15

CGPA groups

Group 1 is defined as having a CGPA score of 3.0 to 3.2

Group 2 is defined as having a CGPA score of 3.3 to 3.6

Group 3 is defined as having a CGPA score of 3.7 to 4.0

1.9   Statement of the problem

MAHSA University is one of 32 medical schools (Wong & Abdul Kadir, 2017) in the country of which 11 are public and 21 are private. The MBBS programme at MAHSA University is a 5-year programme and there is a single intake of 200 students per year. The first intake into the MBBS programme was in 2009 where a total of 106 students were admitted into the programme.

Over the last 8 years, the faculty has noted a significant proportion of students in the MBBS programme at MAHSA University performing poorly academic wise. Over the years, the faculty had taken numerous steps to close the knowledge gap between the academically good and poor students by organising remedial classes to cater for the poor performers. However, attendance at these remedial classes has been poor. There have been instances where there was one out of sixty who attended these remedial classes or sometimes even zero attendance. Thirty percent of students who failed their mid-year examination did not even request for academic help from their lecturers. During informal sessions between the faculty and the students who failed, it was noted that these students did not have a sense of educational direction or future career direction and were also studying medicine because they were forced by their parents to take up medicine. All these reasons indicated there was a lack of motivation among students who had failed.

The pattern of study behaviour and learning in medical students are affected by motivation. Students who desired to study, were those who were certain of their career choices and were sure that more time were spent on their studies (Wilkinson, Wells, & Bushnell, 2007). Academic achievement can be predicted by motivation. When it comes to medical studies, the higher the motivation (Mattick & Knight, 2009) and the higher the motivation, the higher the academic pre-clinical and clinical

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grade (Moulaert, M. G. Verwijnen, R. Rikers, & A. J. J. M. e. Scherpbier, 2004), showing a positive relationship between motivation and academic achievement.

GPA is closely related to strength of motivation to study medicine where the strength increases as a medical student progresses through the academic years. GPA is also related to the reasons for joining medical school. Significantly motivated students seeking an intellectual challenge are known to have a greater GPA (Hoschl & Kozeny, 1997).

Male and female students have different goals for wanting to study medicine. Male students study medicine because of their interest in science (I. McManus, G. Livingston, & C. J. B. M. E. Katona, 2006c; Robbins, Robbins, Katz, Geliebter, & Stern, 1983; P. Vaglum, F. Wiers-Fenssen, & Ø. J. M. E. Ekeberg, 1999), wanting to be indispensable (McManus et al., 2006c), to be altruistic (Per Vaglum et al., 1999), and for pursuing a career in medicine (Robbins et al., 1983). Females students on the other hand study medicine for altruistic reasons (Per Vaglum et al., 1999) and to a certain extent to have a career in medicine (Robbins et al., 1983) .

Reasons for general motivation are known to differ in the males and females. Males were more strongly driven by extrinsic motivation in relation to careers than females. Females were considerably more motivated by performance-orientation activity than their male counterparts (Buddeberg-Fischer, Klaghofer, Abel, & Buddeberg, 2003; S. Loucks, J. C. Kobos, B. Stanton, A. G. Burstein, & Lawlis, P 1979)

The reason that motivates a medical student also differs among ethnic groups. White students are mainly motivated by the challenge that the medical profession has to

offer. On the other hand, black students are driven by a opportunity to assist individuals (N. E. Wagoner & S. D. J. A. M. Bridwell, 1989).

Another factor that influences motivation of students is their socioeconomic status. Students of greater socio-economic status are able to concentrate on challenges, accomplishment and fulfilment in medicine, while students of reduced socio-economic status concentrate on extrinsic motivation, such as financial incentives, as reasons for pursuing a career in medicine (T. Greenhalgh, K. Seyan, & P. J. B. Boynton, 2004b).

Studies in Malaysia using the revised version of the Strength of Motivation to Study Medicine questionnaire are scarce. There have been studies pertaining to success in academic achievements among tertiary education students in various fields.

The motivation among medical students of private institutions of higher learning in Malaysia is affected by the presence of examination where test anxiety contributed to a high level of psychological distress and amotivation among medical students. Therefore, the presence of examinations is one among the factors that affect motivation (Saravanan, Kingston, & Gin, 2014). Looking at the seriousness of the matter, this led to psychological interventions at private institutions of higher learning as studies have documented the effect of examinations on the psychology of medical students. Psychological intervention helped significantly reduce the performance anxiety and thereby, the scores of test anxiety, psychological distress, and lack of motivation, and it helped improve students' GPA (Rajiah & Saravanan, 2014). Therefore, knowing the negative effect of examinations alone is insufficient. As part of the responsibility of educator and indirectly, the instituted of higher learning, they should put in place strategies to increase student motivation.

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Not forgetting public institutions of higher learning, studies also revealed high prevalence and level of stress in freshman as well as medical students who were well into their academic years. However, being medical students, they are able to cope well by some means such as task-oriented strategies (Salam et al., 2015).

Most academic institutions recognise the prevalence of stress factors such as health, social and academics do exist, not only at the beginning but also through of an academic year. Recognition of the prevalence of stress among students enables institutions to not only survey but also provide assistance to enable students to manage their stress so as to achieve an improved academic performance (Rafidah et al., 2009).

Reasons for entry into medical school may be due to intrinsic or extrinsic motivation and research has shown that those who succeed in the selection into medical school are highly motivated individuals. Having to go through the selection itself boosts their intrinsic motivation. However, having an interest in medicine or having the passion to helping others can be due to extrinsic or intrinsic motivation. Influenced to apply and gain entry into medical school is regarded as an extrinsic motivation as wanting to venture into private practice. Extrinsically motivated students who are dissatisfied with the medical course have a high risk of dropping out of medical school. Studies have shown that medical students have been influenced by family to apply to medical schools. Such a situation was seen in a public medical school (Razali, 1996).

Another common reason under extrinsic motivation is the desire for monetary gain which motivates students to choose medical as a career. Having chosen the wrong

career move adds to their dissatisfaction with their experience of medicine as undergraduates, which may lead to an increased dropout rate (Razali, 1996).

As shown from the above Malaysian studies, there is a lack in literature of motivation among medical students' motivation in the two genders, educational backgrounds, nationalities, CGPA of entry qualification and module or rotation grades of their current year of curriculum, especially in comparison with general education.

The reasons listed above and the scarcity of student motivation information among private medical schools in Malaysia is the primary reasons for this research.

MAHSA University is a suitable place to compare these effects of difference educational background, pre-entrance selection, age and gender, as the university has a single intake per year where there are foreign students together with the local Malaysian students who are from various countries around the world, backgrounds and ages. This presented a huge opportunity to study the effects of gender, age and educational background on the motivation in the pursuit of a medical degree in a similar medical education environment

The inference from this research will provide us with information on prevalent independent variables, namely age, gender, ethnicity and background education, which will have a positive or negative impact on motivation in medical students.

The curriculum review can utilise the findings of this study to enhance the effectiveness of teaching learning strategies, remedial measures and faculty training.

A literature search for studies that measured the strength of motivation revealed the revised version of Strength of Motivation for the Medical School (SMMS) questionnaire. However, there were no studies that investigated the motivational strength of medical students at a university in an Asian country, using the revised version of the questionnaire to investigate the correlation between motivation and performance. The motivational surveys of medical students have always evaluated the quality or type of motivation. A student with a healthy or desirable quality of motivation may have less than an optimum rate of motivation.

A literature search was carried out for the measurement of strength of motivation and only one questionnaire was found, that is, the Strength of Motivation for Medical School (SMMS). To the best of my knowledge, there is no study which has investigated strength of motivation in medical students in a university in an Asian country, using the revised version of the questionnaire investigating the correlation between motivation and performance. The studies done on motivation of medical students have always assessed the quality or type of motivation. A student with a good or desirable quality of motivation may have less than optimal level of motivation (M. G. Nieuwhof, O. ThJ ten Cate, P. Oosterveld, & M. Soethout, 2004) .

The research would like to address the lack of motivation as shown in the poor attendance at remedial classes and lack of enthusiasm to request for academic assistance in the sight of failure in their examinations by analysing the strength of motivation among all MBBS students in the current academic year 2018/2019.
 The study aims to analyse the strength of motivation among all medical students in the MBBS programme in a private Malaysian medical school and to compare the

student motivation among the two gender groups, two categories of educational backgrounds and three categories of CGPA of entry qualification.

1.10   Objectives

Specifically, objectives of this study were:

1. To analyse the strength of motivation among all medical students in a private Malaysian medical school in the current academic year 2019/2020?

2. To investigate possible relationship between strength of motivation and the following variables

    a. academic years

    b. gender

    c. educational background

    d. CGPA of entry qualification

    e. academic performance

3. To compare the strength of motivation among medical students in the

    a. different academic years

    b. gender groups

    c. different educational background

    d. CGPA of entry qualification

1.11   Hypotheses

1. Motivation has significant influence on academic performance

2. Age, education background and gender of medical students has significant a
    relationship with motivation to achieve academic success

1.12   Research questions

1. How is the strength of motivation among undergraduate medical students?

2. Is there any relationship between the strength of motivation and following
    variables?

    a. Academic years

    b. Gender

    c. Educational background

    d. CGPA of entry qualification

    e. Academic performance

3. Is there any significant difference between in the strength of motivation
    among undergraduate medical students of

    a. different academic years

    b. gender group

    c. different educational background

    d. different levels of CGPA of entry qualification

CHAPTER 2: REVIEW OF THE LITERATURE

2.0   Introduction

This chapter will address the overview of the literature on current and past studies available on motivation. The aim of the literature review is to decide how the existing literature will apply to this study and to avoid replication.

This literature review begins with the introduction of motivation theories related to this study and later discusses the dimensions of the learning process, motivation in medical education versus motivation in general education, difference in motivation between medical and general education students, what is academic motivation, motivational constructs, and moves on to what is currently known about motivation. It will then provide a literature review of previous studies, locally as well as internationally, that are applicable to motivational aspects. The focus will be on factors affecting motivation relevant to academic performance. Finally, the chapter will conclude with a summary.

2.1   Theories of motivation

Countless theories have been proposed to explain human motivation (D H Schunk, Meece, & Pintrich, 2012), the major ones being Expectancy value Theory, Attribution Theory, Social Cognitive Theory, Goal Theory and Self-determination theory (Atkinson, 1957; Bandura, 1986, 1989; Deci, 1985; Franken, 1994; Pintrich, 2000; B Weiner, 1974)

All these contemporary theories include a concept related to beliefs about competence. Most theories also include a concept regarding the value or anticipated result of the learning task. These beliefs include specific terms such as task value,

outcome expectation and intrinsic versus extrinsic motivation. Most theories discuss the importance of attributions in shaping beliefs and future actions. Learners frequently establish conscious or unconscious links.

Each contemporary theory nonetheless contributes a unique perspective with potentially novel insights and distinct implications for practice and future research.

This part of the chapter will attempt to succinctly summarise five contemporary theories about motivation to learn, clearly articulating key intersections and distinctions among theories, and identify important considerations for future research.

2.1.1 Expectancy – value theory

The theory of expectancy-value has two important independent factors influencing the behaviour: The first is, the extent to which individuals believe that they will succeed if they try, the expectation of success; and the second is, the degree to which they perceive that the task, known as the task value, is of a personal importance, value or intrinsic interest.

Success optimism is more than a sense of general competence; it is a belief of the future that an individual can accomplish the desired mission.

The expectation of success is determined by motivational belief that falls within three broad categories: goals, self-conception and challenges, according to Wigfield and Eccles.

Empirical studies show that expectation predicts both commitment to learning and achievement (e.g. test results and grades). The expectation of success may in fact be stronger than previous results (Wigfield & Eccles, 2000)

Expectation value theories have claimed that motivation requires more than just the expectation that an individual will succeed; an individual has to expect a personal benefit or an immediate and future gain.

In theory, job value is mainly influenced by one psychological faith: emotional responses and emotions associated with previous experiences. Favourable experiences boost perceived value; unfavourable experiences diminish perceived value. The motivating convictions that determine the expectation of success and value for work are, in turn, influenced by life events, social influences like parents, teacher or peer pressure and the environment and professional values.

Such shaping powers are defined by the personal views and experiences of the learner. Perception is what governs motivational beliefs, and not necessarily reality. Empirical studies indicate that both success and quality expectancy are related to learning outcomes, including the selection of topics to be learned, learning degree, and achievement. Task value is most closely linked to choice, whereas success expectations seem most strongly linked to commitment, depth of processing and learning performance (Wigfield & Eccles, 2000).

In other words, in choosing whether to learn something the task value matters most; once that choice has been made, expectancy of success is most strongly associated with actual success.

Medical students are known to be highly motivated, as research has shown(RA Kusurkar, Th J Ten Cate, et al., 2011). The fact that they consider studying medicine,

starting and persisting through the course, explains this motivation as an expectation of success and perceived value.

2.1.2 Attribution theory

Weiner suggested an attribution theory called the theory of motivation and emotion. It was a matter of how individuals interpret things and how they contribute to their thought and behaviour. Weiner focused on achievement in his attribution theory (Bernard Weiner, 1985)

His theory included the background, cause and the cognitive, behavioural and emotional implications. He also differentiated intrapersonal from interpersonal attributes.

Intrapersonal characteristics apply to an individual's personality and behavioural traits, which refer to what an individual does about the consequences of a particular person's behaviour. It was suggested that a time cycle existed regularly between the intrapersonal and relational motivation attribution theories.

The success or failure of an individual was an effective response and a conviction that the result was unforeseen, negative or meaningful.

As the main factors affecting performance awards, Weiner identified ability, effort, difficulty at work and luck.

The attributes of the successes, failures and achievements are described using three dimensions to study their correlations and the predictive ability of various causes.

Three dimensions help to understand the causes and their effect on performance. It is the locus of control, stability and controllability. Each of these dimensions anticipates performance and affect expectations,

Table 2.1: Predicted expectation for success and failure of the dimensions

Dimension	Predicted expectation following successful outcome	Predicted expectation following failed outcome
Locus of control	Pride	Shame / guilt
Stability	Expects future successes	-
Controllability	Expects future successes	Shame / guilt

Controllability in the education environment has been shown to be involved. Students who attribute their results to controllable factors show better results in metacognitive, cognitive, affective and motivated behaviour (Dale H Schunk, 1994; Vermunt, 1998).

The attributions, ability and effort, have been examined in research to determine how they are perceived using Weiner's three dimensions. Ability is described as internal, stable and uncontrollable. Effort is also described as internal but unstable and controllable (Weiner, 1985a, 2010). Effort and ability are perceived differently in education guiding our understanding of the behaviours of students (Bernard Weiner, 1985)

Students are known to use antecedent indicators such as prior events and social norms to determine the cause of their success or failure according to Kelly & Michela. (Kelley & Michela, 1980). Various studies have shown that students sometimes

accept their achievements and have been less responsible for their losses. The increasing number of research participants who attributed their achievements to internal causes (effort and ability) and failures to external causes has determined this attitude. (Bong, 2004; Vispoel & Austin, 1995)

This theory may explain how highly motivated and poorly motivated students have different motivations. Highly motivated students welcome rather than avoid tasks related to success, because they believe that success is due to their great ability and effort. Any fault, such as bad fortune or poor inspection, is thought to cause failure. Consequently, self-esteem is not impaired by loss, but success creates pride and trust. However, low-motivated students avoid successful jobs because their doubt their capacity and assume that success is uncontrolled by related factors.

2.1.3   Social cognitive theory

The most common social-cognitive theory is learning theory. This theory suggests that individuals can learn through shared experiences and comparisons with their environment and not merely reflexive individuals reacting involuntarily to rewards and punishments. The theory emphasizes motivation as to how people interpret their environment and self-regulate their thoughts, sensibilities, and actions, rather than be reflexive actors who react to rewards and punishments unintentionally (Bandura, 1986).

Bandura (1986) theorized that the outcomes of human performance are mutual interactions between three variables: personal (e.g., values, perceptions and behaviours), behavioural and environmental (social and physical) factors (Bandura, 1986). Humans are therefore constructive and self-regulatory rather than reactive

environmental organisms; they are ' agents and creators of their own ecosystems as well as their own social systems ' (Pajares, 2008).

Behaviour and learning are shaped by the interaction between personal characteristics of students and the environment. Simultaneously, how they act influences the environment and can change certain personal factors such as their thoughts and sensations. Thus, the interactions between their own thoughts and sentiments, the nature of the learning environment and activities that determine students' motivation to learn and perform.

Regulation of behaviour and manipulation of the environment in pursuit of personal objectives is essential to working as a motivated person. It largely depends on the beliefs that people have on their own talents, values and interests (Pajares, 2008).

Self-confidence is defined as "the belief that people can produce certain levels of performance that influence events that have effects on their lives" (Bandura, 1994).

Self-efficacy is an expectation of what an individual can do rather than an individual's physical or mental evaluation. (Zimmerman & Cleary, 2006). Citizens have little incentive to do so, because people believe the desired results may be on their decision. The basis of motivated behavior is therefore self-efficacy (Bandura, 1997).

Self-efficacy and positive outcomes are the key criteria for optimal motives (B. Zimmerman & Schunk, 2006). Self-effectiveness was developed by Bandura, Zimmerman and Schunk (Bandura, 1994; D. Schunk, 1991; D H Schunk et al., 2012; Barry J Zimmerman, 2000b) to encourage key learning procedures including perception, motivation, control and selection.

Students approach each learning task which, through past experience, abilities and social support, collectively determines their self-efficacy before the work. During and after this task, students should consider signs of how self-efficacy is further influenced by different factors.

Successes generally improve self-efficacy, while losses reduce self-efficacy. Physiological and emotional knowledge is self-effective, with excitement and thoughts growing auto-effectiveness as negative emotions decrease self-reliance (Bandura, 1997; Brydges et al., 2015).

One way social cognitive theory is operationalized in practice is the idea of self-regulation which examines how students manage their motivation and learning. Zimmerman's proposed self-regulation model (Zimmerman, 2000) consists of three cyclical phases: prediction (for example self-effectiveness evaluation and plan and goal development) and self-refletion (for example, self-monitoring). Self-regulation is an important field of research in medical education (Brydges & Butler, 2012; Brydges et al., 2015).

In brief, Bandura's popular social–cognitive theory explains human behaviourism as a complex paradigm and collective determinism, with personal factors, environmental influences and emotions influencing behavioral changes. The action of a person is influenced by people's experience and environmental perception. Medical students learn from their own experiences and from the actions of others and the results. And medical students have to set goals and track themselves in order to be effective.

2.1.4 Goal orientation theory

The definition of goals in goal orientation theories is distinct from that of most other theories of motivation (Ames, 1992; Dweck, 2000; Dweck & Leggett, 1988b; Meece, Anderman, & Anderman, 2006). Instead of referring to the aims of education, such concepts refer to specific and often unconscious orientations or intentions of learning.

The primary concern for performance goals is to do better than others and to stop being dumb. Mastery goals concentrate on the importance of training, i.e. the development of new knowledge or skills. In turn, these broad directions lead to various behaviours or approaches to learning.

The subconscious theory of students with performance goals is that intelligence or ability is a stable, permanent characteristic. Whether people are intelligent or not. Because that stable trait cannot be modified, students are worried that they look and feel' enough' to perform well. Easy, effortless successes make them more intelligent and encourage further study; challenging, efficient work and poor performance are considered to show low capacity and to lead students to disengage and to give up gradually.

Learners with this mindset enhance their failure and forget their achievements, rapidly give up on challenges and adopt defensive or self-sabotage behaviours. They can persevere after failure by a strong belief in their ability. Low confidence, however, causes them to disintegrate into an' hilpless' state, as the lack of effort ("I didn't really try") is emotionally better than the lack of intelligence. Dweck noted,' It's ironic that students with the smartest look could be inconvenient precisely for this reason' (Dweck, 2000).

In addition, mastery oriented educators have a self-theory that knowledge and ability will increase or strengthen through reading. Through learning and training, people are smarter (or great in basketball or art). This way of thinking leads people to look for learning opportunities, because they make them wise. You are questioned and even defeated initially, because you clearly believe in' no trouble, no gain.' In fact, even students with low confidence in their current ability prefer difficult tasks if they think gradually.

Learners with an incremental mindset feel confident when they fully participate in training (mastering target orientation) and develop their abilities. Simple tasks have little or no meaning, and failure is seen simply as a sign of a greater plan and renewed effort.

Though the attribution principle has control and stability dimensions: mental attitudes result in attributions of fixed and unregulated causes (e.g. ability). Incremental attitudes lead to attributions of controllable and evolving causes (e.g. effort)(Dweck & Leggett, 1988b; Y.-y. Hong, Chiu, Dweck, Lin, & Wan, 1999).

Typically, minds sets are not black-and-white, but seem to be domain and situation: the participant may have mostly beliefs about administrative activities, but incremental beliefs about the ability to communicate. While children usually have gradual thought, most people change to entity thinking by age 12. mentalities are young children(C. Ames & Archer, 1988; Dweck, 2000). Studies based on the work of Dweck and others (Ames, 1992; Ames & Archer, 1988; Nicholls, 1984) have divided performance goals into those that allow the participant to look good and those in which he or she tries to avoid giving negative impressions (effects of "avoidance" objectives, such as avoiding obstacles or unpredictable tasks)) (Elliot & Dweck,

2013; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002). Researchers are also working to achieve results. The empirical results from a real-world environment vary for different results: performance-approach goals are consistently linked to higher achievement (e.g. better grades) than mastery objectives, whereas mastery objectives are linked to higher motivation and deep learning approaches. Such empirical findings need further clarification but could indicate shortcomings in master-oriented studies approaches (i.e. apprentices concentrating not on broad-ranged studies but on fields of interest) or graded programs promoting shallow training (Senko, Durik, & Harackiewicz, 2008)

In comparison, performance improvement targets are frequently linked to low results and other negative outcomes.

One of Dweck's most convincing observations is that the gradual collection of minds can be trained. Randomized tests show that teaching students that their brain is mixable and has limitless learning ability leads them to try and persevere in learning opportunities more and more. (Dweck, 2000).

The period and transition to future activities of this effect remain unclear. Sadly, the mind-set appears to be taught by individuals and learning environments that stimulate competition and frame skills as static or praise the quick and easy success of individuals. Feedback aimed at boosting the confidence of a learner (' You've done so well; you have to be so clever!') will unwittingly reinforce an organisation's thinking. Teachers should build trust that anyone can learn if they work at it instead of stressing their innate ability.

Other theories of motivation try to understand other aspects of objectives, such as the setting of goals and content (Ford, 1992).

In a 1992 publication, goal orientation theories concentrate on why and how approach and engagement are created. The concepts concentrate on success criterion, analysis of problems including objective properties (proximity, specificity and difficulty) and factors that influence the selection of goal, the target level of performance and commitment. (Locke & Latham, 2002)

The concepts of goal contents concentrate on what is expected (i.e. expected impact) to be accomplished. The content taxonomy of Ford and Nichols (Ford, 1992) has been established to include 24 basic goals categorized as individual (e.g. entertainment, enjoyment and intellectual creativity), and objectives related to engagement between the person and the environment (superiority, participation, equity and security).

Due to comprehensive empirical research and ease of use, the aim — orientation theory — is widely accepted and effectively supported. Nevertheless, two current goals may be in dispute. There may be issues.

Goal content theories focus on what is trying to be achieved (i.e. the expected consequences. A content taxonomy was developed by Ford and Nichols of 24 fundamental objectives defined as relational goals (i.e., entertainment, gladness and intellectual creativity) and objectives dealing with human and environmental interaction (i.e. dominance, belonging, equity and security).

The goal–orientation theory, widely acceptable and effectively supported, was generally accepted due to extensive empirical research and ease of use. Nonetheless, issues can occur if two different goals clash.

Medical students set specific and individual goals. In short, goal orientation theory is a general motivational approach, where a goal must be defined that acts as an underlying motivation. It is important to focus on current and future tasks through the monitoring of procedures and on-going feedback. A doctor who is committed to success would connect the question of the goal, the level of quality and the effort involved. Therefore, the specific goal acceptance, its difficulty and commitment needed has to be established by students.

2.1.5   Self-determination theory

The self-determination theory states that there is a difference in quantitative and qualitative motivation. Naturally, people want to be independent, undertake jobs that are intrinsically   enjoyable and to communicate with the environment. Intrinsic motivation produces the best success in people.

Children are usually inspired to do their job. The drive found in adult life slowly diminishes. There are more international pressures at this stage, such as career progression, deadlines or fines, which may be of no concern to you and may be a good thing in effect. Rewards thus lessen the motivation intrinsically (E. L. Deci, Koestner, & Ryan, 1999). The introduction of the principle of self-determination, showing us how to promote intrinsic motivation and improve motivation in the face of external pressures, at this juncture, is a valuable theory of motivation.

Intrinsic motivation is not caused by an intrinsic human propensity, but is otherwise inhibited or encouraged either by unfavourable or beneficial circumstances. Inherent motivation will be fostered by three basic psycho-social needs-autonomy, integrity, and connectedness.

Table 2.2 Explanation of the innate needs of self – determination theory

Innate needs of self-determination theory	Explanation
Autonomy	Provides opportunities for choice, acknowledging feelings, avoiding judgement and encouraging personal responsibility for actions. Rewards, punishments, deadlines, judgemental assessments and other controlling actions all undermine autonomy.
Competence	Supported by optimal challenge, and by feedback that promotes self-efficacy and avoids negativity
Relatedness	Promoted through environments exhibiting genuine caring, mutual respect and safety.

The essence and the result of the motivation differ. This is demonstrated by a sub-theory of self-determination in the mental evaluation framework. A common example of this is the involvement of medical students in homework; medical students interested in giving patients treatment are genuinely interested in doing their homework relative to those who are doing their homework to do so. Due to the degree in which external forces are internalized and incorporated, this disparity in qualitative

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motivation is noticed. These differences are explained by organizational integration theory, another sub-theory of theory of self-determination. (R. M. Ryan & E. L. Deci, 2000a, 2000b).

Table 2.3 Explanation of extrinsic motivation

Extrinsic motivation	Explanation
External regulation	Behaves in such a way to earn rewards or avoid punishment
Introjected regulation	Acts to avoid guilt or anxiety, enhance pride or self-esteem
Identified regulation	External pressure becomes an important self-desired goal, but the goal only useful and not inherently desirable
Integrated regulation	External influences are integrated with an intrinsic interest and become part of one's personal identity and aspirations.

Internalization and integration leads to external motivation that is promoted by the three psychosocial needs (R. M. Ryan & E. L. Deci, 2000b). In this situation, relatedness and competence are important for internalisation, whereas autonomy is required for integration.

Because optimum motivation and welfare require all three needs to be met, the conditions for alienation and psychopathology are formed in ' social contexts causing contradictions between basic needs ' (R. M. Ryan & E. L. Deci, 2000b)

These needs have demonstrated their importance in education and performance at work, patient compliance, general health and well-being (Ng et al., 2012).

2.2   The dimensions of learning process

Educational psychology states that there are three dimensions that learning processes can be mapped to. They are the cognitive dimension (what to learn), affective or motivational dimension (why learn) and a metacognitive regulation (how to learn) dimension (Vermunt, 1996).

Learning may bring out feelings which may positively, neutrally or negatively affect the progression of a learning process and coping with such feelings is the forte of the affective dimension of learning, which is also known as the motivational dimension (Greeno, Collins, & Resnick, 1996; Vermunt, 1996).

2.3   Motivation in medical education versus motivation in general education

Motivation is an important foundation of academic development in students. There is well established research on the importance of motivation in learning behaviour and education in general education but the same can hardly be said about medical education. It was a strong belief of White & Gruppen (Casey B White, Gruppen, & Fantone, 2014b) that research relevant to motivation needed to become a greater focus in medical education Motivation has been widely studied in education and in other fields (Collins & Amabile, 1999; Treffinger, Isaksen, & Dorval, 2011)

Research by Vansteenkiste, Simons, Lens, Sheldon, and Deci, further confirmed that there is a wealth of knowledge found in research in general education that can be

shared with medical education. Research in general education has shown that motivation as a predictor for learning, academic success, persistence or continuation in a study and well-being (Maarten Vansteenkiste, Joke Simons, Willy Lens, Kennon M Sheldon, & Edward L Deci, 2004a)

2.4 The difference in motivation between medical and general education students

However, motivation of medical students is said to be different from that of students in any other field of studies because of the intertwining clinical work and works toward one restricted and clearly defined profession. The environment within which teaching and learning in medical education occurs is highly specific. The process of selection for medical school that candidates are put through before being selected is known to be an intricate one, Therefore, being successfully selected into medical school is considered a big achievement as candidates have to be highly motivated from the outset to preserve through the selection process.

2.5 Academic motivation

Academic motivation is considered important in human learning and development (Roeser, Eccles, & Strobel, 1998; Scheel, Madabhushi, & Backhaus, 2009). Although many significant psychological components influence student behaviours, motivation is considered one of the most important foundations essential for students' academic development (Steinmayr & Spinath, 2009)

During the past several decades, studies have steadily examined motivational foundations of student behaviour, with the empirical findings providing evidence of a strong relationship between students' motivation and their academic functioning

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(Wentzel, 1999). This relationship is evident even when effects of cognitive skills are partialled out (A. Wigfield & Wentzel, 2007).

Literature in general education states that motivation has been shown to be a predictor for learning, academic success, persistence or continuation in a study and well-being (Hustinx, Kuyper, van der Werf, & Dijkstra, 2009; Vansteenkiste, Simons, et al., 2004a; Maarten Vansteenkiste, Mingming Zhou, Willy Lens, & Bart Soenens, 2005b). But the motivation in medical students could differ as an individual has to be highly motivated to keep overcoming all hurdles placed in their path to achieve the requirements from secondary schooling grades through the process of selection for medical school and adapting to a different learning and teaching environment. These explanations make up the rationale for studying motivation in medical students, more so in a private medical school in Malaysia due to the scarcity of literature in this area.

2.6   The motivational constructs

Motivation has also been explored from the theoretical perspectives of behavioural (B. F. Skinner, 1965, 1978), social (Bandura, 1997, 2011), cognitive (Festinger, 1957), and humanistic standpoints (Maslow, 1968, 1970; Rogers, 1969). The constructs of motivation such as self-efficacy (Bandura, 1997), values (Wigfield & Eccles, 1992), and goals (Ames, 1992; Locke & Latham, 1990) have also been researched.

The motivational constructs, namely, beliefs/perceptions, goals and values are derived from theoretical perspectives of motivation. These motivational components are related to learning outcomes and theoretical perspectives of motivation. Research

has shown the relationships between these constructs and learning outcomes and theoretical motivational views from which they were derived.

Beliefs/perceptions, which is one construct of motivation includes self-efficacy, autonomy, and attributional beliefs.

Self-efficacy is an individual's personal beliefs in his or her ability to perform and accomplish tasks(Bandura, 1997; Dale H Schunk & Pajares, 2002). When students believe they can take on the challenge of schoolwork, they are efficient or skilled. Highly effective students take on difficult assignments, strive hard, continue and believe they are going to succeed in the future (Dale H Schunk & Pajares, 2002; Dale H Schunk & Zimmerman, 1997). Low self-efficacy students tend to avoid difficult tasks, avoid making efforts and quit easily when faced with learning difficulties (Bandura, 1993; Pajares, 1996; D. H. Schunk, 1991).

The freedom to control a person's own learning and decision making is autonomy. Provision of an autonomous atmosphere for leaning activities and succeeding in their choices of autonomy motivates students to become more participatory and engaging, committing time and energy to learning as learning becomes self-sufficient and self-determined (Niemiec & Ryan, 2009; R. M. Ryan & E. L. Deci, 2000b; Ryan & Deci, 2006).

The way in which students understand their circumstances and how they explain the circumstances of others is known as *attributional beliefs.* As educators, it is essential that we understand how students attribute the causes for their successes and failures and explain their circumstances as this will enlighten educators on the source of their future behaviour (Weiner, 1994, 2005; Bernard Weiner, 1985).

There are three dimensions to the causality classification which explain attributional beliefs: the locus of control (internal and external), stability over time (stable to unstable / alterable), and the student's control or accountability (controllable to uncontrollable). These components, namely, the locus of control, stability over time and the student's control or accountability, become vital constituents of a student's beliefs. For instance, students will be more likely to stay favourably incited when they attribute their academic achievement or failure to inner, unstable and controllable causes.

The effort required or the ability level needed to achieve an acceptable outcome is ever changing. This goes to say that personal beliefs are changeable.

Other motivational constructs, such as self-efficacy (Bandura, 1988), values (P R. Pintrich & De Groot, 1990) and goals (Dweck, 1986), when considered together, can give educator a clearer picture of a student's personal belief.

2.6.1 Goals

Students react to events in a unique pattern of cognition, behaviour, and affect (Dweck & Leggett, 1988a).They may have short term or long term goals along with sub-goals to monitor progress (Alderman, 2013). They may also be said to be goal oriented. Goal orientation is of two types, namely, mastery and performance goal orientation.

Students who are mastery goal-oriented are academically oriented to learn and master materials and show their expertise through good performance (Ames, 1992; P. R. Pintrich, 2000). They perceive academic success as learning new things, developing

competence and mastering tasks. They believe abilities are changeable and welcome challenges (Dweck, 2013). This type of goal orientation is related to intrinsic motivation.

On the other hand, students who are performance goal-oriented show their expertise with respect to others (Midgley & Urdan, 1995) and do not take academic risks but are still motivated to increase achievement. However, they are negatively related to intrinsic motivation (Colquitt & Simmering, 1998; VandeWalle & Cummings, 1997)

Students who set goals are committed to learning and achieving success. This is so because the goal directs behaviour and helps them monitor their progress. When their progress is evaluated as positive, their competence increases thereby, sustaining their motivation (Bandura, 1997; Locke & Latham, 1990, 2002) Students may choose to set easy, moderate or difficult goals, but that will have its repercussions. Therefore, even if setting difficult goals tend to enhance performance level, it is more effective to set realistic goals based on competence levels (Locke & Latham, 1990).

Effective feedback on students' progression from educators is important as it will help students continue or redirect their path to achieve their chosen goals

2.6.2 Values

Students who perceive learning activities as unworthy of their time are unlikely to spend their effort learning. When student value the learning activities, they will spent more time and effort (Bandura, 1997). Students place value on learning activities by judging if these activities are interesting (*intrinsic value*), important (*attainment value*), and useful (*utility value*) to them (Eccles, 2005; Wigfield & Eccles, 2000). Students endure in pursuing and accomplishing a task they value. The most common

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example that is cited is that most students do not like doing homework but regard it as useful, so they complete their homework (Hong, Peng, & Rowell, 2009)

2.6.3 Intrinsic and extrinsic motivation

Students enter medical school for varied motives. Motivation could be internally motivated such as interest in helping people, interest in science or biology, desire for intellectual challenge (Kutner & Brogan, 1980; Marley & Carman, 1999; I. McManus, G. Livingston, & C. Katona, 2006a; Millan et al., 2005b; Price, Williams, & Wiltshire, 1994; Rolfe, Ringland, & Pearson, 2004; R. M. Ryan & E. L. Deci, 2000a; Todisco, Hayes, & Farnill, 1995; Vaglum, Wiers-Jenssen, & Ekeberg, 1999).

On the other hand, it could be also due to external factors such as the desire for monetary rewards or prestige or pressure from parents. This is classify as extrinsic motivation (R. M. Ryan & E. L. Deci, 2000a; Maarten Vansteenkiste, Willy Lens, & Edward L Deci, 2006)

Students may possess a unique combination of intrinsic and extrinsic motivation which is considered important in predicting how students adjust to their studies, how much effort they are willing to invest in their study, performance in medical school and preference of specialty (Price et al., 1994; Todisco et al., 1995; P. Vaglum et al., 1999)

These combinations could give rise to different motivational profiles which could affect their study outcomes. Students who are genuinely interested in becoming doctors (intrinsic motivation) exhibit different type of study behaviour as compared to students who are studying because of parental pressure or prestige (extrinsic

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motivation) (E. Deci, 1985; E. L. Deci & R. M. Ryan, 1985; R. M. Ryan & E. L. Deci, 2000a)

Many a time we hear complaints from teachers that say their students are not motivated enough. Teachers desire medical students to be highly motivated (Marley & Carman, 1999)

Evidence shows that low motivation does have negative effects on the education processes (De Grave, Dolmans, & Van Der Vleuten, 2002)

Students' motivation has been found to be positively associated with academic performance and learning strategies and negatively associated with dropout behaviour (RA Kusurkar, Th J Ten Cate, et al., 2011)

However, evidence for a direct relationship was not always found and the mechanism is still unknown. Moulaert et al. found positive correlations in their study (V. Moulaert, M. G. Verwijnen, R. Rikers, & A. J. Scherpbier, 2004) whereas, other studies found no significant correlations (Luqman, 2013)

Some studies have found that motivation has an indirect relationship with academic performance through deep learning strategy or emotions or resource management (Artino et al., 2010; R. Kusurkar, O. Ten Cate, C. Vos, P. Westers, & G. Croiset, 2013; Stegers-Jager et al., 2012)

The use of the above motivation elements will help to know whether a student is intrinsically motivated or not. Intrinsically motivated students tend to engage in educational activities without any external incentives as they are naturally

challenging curious individuals with preference for interesting tasks (Deci & Ryan, 2002; R. M. Ryan & E. L. Deci, 2000a).

On the other hand, students who are extrinsically motivated engage in learning activities to escape from punishments or to be rewarded, which is separate from the learning activity itself. Motivation to perform extrinsically motivated activities can be internalised if they do not perceive these learning activities as inherently enjoyable or interesting. Internalisation of extrinsic motivation takes place when some motivational needs as stated above are satisfied.

Being intrinsically motivated helps students achieve goals but they may also achieve their goals even though they are extrinsically motivated. This can be achieved if they progress towards being less regulated by external factors such as receiving rewards or avoiding punishment (Deci & Ryan, 2002; E. L. Deci & R. M. Ryan, 1985; Niemiec & Ryan, 2009)

Students who value learning activities without being competence, may struggle but enjoy learning. Students, who fail at tests and blame their circumstances on the difficulty on the test, will be demotivated to study harder.

At the end of the day educators should understand which aspects of academic motivation individual students need to improve. Understanding how students attribute their success and failure in school, that is, how students explain the outcome or their understanding of why certain achievement outcomes happen, sheds light on the source of their subsequent actions.

As the main goal is to enhance academic motivation, educators should equip themselves with knowledge regarding motivation and its relationship with academic

development in order to help students enhance academic motivation. Educator should also provide an autonomous supportive environment to promote learning which will increase the development of intrinsic motivation and internalisation of extrinsic motivation (Reeve & Halusic, 2009).

2.7 Theoretical perspectives of academic motivation

Major theories that relate to the motivational components that have produced significant empirical evidence supporting the theoretical assertions are social-cognitive theory of self-regulated learning (Bandura, 1997; B J Zimmerman, 1989; Barry J Zimmerman, 2000) and self-determination theory (E. L. Deci & R. M. Ryan, 1985).

Among the well-known social cognitive theories which are also theoretical constructs are self-efficacy theory, achievement goal theory, attribution theory, expectancy-value theory, self-determination theory (SDT), and self-theories that attempt to explain the behaviour of students and effects of factors and how it relates to action and reactions.

The social-cognitive perspective states that academic self-regulation is motivation and cognitive-metacognitive components (E. Hong, 1998; E. Hong & O'Neil, 2001) and is represented by the thoughts, effects and behaviours used for the achievement of learning goals (Barry J Zimmerman, 2000). The motivation aspect of the social-cognitive perspective states that self-regulated students are motivated because they view tasks associated with learning as valuable, are highly self-efficacious, expend effort to achieve goals, and demonstrate persistence when they encounter difficult tasks (Bandura, 1993; Corno, 2013; P. R. Pintrich, 2000). The

metacognition element in social-cognitive perspectives says that self-regulated students use efficient metacognitive strategies such as planning learning activities, learning process surveillance and cognitive strategic application (Hong et al., 2009; Paul R Pintrich, Wolters, & Baxter, 2000)

Self-determination theory (E. L. Deci & R. M. Ryan, 1985; E. L. Deci & Ryan, 2000) is based on the assumption that human beings are naturally curious about their environment and interested in learning (Niemiec & Ryan, 2009). It postulates that human motivation can be developed toward intrinsic motivation, internalizing external motivation by becoming gradually more autonomous in the level of external motivation that is, from the spectrum of external regulation through to integrated regulation) and strengthening self-determination (R. M. Ryan & E. L. Deci, 2000).

2.8   Role of innate traits and prior experiences of learning on motivation

Motivational factors of teaching and education are influenced by natural characteristics of students and educators as well as daily experiences experienced by students and educators. Students have inborn characteristics and come with personal experiences that affect their motivation for studying and academic achievement. On the other hand, educators too have natural characteristics and previous experiences that affect their styles of learning and behaviour in the classroom. The perception of motivation is created through interactions and previous experiences already possessed by learners and educators. Educators can affect the perception of the motivation of students they have through their efforts to encourage and support this motivation (Linnenbrink & Pintrich, 2002).The features and perceptions of the educators therefore play a very important role in the motivation of the student.

2.9   The educator's role in motivation

Researchers in general education have frequently asked the difficult question as to how college students should be motivated, but there is still an ideal reaction to come. The discovery of theories such as the theory of attribution, the theory of self-efficacy, the theory of expectation-value, self-theories, the theory of achievement goals, and the theory of self-determination have given an idea of the factors that can affect motivation. One such example of factors that can affect motivation is that of the educators' beliefs and perceptions, their students and the difficulties of motivation influence their strategic classroom and interpersonal motivating practice.

2.9.1 The educator's characteristics

In particular, the belief of educators in motivation and the motivation of their students reflects a position favouring the need and willingness to intervene for unmotivated students. The self-perceptions of educators reflect a relatively weak efficacy for successful intervention (Hardré & Hennessey, 2013). First, however, it is vital to understand the perceptions of educators and how they relate to strategies and motivating behaviours in order to understand student motivation. The characteristics of educators contribute to the strength of motivation among students. The manner in which an educator practices can be affected by the educator's age and gender and teaching experiences and contextual distinctions such as grade level and the topic being taught.

Research has shown that the educators ' gender and age are linked to how they demonstrate their support to learners (Jacobs, Finken, Griffin, & Wright, 1998)

However, these relationships have faded over time (Hardré & Sullivan, 2008).

The gender of educators has some impact on how they view the temperament, educational competence and receptive to training of their learners. This perception of the educator has consequences for the growth of the students ' skills (Mullola et al., 2012)

The significance of the learning experience of an educator is seen in the confidence and flexibility of the educator that influence teaching methods in the classroom (Mullola et al., 2012) and improved capacity to predict students ' future intentions (Hardre, Davis, & Sullivan, 2008).

2.9.2 The educator's perception on motivation

As educators impart the same set of knowledge to all their students, they also learn to comprehend and discover what motivates and ignites that enthusiasm and directs that motivation through the right channels. Educators believe that it is the students ' responsibility to fill in their own knowledge gap how best they feel it should be accomplished and how far it should be achieved. Therefore, efforts that students spend towards change are in fact related to adaptability of a situation (Reeve, 1996) and the need to intervene to change (E. L. Deci & Flaste, 1995)

Limitation of time and resources, enables students to choose how best to spread those resources based on the importance of the task and likelihood of success. Furthermore, when confronted with restricted time and resources, students choose how best to spend the funds based on the significance of the task and the probability of achievement (Fishbein & Ajzen, 2011)

Educators are more likely to invest in motivating behaviours in the classroom if they think that student motivation under their influence is malevolent and changeable (Hardré & Hennessey, 2013).

However, educators may not invest time if the believe that change will occur on its own (E. L. Deci & Flaste, 1995; Hardré & Hennessey, 2013)

Educators believed that the nature and aetiology of motivation can affect the efforts made and the strategies used to motivate learners (Hardré et al., 2006).

These beliefs educators have, covered the wide spectrum of motivational constructs. Firstly, it was regarding the goals students have. Secondly, it was the interest and

perceived value of the material and nature of the motivation students have, be it intrinsic or extrinsic. Lastly, it was concerning whether they believed that the capacity to succeed is connected with motivational attempts (Hardré & Sullivan, 2008; Hardré & Sullivan, 2009; Heyman & Compton, 2006; Kaplan & Maehr, 2007).

The educators' belief that the level of motivation and adequacy of motivation for a given assignment and the reason for the lack of motivation are also essential because then educators are more likely to take action (E. L. Deci & Flaste, 1995; Hardré et al., 2006).

Educators feel confident that they can influence motivation because of their confidence in their skills, understanding and strategies to motivate learners and their relationship with learners (Hardré et al., 2006).

In this perception, self-efficacy (Bandura, 1997) is vital and linked with enhanced ability to initiate, maintain and work towards objectives (Barry J Zimmerman, 2000b) despite difficulties or setbacks (Liem, Lau, & Nie, 2008)

The achievements of the students influence the assessment of the educators on motivation, which in turn influence the use of motivational strategies by the educators (Kaiser, Retelsdorf, Südkamp, & Möller, 2013)

Self-efficacy is task dependent (Tschannen-Moran, Hoy, & Hoy, 1998).

Educators may have different levels of self-efficacy to determine students ' lack of motivation versus addressing those concerns (Hardré & Sullivan, 2009; Heyman & Compton, 2006)

2.10 Motivation as either an independent or dependent variable

Research done on motivation in medical education found that motivation can be a dependent or independent variable. That means as a dependent variable motivation could be enhanced or manipulated by changes in the learning environment and the medical curriculum (Cantillon & Macdermott, 2008; Diemers, Dolmans, Verwijnen, Heineman, & Scherpbier, 2008; von Below et al., 2008; C. B. White, 2007; G. C. Williams, Saizow, Ross, & Deci, 1997)

Motivation can also stimulate learning and academic success as an independent variable (Hoschl & Kozeny, 1997; V. Moulaert et al., 2004; Price et al., 1994; D. T. Sobral, 2004)

2.11   Variables influencing motivation

The variable influencing motivation are age, gender, ethnicity, socioeconomic status, education background and year of curriculum

2.11.1   Role of age

Age has influenced the study of medicine as shown in an Australian study that stated mature-age entrants cited intellectual satisfaction as their main reason followed by working with people and desire to help other. On the other hand, normal-age entrants cited desire to help others as they main reason for entering medical school followed by enjoyment through working and intellectual satisfaction(Harth, Biggs, & Thong, 1990).

2.11.2 Role of gender

Gender differences were studied for goal contents in medicine and the results stated that males who wanted to study medicine did so because they were interested in science (Robbins et al., 1983; P. Vaglum et al., 1999; Webb et al., 1997)⋅ being indispensable (Webb et al., 1997), helping others (P. Vaglum et al., 1999) and having a career (Robbins et al., 1983). On the other hand, females reported helping others (P. Vaglum et al., 1999) and having a career (Robbins et al., 1983) as their reasons for pursuing a career in medicine. More females were oriented towards altruistic motives and more males were oriented towards financial security(Millan et al., 2005a) and prestige issues (Wierenga, Branday, Simeon, Pottinger, & Brathwaite, 2003). Studies also found that female medical students scored higher on the person – orientation motive and lower on the natural science motive and opportunity for higher income. Females were equal to males on the status – oriented motive. Gender differences for generalised motivation were also studies and the following were the results. Males were more highly extrinsic career motivated than females (Buddeberg-Fischer et al., 2003). Females were found to have significantly more achievement oriented as compared to their male counterparts (S. Loucks, J. C. Kobos, B. Stanton, A. G. Burstein, & G. F. Lawlis, 1979a).

2.11.3 Role of ethnicity

In studies that looked at ethnicity among high school students in the United States who were interested in taking up Medicine as a career, it was noted that white students were predominantly motivated by the challenge the medical profession had to offer. The black students however were motivated by the chance to help people (N. E. Wagoner & S. D. Bridwell, 1989)⋅ On the rating of monetary benefits and status of the medical profession, the black students rated both higher than the white

students. In a study in UK showed the non-white students scored higher on "Science" and lower in "helping others" compared to the white students (McManus et al., 2006a) .

All the above variables are the ones that cannot be manipulated. However, there are variables that can be manipulated as stated below.

2.11.4 Role of socioeconomic status

A study in the UK revealed that more important role on the perception of high school students about medical school was played by the socioeconomic status compared to the ethnicity and gender(T. Greenhalgh, K. Seyan, & P. Boynton, 2004a). Students from higher socioeconomic status focused on intrinsic factors like challenge, achievement and fulfilment in medicine whereas students from lower socioeconomic status focused on extrinsic motivation such as monetary rewards (Greenhalgh et al., 2004a).

2.11.5 Role of educational background

A Finnish study stated that non-graduates had higher achievement motivated compared to graduate entry students (Kronqvist, Mäkinen, Ranne, Kääpä, & Vainio, 2007b) .

2.11.6 Role of year of curriculum

The year in which students were studying in made a difference in their motivation for joining and continuing medical studies. The year 1 students in a UK based study showed that they were more oriented towards prestige, money and success whereas its final year students were more oriented towards relief of suffering hand importance of mankind (Powell, Boakes, & Slater, 1987). In the US, studies have shown that first year students had higher achievement orientation compare to students after their third year of medical school which attributed towards a shift in the motivation from achievement to self – gratification (Burstein et al., 1980).

2.12   Future research opportunities

Quality of motivation is a very important area to research.

2.12.1 Quality of motivation

However, research has shown that the quality of motivation is more important for educational outcomes than the quantity of motivation (Geoffrey C Williams et al., 1999b). This opens up an avenue for further research on quality of motivation among medical students in a Malaysian private university.

CHAPTER 3: THEORETICAL AND CONCEPTUAL FRAMEWORK

This chapter presents the theoretical and conceptual framework of the study.

3.0 Theoretical framework

The theories of motivation mentioned in Chapter 2 focuses either on quality or quantity of motivation. Quantity of motivation could be high or low whereas quality of motivation depends on whether the source of motivation is intrinsic or extrinsic.

3.1 Introduction

Motivation is the driving force behind change in behaviour and effort to achieve success. And medical students in general are known to be highly motivated individuals. Most research on motivation such as factors influencing motivation and relationships between strength of motivation and academic success evolved from research in general education and therefore creating a void in the knowledge on motivation in medical education, more so in the Asian countries. This research would like to close this gap in knowledge and understand the reasons for the lower than expect strength of motivation among medical students.

3.2 The similarities and differences of motivation theories

Among the countless theories on motivation that have been proposed, they each have their unique aspects of motivation and therefore, are diverse. The theories that come close to this study are Attribution theory, Expectancy-value theory, Goal-orientation theory and Social-cognitive theory.

There are four common concepts that relate the above mentioned theories including self-determination theory but are labelled differently in these theories (David A Cook & Artino Jr, 2016).

First among them is the concept related to beliefs about competence, which addresses the issue whether an individual can do it. Competence in the expectancy value theory is labelled expectancy of success but it is it is known as self – efficacy in the social cognitive theory.

The second concept that relates these five theories is value or anticipated result which addresses the issue whether the individual wants to do it or what the outcome will be if the individual were to do it. The value here is labelled differently in the theories, for example, it could mean task value in the expectancy value theory or outcome expectation in social cognitive theory.

The third common concept is attributes that design the beliefs and actions of individuals. If the individual understands that the underlying cause is fluid and changeable and in their grasp, they will be able to continue to persevere even in the face of initial failure.

Lastly, indirectly non observable cognitive processes are presumed to be present in the modern day theories of motivation which involve social interaction to a certain extent.

Although there are similarities, there are also differences among these five theories.

In the expectancy value theory, expectation to succeed and the perceived value of this success are functions of motivation. The primary concepts of performance expectation and perceived value are affected by motivational beliefs, which in turn are decided by social influences experienced and interpreted by the cognitive processes of learners(David A Cook & Artino Jr, 2016).

The expectancy value theory differs from the attribution theory which states that emotion mediates task value. The attribution theory states that individuals will interpret the outcome in light of personal and environmental conditions to 'hypothesise' a perceived cause, which can be organised along three dimensions i.e. locus, stability and controllability. Stability influences perceived expectancy of success while locus, controllability and stability collectively influence emotional responses(David A Cook & Artino Jr, 2016).

Goal orientated theory however, states that attributes about stability and ability are the main key concepts. The entity and increment mind-set differ in the way ability is viewed. Entity mind-set views ability as fixed and they pursue performance goals that help them look smart and avoid failure. On the other hand, increment mind-set view ability as something that can be enhanced with practice and pursue goals that that cause them to stretch and grow (David A Cook & Artino Jr, 2016).

Attributions are basic in social cognitive theory. In this theory, self-efficacy is more task, context and goal specific. Learners begin a learning task with pre-existing self-efficacy determined by past experiences, aptitudes and social supports

Self-determination theory (SDT) however, differs from all these theories as it places emphasis on autonomy, competence and relatedness. Intrinsic motivation is entirely

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internal. Extrinsic motivation has four regulatory styles that vary from external regulation to integrated regulation. The transition from external to integrated regulation requires that values and goals become internalised and integrated which are promoted (or inhibited) by fulfilment of relatedness, competence and autonomy (David A Cook & Artino Jr, 2016).

3.3 The graphical representation of the theoretical framework

In respect of this, several theories were embedded into the theoretical framework of this study to represent the relationship of motivation and academic performance. To map students' motivation, self-determination theory was chosen with further application the key concepts from the Expectancy value theory and Goal orientation theory.

Deci and Ryan proposed that both level of motivation and type of motivation that determines behaviour is important as it was found to lead to deep learning and better outcomes. (E. Deci & R. Ryan, 1985; E. L. Deci & Ryan, 2000; R. M. Ryan & E. L. Deci, 2000a, 2000b). This study looks at mind-sets as in the goal-orientated theory and the expectancy of success as in the expectancy value theory(David A Cook & Artino Jr, 2016).

The expectancy value theory states that people may possess a varied sets of goals and can be motivated if they believe, there is a positive correlation between efforts and performance, favourable performance will result in a desirable reward, the reward will satisfy an important need and that the desire to satisfy the need is strong enough to make the effort worthwhile (David A Cook & Artino Jr, 2016).

The goal – orientation theory was chosen because the concept of performances goals can be applied to this research whereby the concern is to do better and to avoid looking like a failure and the mastery goal which is focused on deep learning (David A Cook & Artino Jr, 2016).
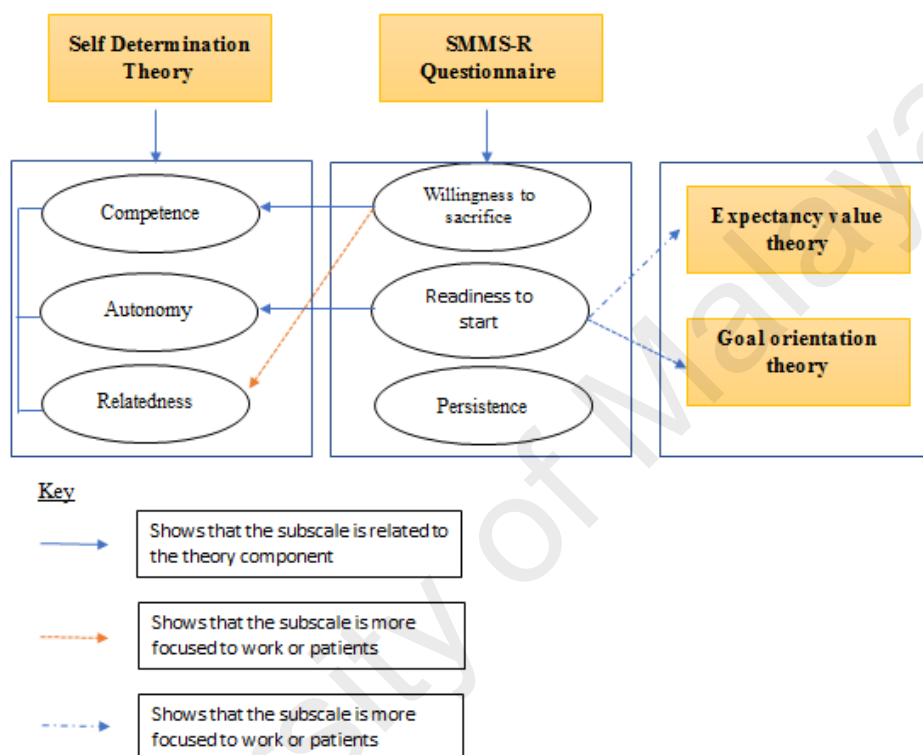
Figure 3.1: The theoretical framework showing strength of motivation and the theories applied in this study

With these justifications, the three theories were selected, not only because they provided contemporary and complex viewpoints on motivation, but also because they incorporated dimensions that indicate problems in motivation, notably amotivation (Legault, 2017). The focus of the factors associated to strength of motivation of medical students and academic success, this was regarded as an added value.

3.4   Self-determination theory forms the backbone of the study

The Self-determination theory holds true for different aspects of motivation in an individual's life, including education and learning and postulates that human beings have a natural tendency to develop towards self-determination (E. Deci & R. Ryan, 1985)

It is a macro motivational theory that builds on the classical, distinction between intrinsic and extrinsic motivation (R. M. Ryan & E. L. Deci, 2000a) and has been frequently used in research in educational contexts (Niemiec & Ryan, 2009). It is a multidimensional model that distinguishes between the quantity and quality of motivation (Maarten Vansteenkiste, Willy Lens, & Edward L Deci, 2006; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009)

SDT acknowledges the qualitatively different types of motivation (Table 3.2) (E. Deci & R. Ryan, 1985). It also argues that even if the level of motivation in an individual is high, different qualities of motivation will result in very different outcomes (Geoffrey C Williams, Ronald B Saizow, & Richard M Ryan, 1999a)

And so SDT introduced the dichotomy of "autonomous" versus "controlled" motivation (Table 3.2) (Ratelle, Guay, Vallerand, Larose, & Senécal, 2007; Maarten Vansteenkiste, Joke Simons, Willy Lens, Kennon M Sheldon, & Edward L Deci, 2004b) which is based on the origin of the motivation and differs in its originates, that is, either from within an individual (autonomous/self-determined) or from forces outside an individual (Guay et al., 2010).

Table 3.1: Self – Determination continuum of motivation (R. Ryan & E. Deci, 2000)

Amotivation	Extrinsic motivation			Intrinsic motivation
	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation
	Least Autonomous			Most autonomous
		Controlled motivation		Autonomous motivation

The two different types of motivation, autonomous and controlled motivation, are further elaborated.

Students, who are autonomously motivated for learning, engage in learning behaviour out of feelings of choice or volition. Underlying motives range from personal interest (internal regulation) or perceptions of value or relevance (Identified regulation). In contrast, in the case of controlled motivation, learning behaviour is predominantly driven by feelings of pressure. These can originate from within students themselves through feelings of shame, pride, or guilt (introjected regulation), or they can be initiated by external pressures such as expectancies, rewards, or punishments (external regulation).

The quantity of motivation is incorporated in SDT through the concept of amotivation. Students who are amotivated or lack motivation altogether (Vallerand et al., 1992a). They are apathetic and have little concern for their studies. They will exhibit very few learning activities, and, when they do so, they seem to lack the ability to regulate their study behaviour and predominantly make use of surface strategies [(Vansteenkiste, Simons, et al., 2004b)]. This lack of motivation, according

to SDT, partially stems from low capacity beliefs, related to low feelings of self-efficacy

Intrinsic motivation makes a person pursue an activity for personal interest or enjoyment. It is the most autonomous/self-determined form of motivation.

It has been found that autonomous motivation, leads to greater creativity (Koestner, Ryan, Bernieri, & Holt, 1984) when compared to controlled motivation, Autonomous motivation consist of less superficial information processing . (Vansteenkiste, Simons, Lens, Sheldon, Deci, et al., 2004) and more deep learning (Grolnick & Ryan, 1987) higher achievement (Boggiano, Flink, Shields, Seelbach, & Barrett, 1993; Soenens & Vansteenkiste, 2005) enhanced well-being or adjustment (Black & Deci, 2000; Levesque, Zuehlke, Stanek, & Ryan, 2004) decreased drop-out intention and behaviour (Hardre & Reeve, 2003; Vallerand, Fortier, & Guay, 1997)

Intrinsic motivation is built on the inherent needs for "autonomy", "competence" and "relatedness". The need for autonomy or self-determination is related to the feeling of volition in one's actions. The need for competence is related to one's feelings of capability in achieving the target. The need for relatedness concerns the desire to relate to the significant others in one's life through work and achievement. Significant others could be parents, teachers, colleagues and peers (Table 3.3) (Dejano T Sobral, 2004)

Table 3.2: Inherent needs for autonomy, competence and relatedness and how this study relates SMMS-R questionnaire to inherent needs of intrinsic motivation.

Inherent needs of intrinsic motivation	The meaning of inherent need	How this study relates SMMS-R questionnaire to inherent needs of intrinsic motivation
Autonomy	Feeling of volition in one's actions	The prospective student's willingness to sacrifice for his/her medical study.
Competence	Feelings of capability in achieving the target	The prospective student is ready and willing to enter medical study
Relatedness	Desire to relate to the significant others (e.g. parents, teachers, colleagues, peers) in one's life through work and achievement	The prospective student feels that there is a bond between him and his studies, and therefore, he persists in medical study in spite of unfriendly circumstances during or after the study.

Motivation may increase or decrease depending on the fulfilment of these 3 innate factors. A student who believes that he or she is study medicine because he or she wants to, has the capability to achieve his or her desired goals and is able to relate to patients is fulfilled of his innate needs. These three needs must be satisfied for a person to be intrinsically motivated.

Extrinsic motivation makes a person pursue an activity for a separable outcome i.e. to obtain a reward or to avoid a loss (Table 3). Extrinsic motivation has different levels of self-determination, hence is composed of four different stages: external regulation, introjected regulation, identified regulation and integrated regulation. "External regulation", in the case of education, means studying because of pressure or expectation of others, without interest in the study. "Introjected regulation" means there is realization of the importance of the study but the causation is perceived as external. "Identified regulation" means that the importance of study is valued, has been identified with and the regulatory process has been accepted. "Integrated regulation" means that the acceptance of the importance ascribed to the study has been fully integrated into the individual's coherent sense of self; the locus of causation is now internal. Self-determination, the regulation type that fits with intrinsic motivation, means that one determines one's own motivation; the motivation is self-generated and autonomous. External regulation is the least and integrated regulation is the most self-determined regulation of extrinsic motivation. Many studies have combined intrinsic motivation, integrated and identified regulation as autonomous motivation and introjected and external regulation as controlled motivation (R. M. Ryan & E. L. Deci, 2000b)

Amotivation signifies the state in which a person lacks the intention to act. (E. L. Deci, Vallerand, Pelletier, & Ryan, 1991; R. M. Ryan & E. L. Deci, 2000a, 2000b)

Autonomous motivation concerns intrinsic motivation (doing something out of interest or enjoyment) or the appreciation of certain behaviour as being personally valuable (identified regulation) (Vansteenkiste, Simons, et al., 2004b; Maarten Vansteenkiste, Mingming Zhou, Willy Lens, & Bart Soenens, 2005a)

This kind of motivation has been found to be an especially important favourable factor in education as it fosters deep learning, better study behaviour, higher academic achievement and the intention to continue medical studies; and results in lower dropout rates in (medical) students (Artino et al., 2010; RA Kusurkar, Th J Ten Cate, et al., 2011; R. Kusurkar, T. J. Ten Cate, et al., 2013; Dejano T Sobral, 2004; Vansteenkiste et al., 2005a)

Autonomous motivation positively correlates with deep learning, intention to continue higher studies and reflection in learning (Dejano T Sobral, 2004). On the other hand, amotivation (Legault, 2017) correlates negatively with deep learning and reflection in learning and positively with surface learning (Dejano T Sobral, 2004). Different motivations stimulate leaning in medical students (Mattick & Knight, 2009). Concerning study related behaviour, it found that intrinsically motivated medical students tended to take more optional credit courses and peer-tutoring activities (Sobral, 2008).

Alternatively, controlled motivation) implies that behaviour is driven by the promise of reward or the threat of punishment (external regulation), or by internal pressure such as feelings of guilt or shame (introjected regulation)(Legault, 2017).

A common example cited is that of a student who chooses to study medicine in order to please his parents or because of the prospect of a generous salary. A combination

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of high intrinsic and low controlled motivation in students has been found to demonstrate the most favourable learning behaviours and performance. Unmotivated students and students with a combination of high controlled and low autonomous motivation have shown the least desirable learning behaviours and performance (Rashmi A Kusurkar, Gerda Croiset, Francisca Galindo-Garré, & Olle Ten Cate, 2013a)

SDT puts forth that intrinsic motivation could change to extrinsic motivation and vice versa depending on whether the three basic psychological needs of autonomy, competence and relatedness are satisfied or not (E. Deci & R. Ryan, 1985; E. L. Deci & Ryan, 2008; RA Kusurkar, Th J Ten Cate, et al., 2011; R. M. Ryan & E. L. Deci, 2000b)

3.5   Conceptual framework

Willingness to sacrifice, readiness to start and persistence are the subscales that are measured using the revised questionnaire of the Strength of Motivation for medical school. All three subscales relate to the intrinsic motivation which makes an individual to behave in a certain manner to pursue an activity out of personal interest or enjoyment. The behaviour of the intrinsically motivated person would be in the direction of success. The score in the SMMS-R questionnaire, will show whether or not the students are intrinsically motivated and the level at which they are motivated, that is, strong, average and poor.

Intrinsic motivation is the desirable type of motivation, according to SDT, as it has been found to be associated with deep learning, better academic performance and positive student well-being as compared to extrinsic motivation which is associated

with surface learning, lower academic performance and negative well-being (RA Kusurkar, Th J Ten Cate, et al., 2011; R. A. Kusurkar et al., 2013a; R. M. Ryan & E. L. Deci, 2000b)

Table 3.3: Categories of quantity of motivation, strength of motivation and its score, academic success and relationship between variables and strength of motivation

Quantity of motivation	Nil	Low	Average	High
Strength of motivation	Nil	Weak	Moderate	Strong
Strength of Motivation score (SMMS – R Score)	0 – 15	16 – 25	26 – 50	51 – 75
Academic success	None (academic failure)	Poor	Moderate	Good

Factors presumed to affect academic success are
Age, Gender, Academic year, CGPA of entry qualification

0%   100%

Increased strength of motivation in females, as students' age increases, proceed to a higher academic year, entry to medical school with a higher CPGA affect academic success positively

0%   100%

By using the SDT, expectancy value and goal orientation theories in the framework, this study intends to prove that academic year, gender, educational background and CGPA of entry qualification influence motivation. Also that inherent needs of intrinsic motivation i.e. competence, relatedness and autonomous is associated with high scores of motivation.

LEARNERS WITH DIFFERENCES IN:

- Gender
- Educational background
- Entry level CGPA

Strength of motivation

- Willingness to sacrifice
- Readiness to start
- Persistence

Years of undergraduate education

Academic Performance
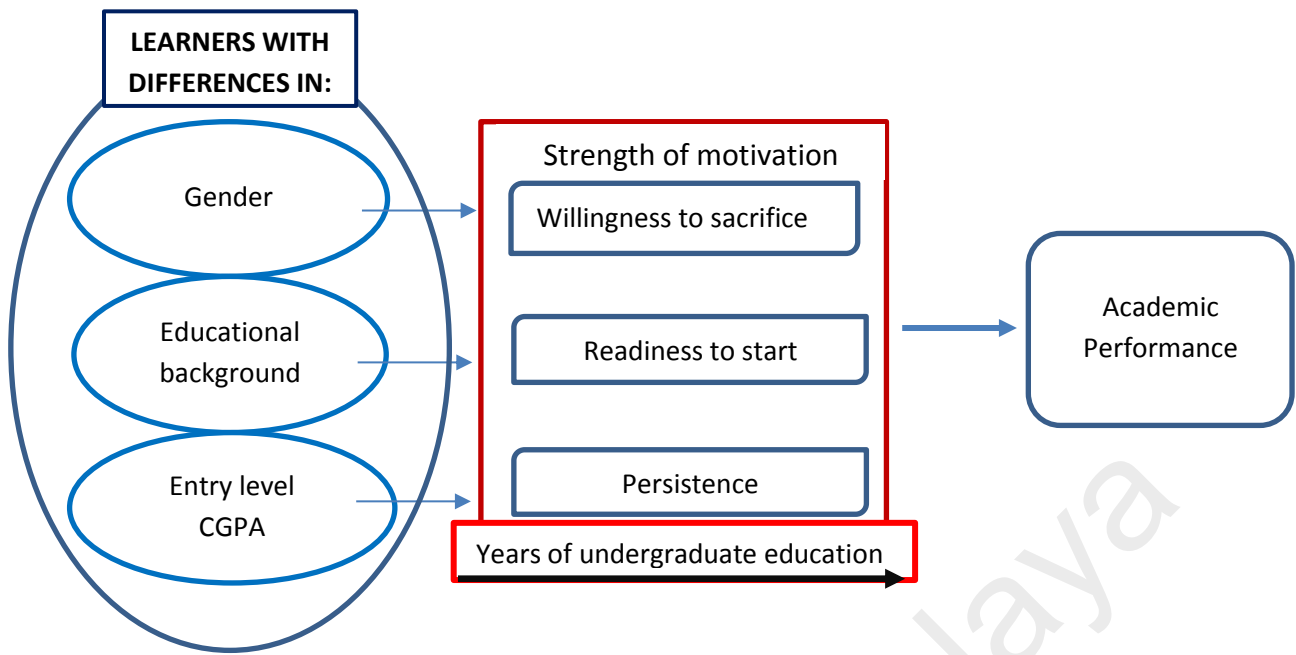
Figure 3.2: Conceptual framework

CHAPTER 4: METHODOLOGY

4.0 Introduction

This study was designed to investigate the strength of motivation among medical students at a private university. Specifically, the study attempted to assess the factors that affect motivation of these students. The factors assessed are gender, educational background, and CGPA of entry qualification. It also sought to compare the strength of motivation of medical students in the different academic years for the 2019/2020 academic year, investigate the relations between the strength of motivation and academic performance.

A total of 700 medical students from the Faculty of Medicine, of a private university, participated in this study. Data on the strength of motivation for the study was obtained from one single instrument, that is, the revised version of the Strength of Motivation for Medical Students (SMMS-R). The Statistical Package for the Social Sciences (SPSS) was used to process and analyse quantitative data collected from this study.

To be able to achieve the above mentioned objectives, the methodology involved several main procedures. The data for study were collected using quantitative technique. Sources of data included demographic data namely, age, gender, educational background and CGPA of entry qualification..

This chapter shall discuss the methodology in detail as follows: 4.1 Research approach, 4,2 Research design, 4.3 Research method, 4.4 The sample 4.5 The sample size 4.6 The instrument 4.7 Data collection 4.8 Data analysis

4.1 Research approach

This research used a quantitative approach, where it describes the research problem using trends and relationships, justifies the research problem via literature review and creates purpose statements, research questions, and hypotheses that are specific, narrow, measurable, and observable.

The quantitative approach is utilised as there is collection of data from a large number of participants using a questionnaire as the study instrument, analysing trends, comparing groups and relating variables using statistical analysis and interpreting results and lastly, reporting the results using standard fixed structures in an objective, unbiased approach (Creswell, 2014)

4.2 Research design

The correlational research design is chosen to investigate relationship between the above mentioned variable in a predictable pattern for this group of medical students at one point in time. Creswell and colleagues (2014) defines correlational research designs as quantitative designs in which investigators use a correlation statistical technique to describe and measure the degree of association (or relationship) between two or more variables or sets of scores

The characteristics unique to correlational designs are that the scores may be displayed using scatterplots and correlation matrices; there may be associations between scores such as the direction and strength and the multiple variable analyses such as multiple regression.

Therefore, for the purposes of this research, the explanatory correlational research design is chosen, rather than the prediction design, because the variables such as the

strength of motivation, difference in strength of motivation among medical students in the different academic years, gender groups, different educational background and CGPA of entry qualification, relationship between the above mentioned variables and strength of motivation and academic performance were part of the objectives of the dissertation.

The above mentioned variables are used to compare data collected from the medical students of the MBBS programme over 5 academic years, at a single point in time which measured current attitudes and practices. Therefore, the cross sectional questionnaire survey was found to be most applicable.

4.3   Research Method

Questionnaire was used as the research tool because it is a reliable (Nieuwhof, Th, Oosterveld, & Soethout, 2004)   and quick method to collect information from multiple respondents in an efficient and timely manner. This is especially important in research projects that involve a large number of participants, with several complex objectives and, where time is one of the major constraints (Bell, 2005; Greenfield, 2002; Seale, Gobo, Gubrium, & Silverman, 2004)

This research was no exception and the questionnaires provided the researcher with a fast and efficient manner to reach a large group of participants within several weeks. The questionnaire was however limited to a fixed format that eliminates the option of more in-depth or abstract observation (Bell, 2005)

While observing strict participant privacy and confidentiality, the link to the google form of the questionnaire was sent out via email i.e. via bcc, to all medical students

from year 1 to year 5 in the Faculty of Medicine of a private university. The participant information sheet (PIS) containing information on what the research is about, the voluntary nature of involvement, what will happen during and after the research has taken place, the participants rights, the benefits and confidentiality, was sent along with the questionnaire and consent form.

As a complementary method to ensure that all MBBS students received the questionnaire, the link was also sent to the students via WhatsApp as a gentle reminder.

4.4 The Sample

The sample population is described below.

4.4.1 Study population

This private university has a single intake into the MBBS programme which takes place every September. The study population includes students who have joined the programme from the first year, as a fresh intake and credit transfer students who have joined the programme in any of the years from other universities any time during the academic year.

4.4.2 Inclusion criteria

All students studying in the MBBS programme at Faculty of Medicine, of a private university in Malaysia.

4.4.3 Exclusion criteria

All students from the Faculties of Dentistry, Nursing and Midwifery, Allied Health and Sports Sciences, Pharmacy, Business, Finance and Hospitality, Engineering and Centres for Languages and Foundation

4.5 Sample size

Although the target population of the study was all the medical students in this private university, this questionnaire which is to be answered on a voluntary basis, was answered by 700 medical students

Although the target population of the study were all medical students in this private university, only students who were present during the briefings for each academic year appeared to be the accessible population for this study. The actual sample of this study comprised 700 students from the Year 1 to Year 5 medical students.

Since this study has 4 independent variables, the sample size (n= 700) is considered adequate for the analysis of data and the generalization of findings (Hair, Black, Babin, Anderson, & Tatham, 2014)

4.6 The instrument

Questionnaire

For the purpose of data collection, one instrument was employed. The Strength of Motivation of Medical Students questionnaire, developed by Nieuwhof and colleagues (2004) and revised by Kusurkar and colleagues (2011), to be Strength of Motivation of Medical Students - Revised questionnaire, is the only instrument assessing students' motivation specifically for medical studies and was used to

measure the of strength of motivation among medical students in the MBBS programme in Of a private university.

It is a recommended tool to examine the relationship between motivation and other factors such as academic successes. Having a more cohesive understanding of the strength of motivation for medical school could help administrators and faculty members target students who may need interventions to improve strength of motivation.

The SMMS-R measures the strength of motivation for medical school and comprises three subscales, willingness to sacrifice, readiness to start and perseverance

The subscales are as follows. The first subscale, willingness to sacrifice, measures willingness to sacrifice social and personal life to meet the demands of medical school. The second subscale, readiness to start, measures determination to start medical school The third subscale, persistence, measures the will to persevere amid difficult circumstances (R Kusurkar et al., 2011)

Table 4.1 Strength of Motivation in Medical Students – Revised (SMMS-R) item summary

	Subscale	What the subscale measures	No. of items per subscale	Item number
Subscale 1	**Willingness to sacrifice**	Willingness of a student to sacrifice for his/her medical study.	5	5, 7, 9, 10,12
Subscale 2	**Readiness to start**	Readiness and will to enter medical study	5	1, 3, 6, 11, 15
Subscale 3	**Persistence**	Persistence in medical study in spite of unfriendly circumstances during or after the study.	5	2, 4, 8, 13, 14
	Total		15	15

4.6.1 Validity and reliability of the questionnaire

A study determining the validity evidence for measuring strength of motivation for medical school was performed using the Strength of Motivation for Medical School (SMMS) questionnaire (R Kusurkar et al., 2011).

The Strength of Motivation for Medical School (SMMS) questionnaire which originally had 16 item with a lower Cronbach's alpha reliability score was modified by removing item 15 (SMMS Question number 15. I would like to study medicine, even if I have to spend a lot of time on topics that later turn out to be a waste of time) to increase the reliability from 0.69 to 0.70. And so the SMMS questionnaire was

called SMMS-R which meant Strength of Motivation for Medical Schools – Revised (R Kusurkar et al., 2011).

Evidence for internal consistency was determined through the Cronbach's alpha for reliability. Values of Cronbach's alpha for reliability of the 3 subscales , namely, willingness to sacrifice, readiness to start and persistence, and the overall instrument were 0.70, 0.67, 0.55 and 0.79 respectively (R Kusurkar et al., 2011)

The validity evidence for the internal structure was analysed via exploratory factor analysis by principal components analysis with promax rotation (R Kusurkar et al., 2011). For each subscale, a reliability score was calculated. The first subscale which measured the willingness of a student to sacrifice for his/her medical study had factor loadings of 0.40 based on five item (SMMS-R Question number 5,7,9,10 and 12) as shown in Table 4.5. Item total correlations of all items were >0.3, which is the recommended value (Field, 2005). The second subscale, readiness to start (SMMS-R Question number 1,3,6,11 and 15) measured the readiness and will to enter medical study. Internal consistency of this subscale was 0.67. Item total correlations of all items were >0.3. The third subscale, persistence, measured the persistence in medical study in spite of unfriendly circumstances during or after the study. The five item (SMMS-R Question number 2,4,8,13 and 14) of this subscale had a factor loadings of >0.40 . Internal consistency of this subscale was 0.55, which was lower than recommended (Table 4.5). Corrected item total correlation was 0.220, which is also lower than the recommended 0.3 (Field, 2005; R Kusurkar et al., 2011)

Table 4.2 Factor loading of the SMMS questionnaire items (R Kusurkar et al., 2011).

Item No.	SMMS item	Factor 1 (5 items)	Factor 2 (5 Items)	Factor 3 (5 Items)
5	Even if I could hardly maintain my social life, I would still continue medical training.	**0.75**	0.02	- 0.08
7	I would still choose medicine even if that meant I would never be able to go on holidays with my friends anymore.	**0.7**	0.05	- 0.02
9	If studying took me more than an average of 60 hours a week, I would seriously consider quitting.	**0.45**	0.01	0.22
10	I intend to become a doctor even though that would mean taking CME courses throughout my professional career.	**0.57**	0.11	0.08
12	I would like to become a doctor, even if that would mean work would come before my family.	**0.76**	- 0.12	- 0.04
15	I would be prepared to retake my final high school exams to get higher marks if this would be necessary to study medicine.	0.27	0.21	0.06
1	I would always regret my decision if I hadn't taken up medicine	- 0.08	**0.76**	- 0.04
3	I would still choose medicine even if that would mean studying in a foreign country in a language that I have not mastered.	- 0.10	**0.51**	0.16
6	I wouldn't consider any other profession than becoming a doctor.	0.11	**0.66**	- 0.04
11	It wouldn't really bother me too much if I could no longer study medicine.	0.04	**0.66**	0.09
16	I would be prepared to retake any final high school exam to get higher marks if this would be necessary to study medicine	0.10	**0.57**	- 0.16
2	I would quit studying medicine if I were 95% certain that I could never become the specialist of my choice.	0.06	- 0.33	**0.65**
4	As soon as I would discover that it would take me about ten years to qualify as a specialist, I would stop studying.	0.02	0.17	**0.57**
8	I would stop studying medicine if I started scoring low marks and failing tests often	- 0.02	0.17	**0.47**
13	I would quit studying as soon as it became apparent that there were no jobs or resident positions after graduation.	0.01	- 0.07	**0.69**
14	I would not have chosen medicine if it would have caused me to accumulate financial debts.	- 0.07	0.21	**0.50**

Key:

Factor/Subscale 1 = Willingness to sacrifice;

Factor/Subscale 2 = Readiness to start;

Factor/Subscale 3 = Persistence

4.6.2 Scoring the questionnaire

Responses are provided on a 5-point Likert scale from one (strongly disagree) to five (strongly agree). Scores were calculated individually by sub-scale or by summing the scores from all of the sub-scales to create an overall Strength of Motivation for Medical School score.

Scores can range from 5 to 25 on the individual sub-scales and from 15 to 75 for the overall scale. The measure has demonstrated adequate internal consistency and test-retest reliability and validity (R Kusurkar et al., 2011)

As stated above, each item gets a score of 1, 2, 3, 4 or 5 (where 1 represents Strongly disagree to and 5 represents Strongly agree) depending on the response chosen by the subject. Items 2, 4, 8, 9, 11, 13 and 14 need to be reverse scored, that means, subtracts the option chosen by the subject from 5, and then add 1. As an example, if the participant responds as 4, the actual score after reverse scoring will be 2.

The score on each subscale can be used separately or the scores on three subscales can be summed up to give the overall "Strength of Motivation for Medical School".

4.7 Data collection

Data collection involved two main procedures. These were: (i) preliminary procedures, (ii) administration of the SMMS-R questionnaire.

Preliminary procedure

Data collection for this study began after permission had been granted by the relevant authorities.

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These included:

    (i)   Approval from University of Malaya Research Ethics Committee (UMREC) with reference number: UM.TNC2/UMREC - 626

    (ii)   Approval from Faculty of Medicine, of a private university with reference number: RMC/E86/2019

4.7.1   The procedure

The questionnaire was distributed upon obtaining ethical clearance from the Ethics committee, Faculty of Medicine of a private university with reference number: RMC/E86/2019. Ethical clearance was also obtained from University of Malaya Research Ethics Committee (UMREC) with reference number: UM.TNC2/UMREC - 626.

Data collection was carried out between August 2019 and October 2019. The duration for data collection was about two months, excluding the two weeks of professional examination and two weeks of end-of-academic year holidays.

The entire data collection was conducted by the researcher, with the help of year coordinators for each academic year.

The researcher created a google form for the feasibility of the participants to answer the questionnaire at their convenience. This was done because using hard copies of the questionnaires was time-consuming in the sense of having to print them and distribute and later collect them back from the Year Coordinators. Manually entry of the raw data into analyses tool would have been time consuming and open to error too.

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4.7.2 Administration of the questionnaire

Permission to address the MBBS students of the faculty of Medicine, of a private university, was obtained from the ethic committee via ethical clearance before addressing the MBBS students from Year 1 to Year 5 students.

A briefing on the research was conducted by the researcher. Year 1 and Year 2 MBBS students were given a briefing by the researcher before their didactic lecture started in the second week of August 2019. Students in Year 3, Year 4 and Year 5, were briefed during the common lecture session.

The participants were requested to fill in the questionnaire using the google form link provided via email and WhatsApp after they read and understood participant information sheet. They were also informed that participation will be voluntary and that the data obtained will only accessible to the researcher and the supervisors and anonymity will be ensured. For confidentiality, the name and matric number of the participants were not obtained.

Implied consent was applied when the participants completed and returned the questionnaire. Thereafter, all information that is captured in the questionnaire and in the course of this thesis has been used only for the purposes of the study and will be kept confidential. As the questionnaire does not have any sort of identification information of the participants, the information captured in the questionnaire is anonymous. Analyses of the information will be done by the researcher. All data collected and analysed will be stored in a thumb drive that will be held by the researcher. All the information collected in the course of this thesis has been used only for the purposes of the study, and will be kept confidential.

The questionnaire was administered to all academic years, 4 weeks before the end of their respective academic years for a duration of 12 weeks.

4.8 Data Analysis

All quantitative data were processed and analysed using the Statistical Packages for the Social Sciences, SPSS version. Both descriptive and inferential statistics were employed. An alpha level of 0.05 was used for all the statistical tests.

The variables will be grouped as following.

Table 4.3 Levels of measurement of the variables

Variable	Levels of measurement
Academic years	Categorical (Year 1, Year 2, Year 3, Year 4 and Year 5)
Gender	Categorical (Female, Male)

Educational background	Categorical (Group 1, Group 2)
	 Note:
	 Group 1 consists of the following entry requirements
	   i. SPM + FIS
	   ii. SPM + A level
	   iii. SPM + STPM
	   iv. IGCSE
	   v. GCE O and A levels
	 Group 2 consists of the following entry requirements
	   i. Plus 2 and others

CGPA of entry qualification	Categorical (High achiever, Average achiever, Below Average achiever)
Strength of motivation (score)	Categorical (Strong, Moderate, Weak) Note: Strong score ranging from 50 to 75 Moderate score ranging from 26 to 49 Weak score ranging from 15 to 25

Research question 1- How is the strength of motivation among undergraduate medical students?

The strength of motivation measured using the SMMS-R questionnaire was analysed using descriptive statistics, mean with standard deviation, maximum and minimum.

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Research question 2 - Is there any relationship between the strength of motivation and following variables?

  i.   *academic years*

 ii.   *gender*

iii.   *educational background*

iv.   *CGPA of entry qualification*

 v.   *academic performance*

The data to analyse the association between the above mentioned variables and strength of motivation was from the sociodemographic and academic information portion on questionnaire and SMMS-R Questionnaire. This question looked at the association between the variables and strength of motivation to examine if these factors have a relationship with motivation. The association was analysed using the cross tabulation and Chi square for academic years, gender, educational background and academic performance. CPGA of entry qualification was analysed using t-test.

Research question 3 - Is there any significant difference between in the strength of motivation among undergraduate medical students of

  i.   *different academic years*

 ii.   *gender group*

iii.   *different educational background*

iv.   *different levels of CGPA of entry qualification*

The data to analyse whether or not there is any significant difference between the strength of motivation in the different groups of undergraduate medical students stated above was from the sociodemographic and academic information portion on questionnaire. The association was analysed using one-way ANOVA for academic

years and CGPA of entry qualification. Gender and educational background was analysed using unpaired t-test.

4.5 Chapter summary

Table 4.4 provides a summary of the methodology of the study.

Table 4.4 Summary of methodology

Question number	Research objective	Research questions	Data source	Test
1.	To analyse the strength of motivation among all medical students in this private medical school in the current academic year 2019/2020?	How is the strength of motivation among undergraduate medical students?	SMMS-R Questionnaire	Descriptive statistics: Mean with SD, maximum and minimum. Note: Categorisation of Strength of motivation into 3 categories of Strong, Moderate and Weak
2.	To investigate possible relationship between strength of motivation and the following variables i. academic years ii. gender iii. educational background iv. CGPA of entry qualification v. academic performance	Is there any relationship between the strength of motivation and following variables? i. academic years ii. gender iii. educational background iv. CGPA of entry qualification v. academic performance	Sociodemographic and academic information portion on questionnaire	i. Academic years **Test of association** 1. Cross tabulation 2. Chi square ii. Gender **Test of association** 1. Cross tabulation 2. Chi square iii. Educational background **Test of association** 1. Cross tabulation 2. Chi square iv. CGPA of entry v. qualification **Test of correlation** 1. Spearmans' rho correlation
			Academic information portion on questionnaire and the	vi. Academic performance **Test of association** 1. Cross tabulation 2. Chi square

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Table 4.4 continued

3.	To compare the strength of motivation among medical students in the
	  i. different academic years
	  ii. gender groups
	  iii. different educational background
	  iv. CGPA of entry qualification
		Is there any significant difference between in the strength of motivation among undergraduate medical students of
		
		  i. academic years (5 groups)
		  ii. gender (2 groups)
		  iii. educational background (2 groups)
		  iv. CGPA of entry qualification (3 groups)
			SMMS-R questionnaire
			Socio – demographic and academic information portion on questionnaire
				i. Academic years
				
				  1. One-way ANOVA
				
				ii. Gender
				
				  1. Independent samples t-test
				
				iii. Educational background
				  1. Independent samples t-test
				
				iv. CGPA of entry qualification
				
				  One-way ANOVA

In Chapter 5, findings of the study will be presented and discussed.

CHAPTER 5: RESULTS AND DISCUSSION

5.0   Introduction

The purpose of this study was to analyse the strength of motivation of medical students in a private university in Malaysia. Academic year, gender, educational background and CGPA of entry qualification were the factors assessed. It also attempted to compare the strength of motivation among medical students in the different academic years, gender groups, different educational background and CGPA of entry qualification and investigate possible relationship between strength of motivation and academic years, gender, educational background, CGPA of entry qualification and academic performance

This study was intended for 911 medical students studying in Year 1, Year 2, Year 3, Year 4 and Year 5. However, only 700 responded (76.8%). Demographic data was collected and other data was collected based on the revised version of Strength of Motivation in Medical Student questionnaire (SMMS-R). SPSS (version 23) was utilised for data analysis.

In this chapter, the demographic data will be presented and discussed first. Subsequently, the findings and discussion will be presented based on the research question.

5.1   Profile of the subjects of the study

700 medical students from the Faculty of Medicine at a private medical school participated in this study from August 1st to 31st October 2019. The profile of these 700 respondents will be further elaborated below.

5.1.1   Results of the demographic characteristics of the subjects

The target sample size was 911. However, the number of subjects recruited was smaller compared to what was intended (n=700). The non-participatory rate was 23.25%. The Year 3 had the most respondents with a total of 167 (23.9%), followed by Year 5 (21.6%) and Year 4 (21%) respondents. Year 2 has the lowest respond rate (15.1%). The participatory rate among females was 69.7% and for males was 30.3%. Table 5.1 below shows the demographic characteristics of the subjects of this study.

Table 5.1 Demographic characteristics of the subjects

Subject Characteristics	Frequency (n=700)	Percentage (%)
Academic Year		
Year-1	129	18.4
Year-2	106	15.1
Year-3	167	23.9
Year-4	147	21.0
Year-5	151	21.6
Gender		
Male	212	30.3
Female	488	69.7
Educational background		
Group 1[a]	589	84.1
Group 2[b]	111	15.9
Academic performance*		
Low achiever	127	18.1
Moderate achiever	389	55.6
High achiever	184	26.3

Note:
a: STPM, Foundation, A-Levels, Matriculation (Malaysian, Australian)
b: Others – Higher secondary qualification in India, Iran, Iraq, China, Bangladesh, Pakistan, Yeman, African countries
*Low achiever – no As or Bs, with failed subjects, Moderate achiever – 1A to 3As; no failed subjects, High achiever – all least 4 As; no failed subjects

Only 700 medical students participated out of 911 that were approached, that is, 76.8%. The participation rate for this study is acceptable. Nowadays, participation

rates of 40 – 50 % are common and trends of participation rate has been shown to be decreasing (Mindell et al., 2015). A similar study conducted by Kursukar et.al (year?) involving medical students in Netherlands have shown that the participation rate to be as low as 42% (Rashmi A Kusurkar, Gerda Croiset, Francisca Galindo-Garré, & Olle Ten Cate, 2013b).. In this study, the following rcould be the reasons for the lower than intended participation rate.

    i.   Absent during the briefing and study period. The University's policy is student must have an 80% attendance rate for academic progression. Therefore, students could have been absent during this period. From the university's records, the absenteeism rate is around 5%.

    ii.   No access to internet. Jenjarom area where the university is located has been known to have a poor cellular data network.(nPERF, 2019)

The highest participation rate (23.9%) was among the Year 3 medical students, which is the first clinical year in Phase 2. This faculty records show that the Year 3 batch 2019/2020 has 197 students, which is the highest number of medical students compared to the other academic years.

The lowest participation rate (15.1%) is from the Year 2. These days, medical students in the pre-clinical years skip lecture classes. According to a report by American Medical Association, a survey conducted by the Association of American Medical Colleges (AAMC) noted that approximately a quarter of second-year medical students reported "almost never" attending in-person lectures and instead watch educational videos, such as YouTube videos, every day . (Farber, 2018; Murphy, 2019)

There was a higher participatory rate among female medical students compared to male medical students. The male to female ration was approximately 40:60. The gender distribution of the medical students of the Faculty of Medicine is approximately 40% male and 60% female This university record showed that the gender distribution in the enrolment of all students is approximately 60% of students are females while approximately 40% are males. The worldwide trend in the enrolment of students in higher education institutions has seen a tremendous increase among females compared to males (Da, 2012; Yong, 2017). This trend was noted in the developed or Western countries as well as the Asia Pacific region. In Malaysia, the gender proportion within public and private higher education institutions differed where the public universities documented a male to female ratio of 40:60 while the private universities documented a male to female ratio of 49:51 (Da, 2012). This may be so because there were more female students who preferred to attend classes on a daily basis compared to males as a study has shown similar results (Gupta & Saks, 2013).

84.1% of the respondents are those who sat for STPM, Matriculation, and Foundation in Science or A-levels examinations. This faculty records showed that students who sat for these examinations are Malaysians and remaining 15.9% of the respondents were international students who had sat for the medical school entry qualifying examinations. These qualifying examinations have to the ones stipulated by the Malaysian Medical Council in order to gain entry into a medical programme in Malaysia (Council, 2013).

The distribution of medical students by academic performance shows that 55.6% of the respondents are moderate achievers while 26.3% of them are high achievers and 18.1% are low achievers. The percentage of moderate achievers is similar to that

obtained in a study conducted at Harvard on academic performance, where the average score was 57% (Hamann et al., 2002).

5.2 The strength of motivation among medical students in a private Malaysian medical school in the current academic year 2019/2020

With reference to the first research question, the results of this section are reported in four sub-sections, which are:

i.   Distribution of medical students by sub-scale 1 willingness to sacrifice

ii.   Distribution of medical students by sub-scale 2 readiness to start

iii. Distribution of medical students by sub-scale 3 persistence

iv.   Distribution of medical students by total strength of motivation score.

5.2.1 Distribution of medical students by sub-scale 1 willingness to sacrifice, sub-scale 2 readiness to start, sub-scale 3 persistence and total strength of motivation score

Table 5.2 shows the the mean, standard deviation, median, interquartile range minimum, maximum, skewness, Kurtosis and Shapiro-Wilk test for all the 4 variables. Although the data was not normally distributed as shown by test of normality, namely, Shapiro-Wilk test, the mean and median are not much different because of the large sample size. Since this current sample size is large, it is more meaningful to use mean and standard deviation.

Table 5.2 Summary of descriptive and inferential statistics for the sub-scales and total strength of motivation score. (n=700)

Variables	Mean	Std. deviation	Median	Inter-quartile range	Minimum	Maximum	Skewness	Kurtosis	Shapiro-Wilk test
Sub-scale 1 score	16.51	2.56	17	3	5	24	-0.54	1.51	0.000
Sub-scale 2 score	15.29	3.14	15	4	5	25	0.18	0.42	0.000
Sub-scale 3 score	11.94	3.42	12	4	5	22	0.08	-.0.35	0.000
Strength of motivation score	43.74	5.28	44	5	15	60	-.0.41	2.48	0.000

Note:
Sub-scale 1= willingness to sacrifice, Sub-scale 2= readiness to start, Sub-scale 3= persistence

Each sub-scale had 5 questions related to the variable, that is, willingness to sacrifice for their medical studies, readiness to start a medical programme and persistence to continue the medical programme in the face of difficulties with a minimum and a maximum score of 5 and 25 respectively.

The results show that the respondents achieved a median score between 12 and 17, for the subscales. The minimum score was 5 for each of the subscales. The maximum score was 24 for sub-scale 1, 25 for sub-scale 2 and 22 for sub-scale 3.
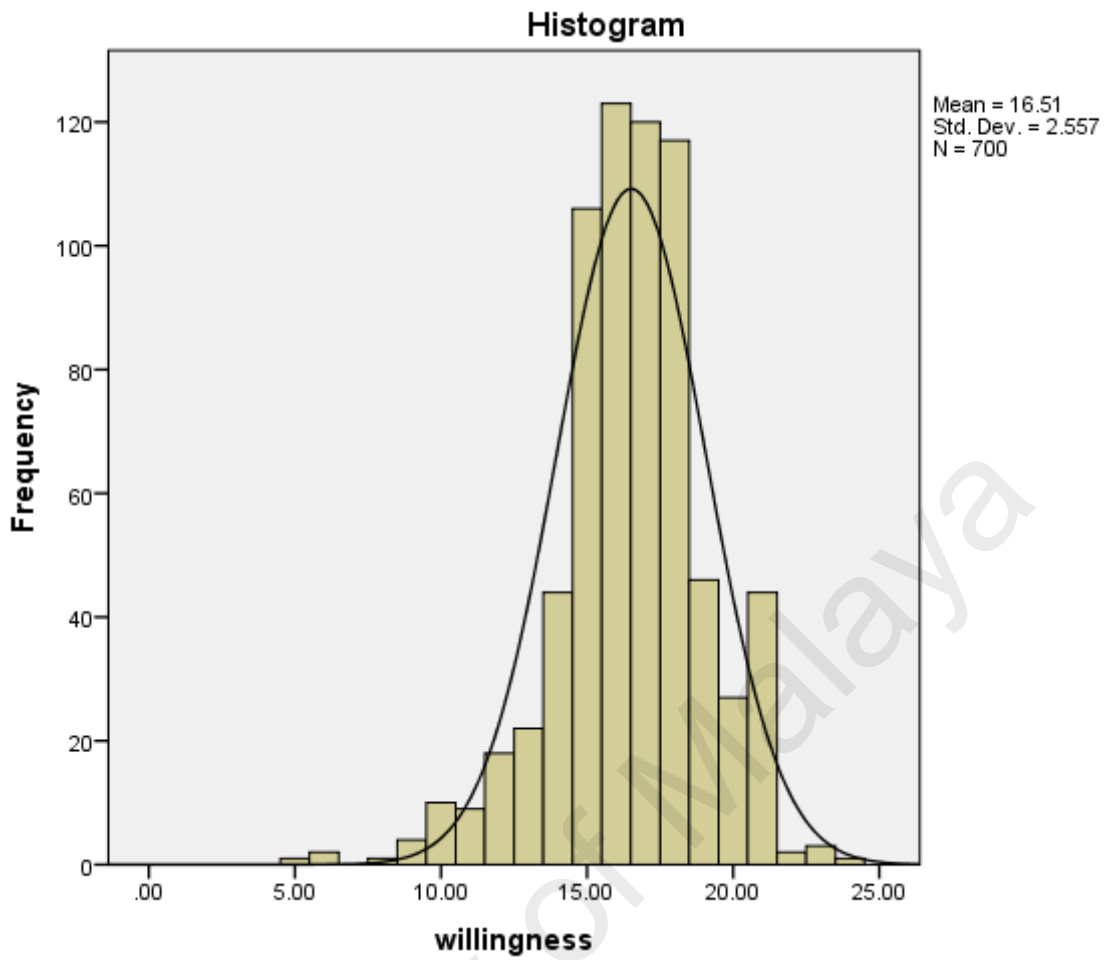
Figure 5.1 Histogram of sub-scale 1 willingness to sacrifice score

The histogram for sub-scale 1 willingness to sacrifice score with a normal curve superimposed was generated to check on the normality of the sub-scale 1 score distribution. Figure 5.1 shows the histogram of the sub-scale 1 score for the 700 medical students in this study. The distribution curve shows a near normal distribution as suggested by the mean (16.51) and median (17.0) obtained through descriptive statistics, which differs very minimally. The score mode has a mid-point of 16.0 Besides, the distribution curve has a skewness of - 0.54. These statistics suggest a near normal distribution for the sub-scale 1 willingness to sacrifice score.

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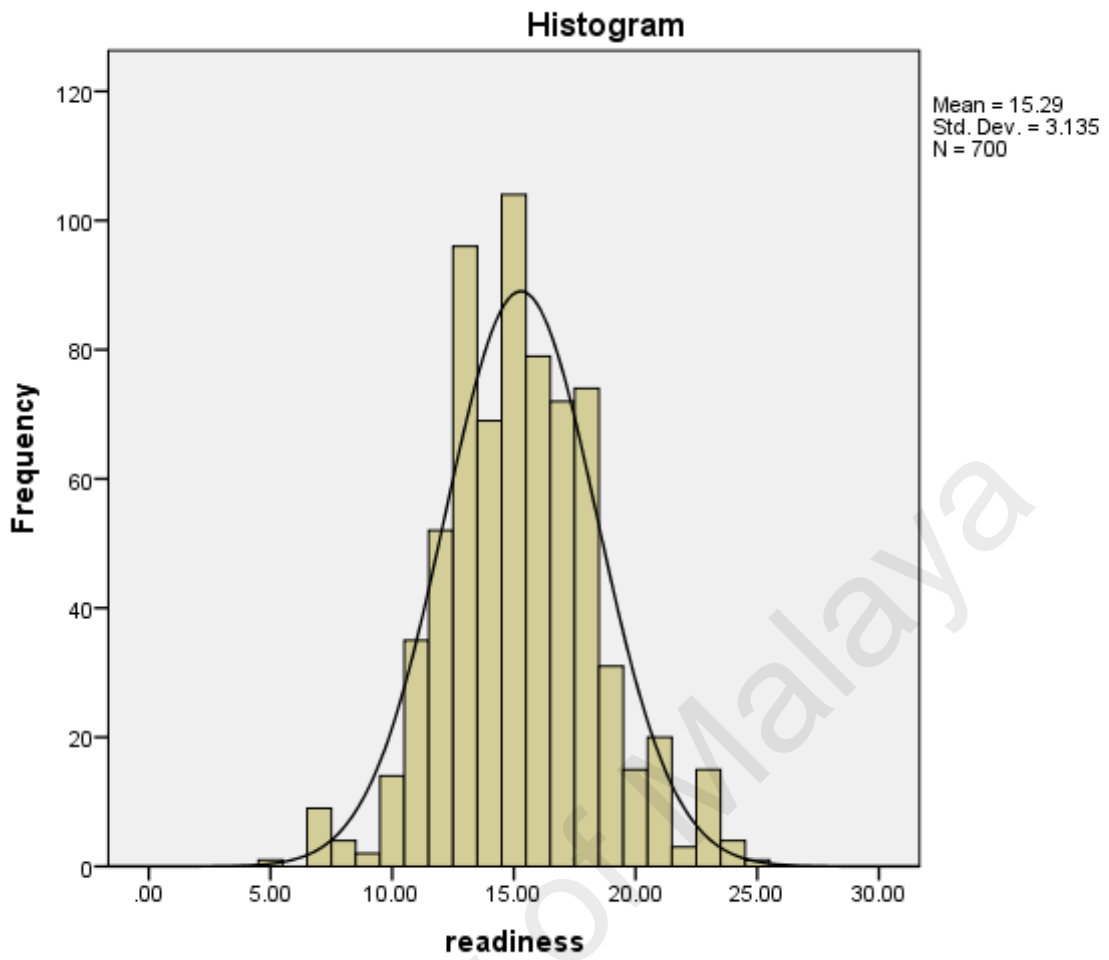
Figure 5.2 Histogram of sub-scale 2 readiness to start scores

The histogram for sub-scale 2 readiness to start scores with a normal curve superimposed was generated to check on the normality of the sub-scale 2 score distribution. Figure 5.2 shows the histogram of the sub-scale 2 score for the 700 medical students in this study. The distribution curve shows an almost normal distribution as suggested by the mean (15.29) and median (15.0) obtained through descriptive statistics, which differs very minimally. The score mode has a mid-point of 15.0. Besides, the distribution curve has a skewness of − 0.18. These statistics suggest a near normal distribution for the sub-scale 2 readiness to start score.
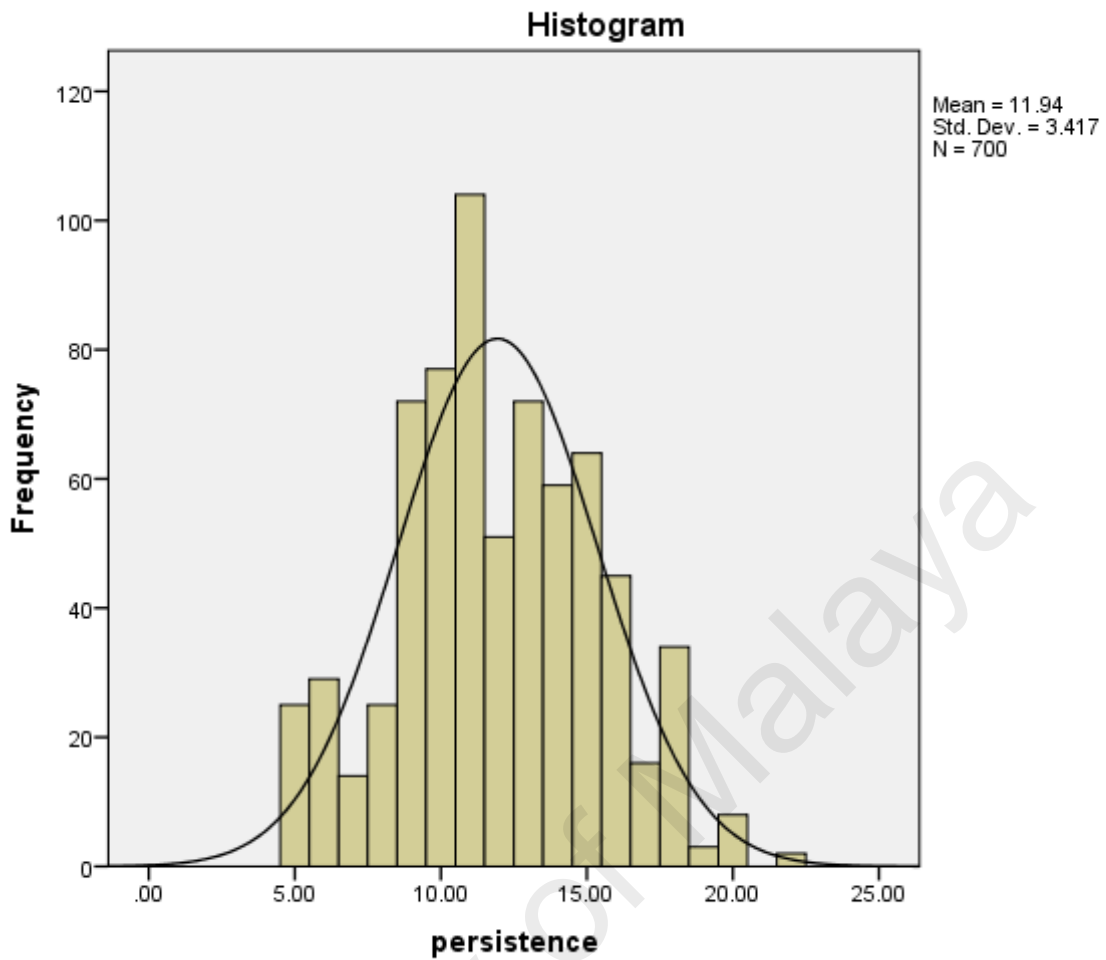
Figure 5.3 Histogram of sub-scale 3 persistence scores

The histogram for sub-scale 3 persistence scores with a normal curve superimposed was generated to check on the normality of the sub-scale 3 score distribution. Figure 5.3 shows the histogram of the sub-scale 3 score for the 700 medical students in this study. The distribution curve shows an almost normal distribution as suggested by the mean (11.94) and median (12.0) obtained through descriptive statistics, which differs very minimally. The score mode has a mid-point of 11.0 Besides, the distribution curve has a skewness of – 0.08. These statistics suggest a near normal distribution for the sub-scale 3 persistence score.
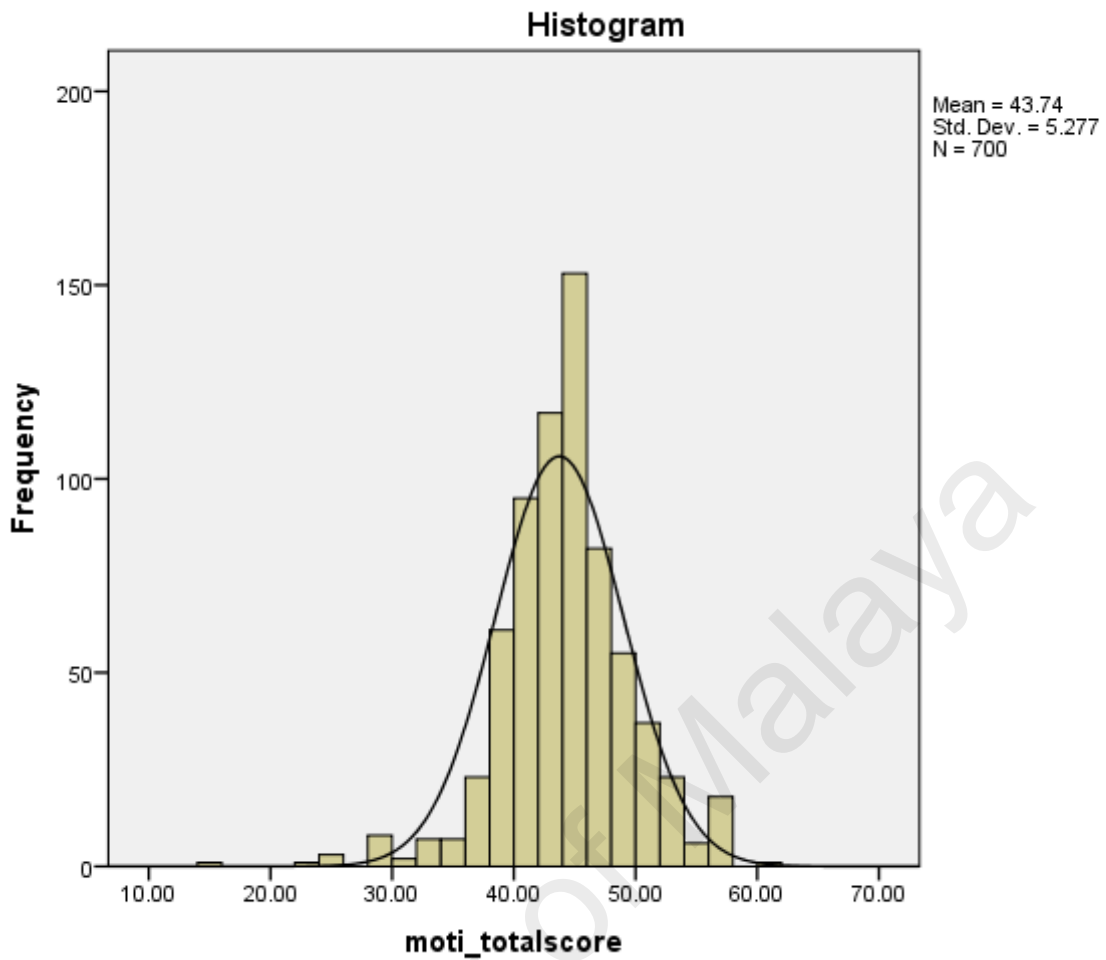
Figure 5.4 Histogram of strength of motivation scores

The histogram for strength of motivation scores with a normal curve superimposed was generated to check on the normality of the strength of motivation score distribution. Figure 5.4 shows the histogram of the strength of motivation score for the 700 medical students in this study. The distribution curve shows an almost normal distribution as suggested by the mean (43.74) and median (44.0) obtained through descriptive statistics, which differs very minimally. The score mode has a mid-point of 45.0 Besides, the distribution curve has a skewness of − 0.404 These statistics suggest a near normal distribution for the strength of motivation score.
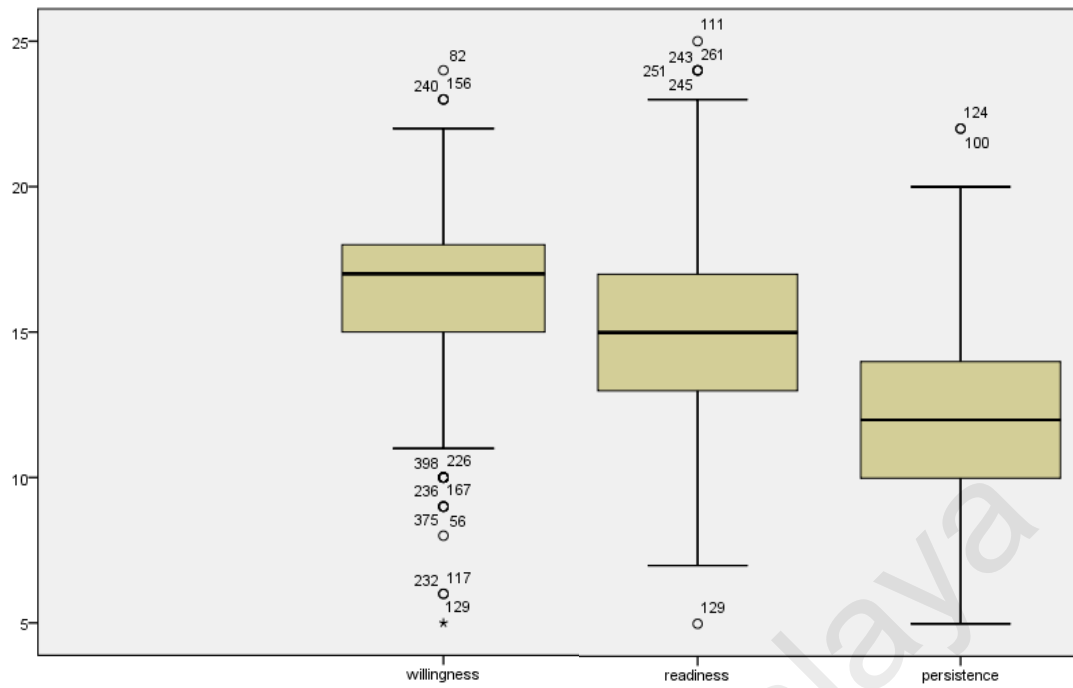
Figure 5.5 Boxplots of the sub-scales for Willingness to sacrifice, Readiness to start and Persistence

Figure 5.5 showed the boxplot of sub-scale 1 willingness to sacrifice score, sub-scale 2 readiness to start and sub-scale 3 persistence for the 700 respondents in this study, showing that the data is near normal distribution.
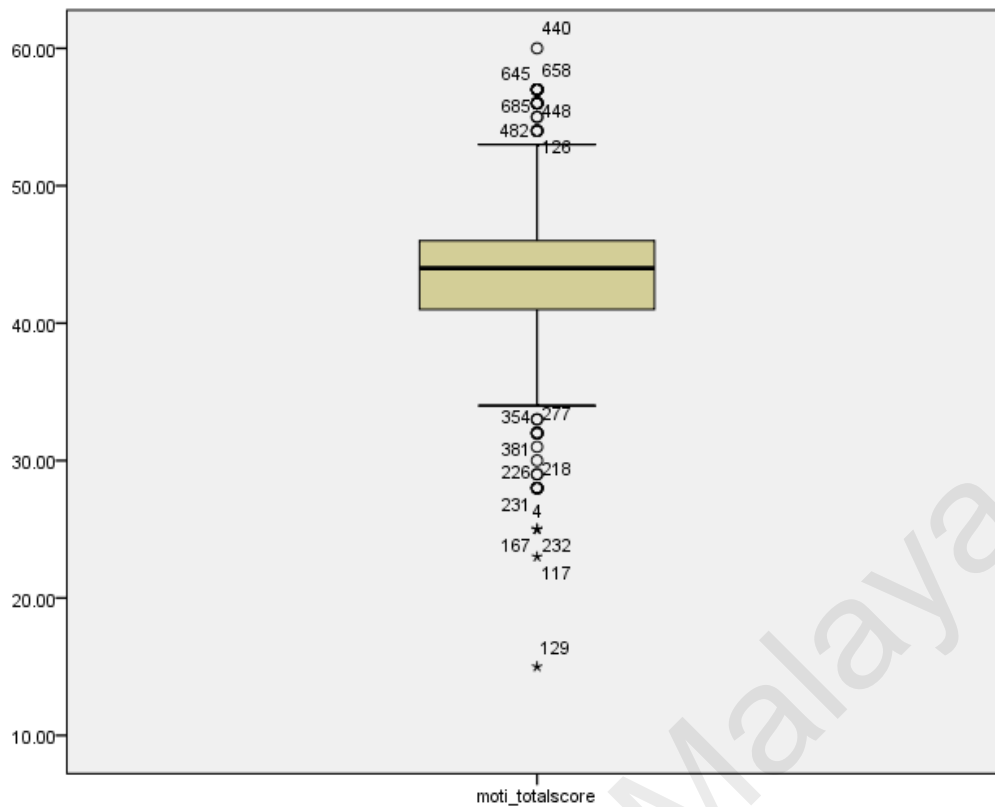
Figure 5.6 Boxplot of total strength of motivation scores

Figure 5.6 is the boxplot of the sub-scale 3 score for the 700 respondents in this study, showing that the data is near normal distribution.

Normality of the above mentioned data was further checked and confirmed by producing the boxplots of the sub-scale 1 willingness to sacrifice score, sub-scale 2 readiness to start and sub-scale 3 persistence and the total strength of motivation scores.

As shown in Table 5.2, a minimum score of 5, meant that there were respondents who were not willing to sacrifice for their medical studies, ready to start a medical programme and / or persistent to continue the medical programme in the face of difficulties. On the other hand, there also were respondents who were willing to sacrifice for their medical studies, ready to start a medical programme and persistent

to continue the medical programme in the face of difficulties, as shown by the sum of the 5 questions for each sub-scale between 22 and 25. There could be three possible explanations for these scores.

Firstly, there might be some medical students who enrol into medical school with various motivations, which may be intrinsic or extrinsic (Kutner & Brogan, 1980; Price et al., 1994). Such external pressures are parental pressures and receiving scholarships (R. A. Kusurkar et al., 2013b). Such students might give the lowest score in the subscales.

Secondly, there might be some medical students who had been offered scholarships to study medicine at that university. Since Medicine is regarded as a noble profession (Sethuraman, 2006) and the fee being expensive (Walsh, 2014), they take the opportunity to study medicine to become physicians even if it is not their ambition. According to a study in England, medical students would have preferred if there were better career advice and more flexible work opportunities in the medical career (Drinkwater, Tully, & Dornan, 2008). According to Deci and Ryan (1999), being offered scholarships are considered as extrinsic motivation (E. L. Deci et al., 1999; R. A. Kusurkar et al., 2013b). External pressures like offering scholarships can become internalized and integrated. This forms the extrinsic motivation that is promoted by the three psychosocial needs. In this situation, relatedness and competence are important for internalisation, whereas autonomy is required for integration (R. M. Ryan & E. L. Deci, 2000b).

Thirdly, where the higher scores were concern, the respondents might have scored a high score because they believed that they should have the spirit of willing to sacrifice for their medical studies, ready to start a medical programme and persistent

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to continue the medical programme in the face of difficulties. This was possible because it was a matter of how these respondents interpreted things and how they contributed to their thought and behaviour (Bernard Weiner, 1985). According to Weiner (1985), intrapersonal characteristics apply to a student's personality and behavioural traits, which refer to what a student does about the consequences of a particular behaviour. Highly motivated students welcome rather than avoid tasks related to success, because they believe that success is due to their great ability and effort. Any fault, such as bad fortune or poor inspection, is thought to cause failure. Consequently, self-esteem is not impaired by loss, but success creates pride and trust. However, low-motivated students avoid successful jobs because their doubt their capacity and assume that success is uncontrolled by related factors.

5.3 Category of strength of motivation among medical students in a private university in the current academic year 2019/2020

With reference to the first research question, how is the strength of motivation among undergraduate medical students, the results of this section are reported according to the categories of strength of motivation among all respondents.

Table 5.3 Most common category of strength of motivation among respondents

(n=700)

	Mode
Academic year	Year 3
Category of strength of motivation	Strong

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Table 5.3 shows most respondents have a strong level of motivation and were studying in Year 3.

Table 5.4 Frequency of level of motivation among respondents (n=700)

Category of strength of motivation	Frequency, n	Percentage, %
Amotivated	1	0.1
Weak	4	0.6
Moderate	196	28.0
Strong	499	71.3
Total	700	100

Note:
Category of strength of motivation (Maximum score is 75)
Strong is defined as having a score of 50 to 75
Moderate is defined as having a score of 26 to 49
Weak is defined as having a score of 16 to 25

In Table 5.4, strength of motivation is referred to the total score as opposed the separate scores of the sub-scales seen in Table 5.2. This table shows that 28% of the respondents are moderately motivated and 71.3% of the respondents are strongly motivated.

Table 5.5 Frequency of the level of strength of motivation in the academic years (n=700)

| | | YEAR | | | | | Total |
| | | Year-1 | Year-2 | Year-3 | Year-4 | Year-5 | number of |
		n, (%)	n, (%)	n, (%)	n, (%)	n, (%)	respondents
Level of strength of motivation	Amotivated	0	0	0	0	1	1
	Weak	0	0	0	1	3	4
	Moderate	34 (26.3)	20 (18.9)	50 (29.9)	40 (27.2)	52 (34.5)	196
	Strong	95 (73.7)	86 (81.1)	117 (70.1)	106 (72.8)	95 (65.5)	499
	Total	129	106	167	147	151	700

Table 5.5 shows the frequency of level of strength of motivation in the different academic years. Students in Year 1, Year 2 and Year3 had moderate to strong motivation. There was one students in Year 4 who was weakly motivated and the rest had moderate to strong motivation. In year 5, there was 1 student who was amotivated, 4 who were weakly motivated and the rest had moderate to strong motivation.

There is a relative increase in percentage of moderately motivated students, that is, Year 1 (26.3%), Year 2 (18%), Year 3 (29.9%), Year 4 (27.2%) and Year 5 (34%). The percentage of moderately motivated students is noted to have dropped in Year 2 and later increased. The drop in the number of moderately motivated students in Year 2 showed a reciprocal increase in the students with strong motivation, that is, Year 2 (81.1%).

The percentage of students with strong motivation is rather constant from Year 1 (73.7%) to Year 4 (72.8%) with a drop in the percentage in Year 5 (62%). There are two possible reasons for this.

The first reason for this demonstrable change in motivation of medical students during the two extremes of academic years, Year 1 and Year 5, and motivational decline in Year 5 can be explained by the cognitive component of learning (Lucchetti et al., 2018), where the importance of motivational factors are minimised and competitiveness is enhanced, contributing to an increase in amotivation and forms of extrinsic motivation(R Kusurkar, Croiset, Custers, & Ten Cate ThJ, 2012).

The second reason could be related to the frame of mind towards learning medical students enter the programme with. Those students who enter the programme with high level of autonomous motivation, self- regulate learning well and achieve academic success. The level of autonomous motivation has been documented to have significant correlation with intention to continue the studies(D. T. Sobral, 2004).

The level of motivation among medical students have been known to increase with age, that is, from 18 years until the age of 24 years after which the level of motivation remains constant. In a similar study in the Netherlands, the level of strength of motivation varied with the academic year (R. Kusurkar et al., 2010).

The age of entry of medical students in this faculty was documented to be between 18 years to 20 years, which is the similar age of entry into medical schools worldwide. Age of entry into medical school is approximately 18 to 20 depending on the country they study in and if it is at graduate entry or undergraduate entry level (Baum & Axtell, 2005; Lambert, Goldacre, Davidson, & Parkhouse, 2001).

The documented age of the students in Year 5 in this study was approximately 24 years.

Students who entered medical school with strong motivation were noted to have strong motivation towards the end of their medical studies (M. G. Nieuwhof, O. ThJ ten Cate, P. Oosterveld, & M. B. Soethout, 2004).
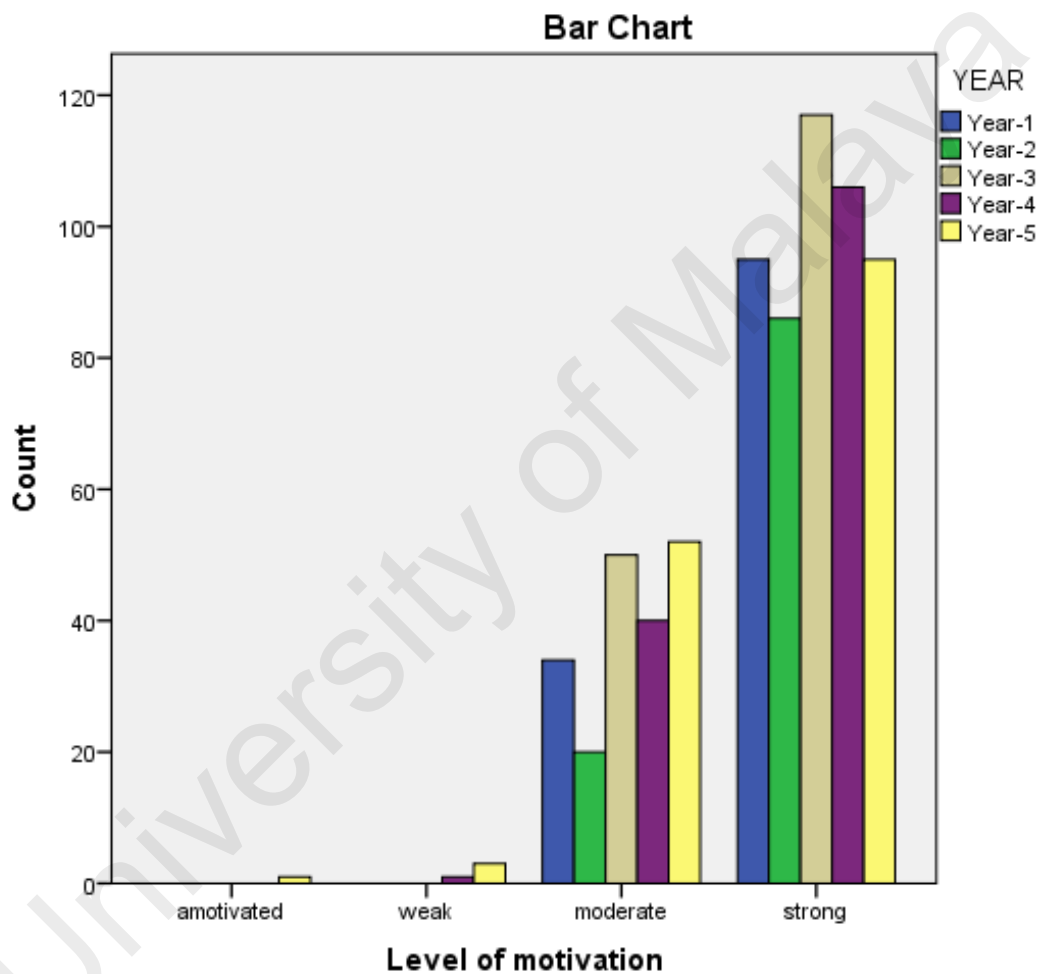
Figure 5.7: Bar chart of the level of motivation in the five academic years (n=700)

5.4   The relationship between level of strength of motivation and academic year, gender, educational background, academic performance and CGPA of entry qualification

With reference to the second research question, the results of this section were reported in five sub-sections. These were:

(i)   The relationship between level of strength of motivation and academic year

(ii)   The relationship between level of strength of motivation and gender

(iii)   The relationship between level of strength of motivation and educational background

(iv)   The relationship between level of strength of motivation and academic performance

(v)   The relationship between level of strength of motivation and CGPA of entry qualification

5.4.1 The relationship between level of strength of motivation and academic year

With reference to the second research question, Table 5.6 showed the relationship between level of strength of motivation and academic year of the respondents.

Table 5.6 The relationship between level of strength of motivation and academic year (Cross tabulation)

Cross tabulation And Chi Square		Academic year					Total	Pearson Chi-Square value
		Year-1	Year-2	Year-3	Year-4	Year-5		
Level of motivation	Amotivated	0	0	0	0	1	1	
	Weak	0	0	0	1	3	4	
	Moderate	34	20	50	40	52	196	0.065
	Strong	95	86	117	106	95	499	
Total		129	106	167	147	151	700	

Table 5.7 The relationship between level of strength of motivation and academic year
(Chi square)

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	20.106[a]	12	.065
Likelihood Ratio	19.998	12	.067
Linear-by-Linear Association	8.306	1	.004
N of Valid Cases	700		

Table 5.6 showed that the number of students with moderate strength of motivation increased progressively through the academic years. However, the frequency distribution of students who entered with a strong level of strength of motivation remained constant. In the highest academic year, the percentage of students with a strong level of strength of motivation reduced. However, these results do not show a significant relationship between academic year and level of motivation.

There is a disimilarity in the signifance of this study when compared to similar studies looking at relationship between level of strength of motivation and academic years. One such study showed that the strength of motivation in medical students increased with age, which meant that as the students progressed up through the academic years, the level of strength of motivation increased too. In a similar study in the

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Netherlands, the level of strength of motivation varied with the academic year (R. Kusurkar et al., 2010).

Probable reasons for the non-significant result could be that students entering medical school have strong motivation prior starting medical school; the sample in this study was not normally distributed as evidenced by the boxplots representation seen in Figure 5.1 and 5.2; the studies that showed significance in the relationship between level of strength of motivation and academic years was those studies conducted in the Western countries but this study is conducted in Malaysia(R. Kusurkar et al., 2010); mental health management strategies designed to reduce the pressures in academic studies experienced by medical students are not given much importance as in other Western and Eastern universities (Park et al., 2012); the study environment other universities may be very enticing to study compared to this university (Al-Hazimi et al., 2004); teaching methods may be very much advanced compared to those used in this university and the use of technology may be very advanced (Al-Hazimi et al., 2004).

Students entering medical school are known to be highly motivated (R. A. Kusurkar, T. J. Ten Cate, M. van Asperen, & G. Croiset, 2011). They are assumed to be goal oriented from the inception of their medical studies. As they progress through the academic years, their age increases, and motivation increases with age (R. Kusurkar et al., 2010).

5.4.2 The relationship between level of strength of motivation and gender

With reference to the second objective, Table 5.7 showed the relationship between level of strength of motivation and gender of the respondents.

Table 5.8 The relationship between level of strength of motivation and gender (Cross tabulation)

Cross tabulation And Chi Square		Gender		Total	Pearson Chi-Square
		Male	Female		
					value
Level of motivation	Amotivated	1	0	1	
	Weak	2	2	4	0.271
	Moderate	64	132	196	
	Strong	145	354	499	
Total		212	488	700	

Table 5.9 The relationship between level of strength of motivation and academic year (Chi square)

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.92[a]	3	0.27
Likelihood Ratio	3.94	3	0.27
Linear-by-Linear Association	2.04	1	0.15
N of Valid Cases	700		

Table 5.8 shows that the number of female medical students with moderate and strong strength of motivation is higher compared to the male medical students. However, these results do not show a significant relationship between level of strength of motivation and gender.

There is a disimilarity in the signifance of this study when compared to similar studies looking at relationship between level of strength of motivation and gender.

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Studies have shown that the female gender had a higher strength of motivation as compared to males. This could be accounted for by the higher level of maturity in the female compared to the males of the same age (R. Kusurkar et al., 2010). They are also generally more people-oriented causing them to choose medicine as a career and speciality (P. Vaglum, F. Wiers-Fenssen, & Ø. Ekeberg, 1999). Male medical students were showed to have lower extrinsic motivation, but higher amotivation compared to females

(Kunanitthaworn et al., 2018). This study demonstrated that females showed higher controlled motivation (R. Kusurkar, O. Ten Cate, et al., 2013)

The motivating reasons for females report helping people (Wierenga et al., 2003) and having a career as the most important reasons for motivating them to study medicine (Robbins et al., 1983; P Vaglum et al., 1999). On the other hand, males medical students were motivated to study medicine because of their interest in science (I. McManus, G. Livingston, & C. Katona, 2006b; Robbins et al., 1983; P. Vaglum et al., 1999) and being indispensable (McManus et al., 2006b) and having a career (Robbins et al., 1983). Therefore, these studies prove that there were some differences and similarities among the two genders in the motivation for pursuing a career in Medicine.

Other probable reasons as to why female medical students are more motivated is because they are more goal oriented (Loucks et al., 1979a) and have higher autonomous and intrinsic motivation (Cortright, Lujan, Blumberg, Cox, & DiCarlo, 2013). However, this result of this study did not show any relationship between levels of strength of motivation and gender. Therefore, this study did not prove the conceptual framework in this study which states that the self-determination theory,

expectancy theory and goal orientation theory have a role in gender influencing motivation.
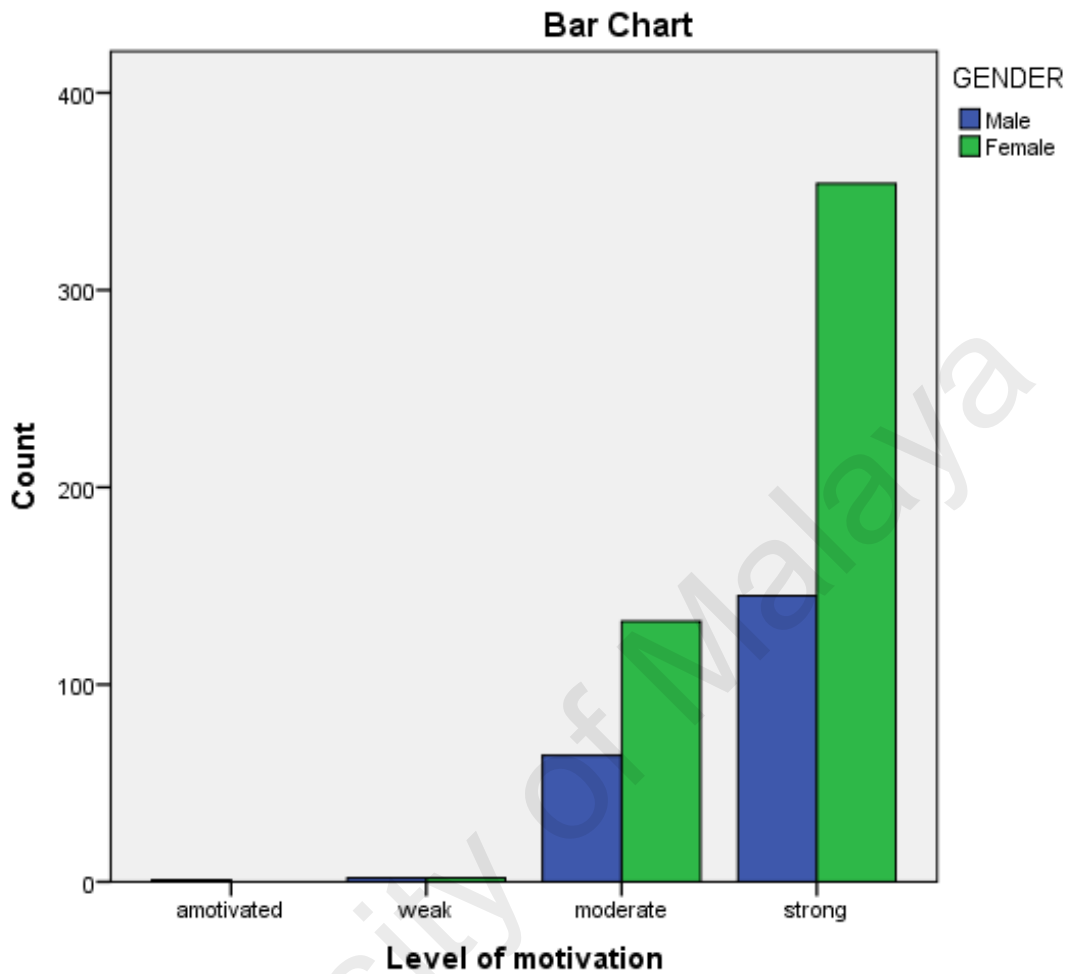
Figure 5.8 Bar chart of the level of motivation in the two genders (n=700)

5.4.3 The relationship between level of strength of motivation and educational background

With reference to the second objective, table 5.8 showed the relationship between level of strength of motivation and educational background of the respondents.

Table 5.10 Relationship between level of strength of motivation and educational background (Cross tabulation)

Cross tabulation And Chi Square		Educational background			Pearson Chi-Square value
		STPM / A-levels / Matriculation / Foundation (Group 1)	Other equivalent foreign examinations (Group 2)	Total	
Level of motivation	Amotivated	1	0	1	
	Weak	4	0	4	0.299
	Moderate	180	16	196	
	Strong	435	64	499	
Total		620	80	700	

Table 5.11 Relationship between level of strength of motivation and educational background (Chi Square)

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.67[a]	3	0.29
Likelihood Ratio	4.41	3	0.22
Linear-by-Linear Association	3.62	1	0.06
N of Valid Cases	700		

Table 5.8 shows two groups of educational backgrounds. Group 1 consists of examination Malaysian medical students appeared for. They are STPM, A-levels, Matriculation and Foundation in Science examinations. Group 2 consist of examination that International medical students appeared for in their home country or international schools in Malaysia.

Table 5.12 The relationship between level of strength of motivation and the individual educational background (Cross tabulation)

Cross tabulation			Educational background				Total
		STPM	A-levels	Matriculation	Foundation	Other equivalent foreign examination	
Level of motivation	Amotivated	0	0	0	1	0	1
	Weak	0	1	1	2	0	4
	Moderate	21	32	42	85	16	196
	Strong	30	57	70	278	64	499
Total		51	90	113	366	80	700
Chi square		0.172	0.296	0.106	0.836	0.807	
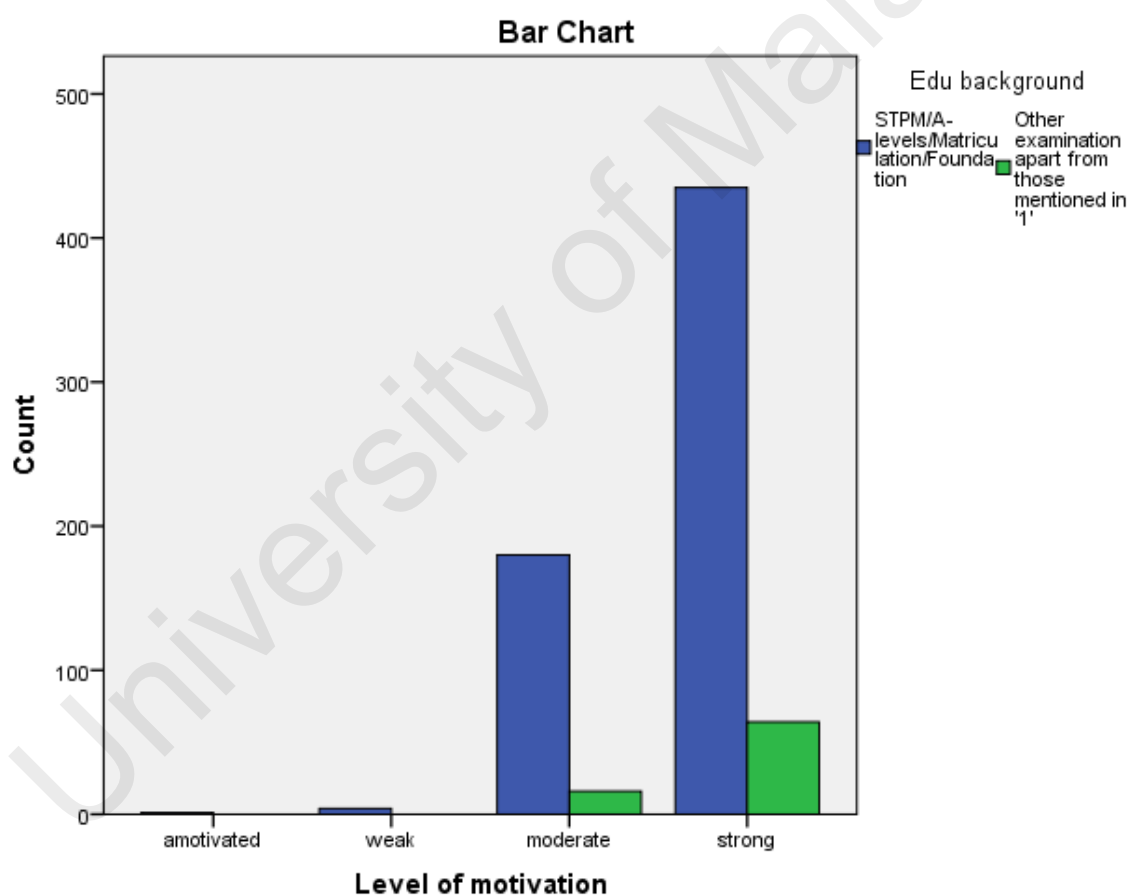
Figure 5.9 Bar chart of the level of motivation in the educational background

(n=700)

Table 5.8 shows that medical students in both groups had a similar percentage of moderately motivated and strongly motivational strength. Table 5.9 shows the

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distribution of medical students with the STPM, A-levels, Matriculation, Foundation in Science and other foreign examination. However, these results do not show a significant relationship between level of strength of motivation and educational background.

Table 5.9 shows 366 (52.2%) of the medical students did their Foundation in Science compared to 51 (7.2%) who did the STPM examinations. Although there were not an equal number of medical students who sat for all the examinations, that did not have any significant relationship to the level of strength of motivation.

Studies have shown that graduate entry level medical students are highly motivated compared to those who enter at non-graduate entry level (R. Kusurkar et al., 2010)

A study conducted in Finland obtained the opposite results (Kronqvist, Mäkinen, Ranne, Kääpä, & Vainio, 2007a), where the non-graduate entry level were more motivated as compared to the graduate entry level medical students. However, this same study documented graduate entry level medical students to be more committed to their studies and have strong work life orientation, (Kronqvist et al., 2007a). A study in the New Zealand showed graduate entry level medical students have higher sense of co-cooperativeness, are goal oriented and motivated(Wilkinson, Wells, & Bushnell, 2004). The inference that can be made from these studies is that educational background does not seem to affect the level of strength of motivation of medical students.

Since the result of this study did not show any relationship between levels of strength of motivation and educational background, we are unable to prove that self-determination theory, expectancy theory and goal orientation theory have a role in educational background influencing motivation.

5.4.4 The relationship between level of motivation and academic performance

With reference to the second objective, Table 5.10 showed the relationship between level of motivation and academic performance of the respondents.

Table 5.13 Relationship between level of strength of motivation and academic performance (Cross tabulation)

		Low achiever n, (%)	Moderate achiever n, (%)	High achiever n, (%)	Total n, (%)	Pearson Chi-Square value
Level of motivation	Amotivated	0	1	0	1	
	Weak	0	4	0	4	0.118
	Moderate	43	113	40	196 (28)	
	Strong	84	271	144	499 (71.2)	
Total		127 (26.29)	389 (55.58)	184	700	

Table 5.14 Relationship between level of strength of motivation and academic performance (Chi Square)

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.153[a]	6	0.12
Likelihood Ratio	12.121	6	0.06
Linear-by-Linear Association	5.630	1	0.02
N of Valid Cases	700		
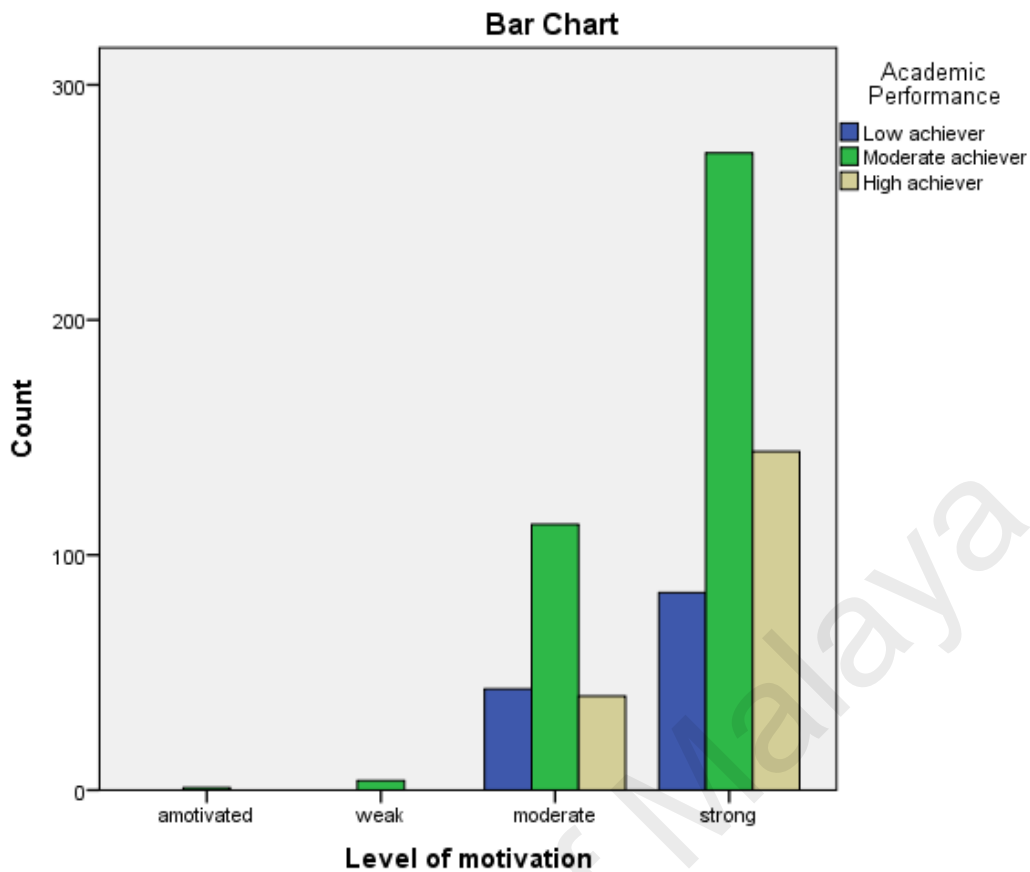
Figure 5.10 Bar chart of the level of motivation in the various levels of academic
performance (n=700)

Table 5.13 showed that 499 (71.2%) of the medical students had a strong level of
motivation and 196 (28%) had a moderate level of motivation. Despite having a
higher number of strongly motivated medical students, academic performance was
only moderate. 389 (55.58%) of the medical students were moderate achievers and
only 127 (26.29%) were high achievers. However, there was no significant
relationship between the level of strength of motivation and academic performance.

Studies have shown that academic performance is associated with motivation. A
study conducted in Saudi Arabia showed that intrinsic motivation drives academic
performance (Hamza M. Abdulghani et al., 2014). An Iranian study conducted in the
School of Medicine of Isfahan University of Medical Sciences showed that higher

motivation scores were accompanied by higher average marks at pre-clinical and clinical years (Yousefy, Ghassemi, & Firouznia, 2012).

Students with high intrinsic motivation and low control motivation profile were associated with good academic performance as noted in the GPA, high deep strategy and low surface strategy (R. Kusurkar, O. Ten Cate, M. Van Asperen, & G. Croiset, 2011).

However, there were other factors that influenced academic success. Among the many factors that could affect academic success are attending lectures, early revision, prioritising learning needs, deep learning, learning in small groups, mind mapping, learning in skills labs, and learning with patients, time management and family support. Intrinsic motivation drives academic performance (Hamza M. Abdulghani et al., 2014; Hamza M Abdulghani et al., 2012; Amini et al., 2008).

According to a study conducted in 2003 by Buddeberg-Fischer, gender, personality trait and career motivation has an effect on academic motivation.

A study conducted in the Czech Republic by Hoschl & Kozeny, to identify variables that had predictive validity on academic success found that motivation to study medicine was predictive of the GPA of the third year medical students(Hoschl & Kozeny, 1997). According to a study in the Netherlands on the effectiveness of selection in medical school admission, it showed the selection process to be effective but it had no significant correlation on academic success (Hulsman et al., 2007).

5.4.5 The relationship between level of motivation and CGPA of entry requirement

With reference to the second objective, Table 5.11 shows the relationship between level of motivation and CGPA of entry requirement of the respondents.

Table 5.15 Relationship between level of strength of motivation and CGPA of entry requirement (Spearman's rho correlations test)

			Level of motivation	CGPA
Spearman's rho	Level of motivation	Correlation Coefficient	1.000	-.030
		Sig. (2-tailed)	.	.436
		N	700	700
	CGPA	Correlation Coefficient	-.030	1.000
		Sig. (2-tailed)	.436	.
		N	700	700

Table 5.16 Cross tabulation between the level of motivation and the CGPA of entry requirement.

Motivation Levels	CGPA 3.0 to 3.2	CGPA 3.3 to 3.6	CGPA 3.7 to 4.0	Total
Amotivated	0	0	1	1
Weak	2	0	2	4
Moderate	33	78	85	196
Strong	109	172	218	499
	144	250	306	700

The results of Table 5.15 show that the correlational coefficient is – 0.30, which is a negative relationship between the level of strength of motivation and CGPA of entry requirement. The significance level of 0.436, indicates that the relationship between the level of strength of motivation and CGPA of entry requirement, is insignificant.

Table 5.16 shows the distribution of the CGPAs against the level of strength of motivation. Students will a CGAP of 3.0 to 4.0 showed a range of motivation from being moderately motivated to strongly motivated. Those with a poor CGPA were noted to have moderate and strong motivation. This was the same with those students who achieved a high CGPA score too.

A cumulative grade point average (CGPA) is related to extrinsic motivation. Students with good high school grades on entry into medical school were highly motivated to study medicine.

Findings from a study conducted by Walker, Greene and Mansell in 2006 on Identification with academics, intrinsic/ extrinsic motivation, and self-efficacy as predictors of cognitive engagement, suggested that a good high school GPA was not necessarily the result of high intrinsic motivation. There is no evidence indicating high grades in high school science subjects predict academic sucesss (Kunanitthaworn et al., 2018; Walker, Greene, & Mansell, 2006) As motivations varies throughout the academic years, students who enter medical school with high grades in high school, may not guarantee a good academic performance in medical school because extrinsic motivation may subside when students are in medical school. This is especially true in the final years of medical school as other types of motivation is required to persevere till completion of the programme (Kunanitthaworn et al., 2018)

5.5 Comparing the strength of motivation among medical students in different academic years, gender groups, different educational backgrounds and CGPA of entry qualification

With reference to the third research question, the results of this section were reported in 4 sub-sections. These were to confirm if there was any significant difference in the strength of motivation among the different:

    (i)   Academic year

    (ii)   CGPA of entry qualification groups

    (iii)   Genders

    (iv)   Educational background

The test used for academic year and CGPA of entry qualification was ANOVA and for gender and educational background was independent t test

Justification of using ANOVA

Although the data is skewed, the large sample size compensates making the difference between the mean, and median very negligible. This allows the parametric analysis to be done. The large sample size also makes using mean and standard deviation more meaningful.

5.5.1 Comparison of means of strength of motivation among the academic years, Year 1 to Year 5

Table 5.17 Comparison of means of strength of motivation among the academic years (ANOVA)

Total motivational score

Academic years	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1314.356	4	328.589	12.582	.000
Within Groups	18150.324	695	26.116		
Total	19464.680	699			

Table 5.17 shows a comparison of mean of the strength of motivation among the

academic years.

Table 5.18 Comparison of the mean score of the strength of motivation among the medical students from 5 academic year (ANOVA – Post Hoc test - Scheffe)

(I) YEAR	(J) YEAR	Mean Difference (I-J)	Std. Error	Sig.
Year-1	Year-2	3.5978[*]	.66994	.000
	Year-3	3.4665[*]	.59902	.000
	Year-4	2.3506[*]	.61653	.006
	Year-5	3.7696[*]	.61270	.000
Year 2	Year-3	-.1313	.63463	1.000
	Year-4	-1.2473	.65118	.453
	Year-5	.1717	.64755	.999
Year-3	Year-4	-1.1159	.57796	.445
	Year-5	.3031	.57387	.991
Year-4	Year-5	1.42	0.59	.220

Table 5.18 above shows the following.

i.   The mean strength of motivation score in the Year 1 respondents was generally higher by 2 to 3 points compared to the mean strength of motivation score in respondents in Year 2 to Year 5. Since the p-value is significant, it is likely that all 4 years differ from one another.

ii. The mean strength of motivation score in respondents in Year 2 was generally lower by 0.1 to 1.2 points compared to the mean strength of motivation score in respondents in Year 3 and Year 4 and is 0.17 points higher in Year 5. However, there is no significant difference between Year 2 with Year 3, Year 4 and Year 5.

iii. The mean strength of motivation score in respondents in Year 3 is generally lower by 1.1 points compared to the mean strength of motivation score in respondents in Year 4 and 0.3 points higher in Year 5. However, there is no significant difference between Year 3 with Year 4 and Year 5.

iv. The mean strength of motivation score in respondents in Year 4 is generally higher by 1.4 points compared to the mean strength of motivation score in respondents in Year 5. However, there is no significant difference between Year 4 with Year 5

Table 5.17 above shows that there is a significance difference in the means of the level of strength of motivation among the academic years. Table 5.18 shows the post hoc test, Scheffe, which shows where the difference lies. The significant difference was seen in the Year 1 compared to the Year 2, Year3, Year 4 and Year 5. There are three probable reasons for this.

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Firstly, students entering medical school are known to be highly motivated. They are assumed to be goal oriented from the inception of their medical studies.

Secondly, strength of motivation is ever changing as it varies with age and maturity. Students' motivation is known to increase with age, which means that motivation increases as students' progress up the academic years (RA Kusurkar, O Ten Cate, et al., 2011).

Secondly, there was a shift in the motivational structure from achievement to self-gratification needs as students progressed up through the academic years. This was seen a study conducted in 1980, where students demonstrated a shift in type of motivation from year 1 to 3 (Burstein et al., 1980) In 1987, Powell et al reported that first year medical students were more extrinsically motivated by money, prestige and success compared to final year students who were more intrinsically motivated, being altruistically inclined (Powell et al., 1987)

Therefore, the results obtained by this test are similar to the results found in the studies mentioned above.

The conceptual framework of this study stated that self-determination to pursue medical education was present at the entry into the programme and throughout the 5 years. The self-determination theory was a continuum of motivation ranging from amotivation to intrinsic motivation. The subscales in the SMMS-R questionnaire were related to intrinsic motivation which was built on the inherent needs for "autonomy", "competence" and "relatedness". Individuals who were intrinsically motivated had a basic fulfilment of the inherent needed and behaved in a success directed manner, expected to achieve academic success. The expectation of achieving

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academic success was influenced by motivational belief which in turn was influenced by social influences that are experienced and interpreted by the cognitive process of the students. As intrinsically motivated students are success driven, they are goal oriented from the start of medical school since intrinsic motivation was high from the start of their medical education.

5.5.2 Comparison of means of strength of motivation among 3 groups based on CGPA of entry qualification

Table 5.19 shows the CGPA of entry qualification results of the respondents divided into 3 CGPA groups according to their CGPA level.

Table 5.19 The number of respondents for each CGPA group

		CGPA level	Frequency, n
CGPA Group	Group 1	3.0 – 3.2	144
	Group 2	3.3 – 3.6	250
	Group 3	3.7 – 4.0	306

Table 5.20 Comparison of means of strength of motivation among the 3 CGPA
groups (ANOVA)

| | Total motivational score | | | | |
CGPA groups	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	19.42	2	9.71	0.35	0.71
Within Groups	19445.26	697	27.90		
Total	19464.68	699			

Table 5.19 shows Group 1, which is CGPA of entry requirement of 3.0 to 3.2,
consists of 144 medical students, Group 2, which is CGPA of entry requirement of
3.3 to 3.6, consist of 250 medical students and Group 3, which is CGPA of entry
requirement of 3.7 to 4.0, consists of 306 medical students. 43.7% of the medical
students obtained a good CGPA (Group 1) in their high school examination, while
35.7% obtained an average CGPA (Group2) and only 20.6% obtained a weak CGPA.
This range of CGPA was within the entry requirements stipulated by the Malaysian
Medical Council. Therefore, the students who were enrolled in this medical school
are those who qualified with at least the minimum CGPA and other entry
requirements.

Table 5.20 shows there is no significant difference in the means level of strength of
motivation among the CGPA groups.

Since there is no significant difference in the mean scores of strength of motivation
among the CGPA groups,

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Firstly, medical students are considered highly motivated from the start due to the effort they have to put in to enter medical school (R. A. Kusurkar et al., 2011). Secondly, according to a study conducted in 2011 by Turner and Nicholson, high achievers in high school, have a higher chance of entering medical school via a selection process (Turner & Nicholson, 2011). The tedious selection process itself stimulates students' motivation (R. A. Kusurkar et al., 2011). Selected medical students reported a higher level of motivation (Hulsman et al., 2007; Wouters, Croiset, Galindo-Garre, & Kusurkar, 2016).

Thirdly, students who meet the entry requirements of medical education are selected for medical school. They may have any of the scores stated in the Table 5.15. Therefore, even if their CGPA score of entry requirement is below average or average they still are able to enter medical school. As they progress through the academic years, their age increases. Motivation is known to increase with age (R. Kusurkar et al., 2010).

Lastly, personality traits of students such as persistence, self-directedness and self-transcendence that are purposed to enhance the learning process are associated with intrinsic academic motivation in medical students (Tanaka, Mizuno, Fukuda, Tajima, & Watanabe, 2009).Therefore, as long as the entry requirements for medical school are met, students with a CGPA of the high school examination between 3.0 and 4.0 will be able to enter medical school. Thereafter, increasing age will increase their motivation.

These results prove that intrinsic motivation makes an individual to behave in a certain manner to pursue an activity out of personal interest or enjoyment. The

behaviour of the intrinsically motivated person would be in the direction of success. The conceptual theory of this study is proven to be true.

The conceptual framework of this study states that self determination to pursue medical education is present at the entry into the programme and throughout the five years. The self-determination theory is a continuum of motivation ranging from amotivation to intrinsic motivation. The subscales in the SMMS-R questionnaire are related to intrinsic motivation which is built on the inherent needs for "autonomy", "competence" and "relatedness". Individuals who are intrinsically motivated have a basic fulfilment of the inherent needs and behave in a success directed manner, expecting to achieve academic success. The expectation of achieving academic success is influenced by motivational belief which in turn is influenced by social influences that are experienced and interpreted by the cognitive process of the students. As intrinsically motivated students are success driven, they are goal oriented from the start of medical school since intrinsic motivation is high from the start of their medical education.

5.5.3 Comparison of means of strength of motivation among the gender

With reference to the third objective, Table 5.17 shows the number of respondents in both genders and their respective mean motivational score.

Table 5.21 Number of respondents and mean strength of motivation score in the different genders

Group statistics

GENDER	N	Mean motivational score	Std. Deviation
Male	212	44.39	6.07
Female	488	43.45	4.87

Table 5.22 The variance of strength of motivation score between the male and females (independent sample t-test)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Total motivation score	Equal variances assumed	6.467	.011	2.12	698	.030	.94	0.43	0.09	1.79
	Equal variances not assumed			1.99	334.541	0.047	0.94	0.47	.0139	1.87

Table 5.21 shows that the mean motivational score of the males were slightly higher, the difference being 0.94.

The Levene's test in Table 5.22 examines the null hypothesis that the variances, that is, the level of strength of motivation, are equal on the grouping variable (male and female). The result show that the null hypothesis can be rejected since the p value is <0.05.

In the t-test for Equality of Means, we are testing the null hypothesis that there is no difference between the mean level of strength of motivation of the male and female

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genders. With a p-value of 0.03, we can reject the null hypothesis and say there is a difference between the mean level of strength of motivation of the male and female genders. Using the t-test for independent samples, it was found that there is a significant difference in the mean level of strength of motivational score between the males and females (t=1.99, df=334.5, p<0.05) as seen in Table 5.19.

It appears that the males had a slightly higher mean score for level of strength of motivation compared to the females.

One study on the strength of motivation between males and females, reported no difference. (Hulsman et al. 2007). The reasons for this may be that the sample size was small and the response rate was only 76.8% which is similar to this current study. This response rate may not have been representative of the whole student population. Since there was a very negligible difference in the mean motivation scores between the female and male gender, it would have been possible to pass of as no difference. However, there may be a few possible reasons for this.

Firstly, the data is not normally distributed as there are outliers, the sample size was small and the response rate was only 76.8%. This response rate may not have been representative of the whole student population.

Secondly, the males in this study may be older than the females and therefore may be more matured compared to the females.

Thirdly, the quality of motivation may have been different between both the genders. This aspect was not investigated in this current study. Intrinsic motivation makes an individual, male or female, to behave in a certain manner to pursue an activity out of

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personal interest or enjoyment. The behaviour of the intrinsically motivated person would be in the direction of success. The conceptual theory of this study is proven to be true. Intrinsically motivated students are success driven and goal oriented.

However, to the contrary, most studies that investigated quality of motivation between the male and female gender, established the fact that females appear to display lower levels of external control, but higher levels of internal control than males (Cooper, Burger, & Good, 1981). The females are more intrinsically motivated and less extrinsically motivated (Vallerand et al., 1992b). These findings have been replicated in different age group profiles (Vallerand & O'Connor, 1989; VandeWalle & Cummings, 1997). Therefore, these finding concord that female medical students perform better than male medical students and they are more likely to attain an honours degree (Ferguson et al., 2002; Yates, Smith, James, & Ferguson, 2009).

5.5.4 Comparison of means of strength of motivation among of the educational background

With reference to the third objective, Table 5.20 shows the number of respondents in both educational background grouping with their mean motivational score.

Table 5.23 Number of respondents and mean strength of motivation score in the different educational backgrounds

	Edu background	Frequency, n	Mean	Std. Deviation
Total motivational score	STPM/A-levels/Matriculation/Foundation	620	43.4839	5.28888
	Other equivalent foreign examinations	80	45.7250	4.76532

Table 5.23 shows two groups of educational backgrounds. Group 1 consists of examination Malaysian medical students appeared for. They are STPM, A-levels,

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Matriculation and Foundation in Science examinations. Group 2 consist of examination that International medical students appeared for in their home country or international schools in Malaysia.

Table 5.24 The difference between strength of motivation of the educational backgrounds (Independent Samples t-test)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Total motivation Score	Equal variances assumed	.779	.378	-3.606	698	.000	-2.24113	.62158	-3.46152	-1.02074
	Equal variances not assumed			-3.907	105.768	.000	-2.24113	.57356	-3.37829	-1.10396

Table 5.24 shows that the mean motivational score of students who sat for the other equivalent foreign examinations had a slightly higher mean score, the difference being 2.241

The Levene's test in Table 5.24 examines the null hypothesis that the variances, that is, the level of strength of motivation, are equal on the grouping variable (the 2 different educational backgrounds). The result show that the null hypothesis cannot be rejected since the p value is >0.05.

In the t-test for Equality of Means, we are testing the null hypothesis that there is no difference between the mean level of strength of motivation of both the educational backgrounds. With a p-value of <0.05, we can reject the null hypothesis and say there

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is a difference between the mean level of strength of motivation of the 2 educational backgrounds. Using the t-test for independent samples, it was found that there is a significant difference in the mean level of strength of motivational score between the educational backgrounds (t= -3.606, df=698.5,p<0.05) as seen in Table 5.20

It appears that students who sat for the other equivalent foreign examinations had a slightly higher mean score for level of strength of motivation compared to those who sat for the STPM, A-levels, Matriculation or Foundation in Science examinations. There are several possible reasons for this.

Firstly, majority of the students who appeared for the other equivalent foreign examinations, are from India, Thailand and Bangladesh. Family support for students from these countries is strong. Strong family support increases the motivation of these students. Motivation may vary from extrinsic motivation to intrinsic motivation. Strong family support equates to high intrinsic motivated.

On the contrary, students who appear for the other equivalent foreign examinations are younger that those srudents who appear for the STPM, A-levels, Matriculation or Foundation in Science examinations. This finding is documented in the university record and student files. Since these students are younger, as research has confirmed they would be less matured, and therefore less motivated compared to the older students who are those use appear for the STPM, A-levels, Matriculation or Foundation in Science.

Secondly, the learning process related to culture's influence on learning and memorisation versus understanding,

Thirdly, Learning styles vary from student to student and from time to time(Honigsfeld, 2002; Slater, Lujan, & DiCarlo, 2007; Zoghi et al., 2010).

The conceptual framework of this study states that individuals who are intrinsically motivated have a basic fulfilment of the inherent needs and behave in a success directed manner, expecting to achieve academic success and are goal oriented. So even though the students who appear for the equivalent foreign examinations are younger, having a basic fulfilment of the inherent needs by having strong family support and cultural influences on learning will promote intrinsic motivation. (Jaju, Kwak, & Zinkhan, 2002; Parashar, Hulke, & Pakhare, 2019; Premkumar et al., 2018)

CHAPTER 6: SUMMARY OF FINDINGS AND IMPLICATIONS

6.0 Introduction

This is the final chapter of this research project. In this chapter, we will discuss the implications of this research, its limitations and recommendations. It will begin with a summary of the findings, and then the implications of this research from various perspectives. The limitations of this research will be then explained in the subsequent sections. The chapter will provide recommendations and end with a conclusion.

6.1 Summary and implications

Participation rate

The participate rate for this research is 76.8% which is considered to be acceptable as the general participatory rate for research in medical education is generally approximately about 40 – 50% (R. Kusurkar, O. Ten Cate, et al., 2013).

Academic year

The highest participatory rate was in Year 3 which has the highest number of students enrolled in that academic year. The lowest participatory rate was in Year 2. Studies have shown that the attendance at class is declining as students choose not to attend classes as there are other means of retrieving information such as watching educational videos like YouTube and reviewing other educational websites and listening to associated podcasts (Farber, 2018).

Gender

The highest participatory rate is among females, the probable reasons could be that the enrolment ratio of male: female is approximately 40:60. The worldwide trend is similar where there has been a tremendous increase in the female admissions to higher educational institutions (Da, 2012; Yong, 2017). Another reason for the higher female participatory rate is that more females prefer to attend classes on a daily basis (Gupta & Saks, 2013).

Educational background

84.1% of the respondents were those who entered the medical programme with an STPM, A-levels, Foundation in Science or Matriculation results. The faculty records show that students who gave these results where Malaysians. Therefore, we can conclude that at least 84.1% of the respondents were Malaysians.

Students versus level of motivation

Results of this study show that the breakdown of students into the different levels of strength of motivation are similar to those in the western universities (Hamann et al., 2002).

General pattern of motivation among the medical students

Results on the motivation pattern of the medical students at this university showed that there were students who were willing to do what it takes to get through the medical programme and yet there were those who would not bite the bullet and continue in the face of adversity. Possible reasons were students were intrinsically motivated and externally motivated respectively. However, extrinsic motivation can be internalised and integrated to become intrinsic motivation by promoting and

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fulfilling the 3 basic psychological needs. Students can also help themselves by applying interpersonal characteristics to their personality and behaviour traits.

Motivation and academic years

Motivation is considered dynamic as it is known to vary with age and maturity. One aspect can be explained by maturity as compare to age by itself. Even though this study does not have a separate score on maturity, development science has reported that maturity of students can be modelled on the basis of age, gender and maturity pattern. Though both genders start with the same level of maturity, by the age of 18 years males start lagging behind females by 3 years and catch up by the age of 24 years. The maturity level of males and females plateau of this age but are only similar and not the same.

The other reason for the noted change in motivational levels from entry into medical school to the finish of the programme at this university is the change in the cognitive components. There is less importance paid to motivational factors and more importance paid to competitiveness. This contributes to amotivation and other forms of extrinsic motivation (R Kusurkar et al., 2012). Therefore, if more attention is paid to increasing the motivation in students, the intrinsic motivation of students can be enhanced, leading to better academic performance.

Self-regulation is another aspect that has to be looked into to improve academic performance. Planning, learning, assessment and adjustment are the 4 core components of self –regulation as stated by Kusurkar et all (2011, 2012, 2013)((R Kusurkar et al., 2012; Rashmi Kusurkar & ten Cate, 2013; R. Kusurkar, O. Ten Cate, et al., 2013; R. A. Kusurkar et al., 2011; C. B. White, 2007; Casey B White, Gruppen, & Fantone, 2014a). According to White and Gruppen, motivation influences

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planning. However, the results from this study show that motivation also influences learning and assessment. Thus, if medical students are to be self-regulated to be academically successful, medical educator should pay attention to the level of motivation of their students.

Motivation and gender

The female gender is generally considered to be more motivated but not in this study. Even though the results in this study do not show a significant relationship between level of strength of motivation and gender, the general fact about the female gender being more motivated should not be ignore. In order to increase the level of strength of motivation, medical educator should inculcate goal orientation in all medical students However, medical educators should firstly be trained to be motivators.

Motivation and educational background

This study did not show any relationship between level of strength of motivation and educational background. Therefore, medical educators should regard all students as equally motivated irrespective of their educational background.

Motivation and academic performance

This study shows that despite having a higher number of strongly motivated medical students, the academic performance was mostly of moderate level. Medical educators should coach students on prioritising learning needs, methods of learning, encourage the use of skills labs, attending all teaching sessions given by adjunct lecturers and faculty staff and time management. Students should also be encouraged to improve their personality traits.

Motivation and CGPA of entry requirement

The CGPA was not a predictor of motivation even though there were students who entered the medical programme with low CGPA results. An intrinsically motivated student can achieve academic success if nurtured well. Medical educators should therefore help students grow in their intrinsic motivation and internalise and integrate their extrinsic motivation to become intrinsically motivated. Medical educators should assist in fulfilling the 3 basic inherent psychological needs related to intrinsic motivation.

6.2 Strengths

A very essential strength in this study is the fact that it is based on theoretical foundations as seen being used in most studies pertaining to medical education. The same size of 700 is a strength. The study also explores how the results can be applied in practice to medical education at this university. The instrument used in this study i.e. Strength of Motivation for medical School (SMMS-R) has not been used widely in this country yet. Therefore, by using the questionnaire here it adds on to the literature in medical education. Using a valid and reliable instrument like the SMMS-R is another strength of this study.

6.3 Limitations

Most studies in medical education are a combination of qualitative and quantitative analysis. However, this study is based only on quantitative data. Students have a high level of motivation before entering the medical programme. Even though the sample size is fair large, it is not normally distributed. So the results may not be able to be generalised. Other factor which are expect to affect motivation such as teaching approaches, personality traits, socioeconomic status, study environment and mental

health aspects have not been studied. Therefore, there may be confounding factors that affect the results of this study that were not addressed in the study.

6.4   Future directions

Autonomy, competence and relatedness can be supported when medical educators allow students to participate in the mapping their learning needs, encourage active participation during teaching learning session, making students more responsible of their learning, encouraging feedback from students, giving learning choices, structural feedback guidance and emotional support, all with the intention of making students intrinsically motivated.

This study is an excellent starting point for conducting more extensive and in-depth research at this university and incorporating the factors that were not included as mentioned above.

An attempt has been made to integrate the principles of the self-determination theory, expectance theory and the goal orientation theory in this study. It is hoped that this study will pave the way forward for future studies in the area of medical education in Malaysia and abroad. These findings will help in developing educational strategies to stimulate self-determined and self-regulated motivation and improve the present medical curriculum by incorporating motivational elements which have been undervalued all these years.

Lastly, a guide could be put in place to assist medical educators to understand how self-determination theory can help understanding, teaching learning process in medical education.

6.5 Conclusion

In conclusion, the pattern of strength of motivation in this study saw 2 groups of students, those who were motivated to succeed academically and those who were not, though the numbers was negligible in the latter group. Students entered the medical programme with a high level of motivation which increased at a fairly constant rate. Though females were seen to have a higher motivation level it was not a significant finding. The results did not show any relationship between level of strength of motivation and educational background. The CGPA was not a predictor of motivation even though there were students who entered the medical programme with low CGPA results.

Motivation has been found to be relevant in medical education. Recommendations can be provided for stimulating intrinsic and autonomous motivation among medical students during their medical training and also during their future medical practice. Supporting the three psychological needs can help enhance intrinsic motivation, goal orientation and expectancy values among students for learning in large and small groups, assessment, and attaining the required competencies at the appropriate levels.

REFERENCES

Abdulghani, H. M., Al-Drees, A. A., Khalil, M. S., Ahmad, F., Ponnamperuma, G. G., & Amin, Z. (2014). What factors determine academic achievement in high achieving undergraduate medical students? A qualitative study. *Medical Teacher, 36*(sup1), S43-S48. doi:10.3109/0142159X.2014.886011

Abdulghani, H. M., Alrowais, N. A., Bin-Saad, N. S., Al-Subaie, N. M., Haji, A. M., & Alhaqwi, A. I. (2012). Sleep disorder among medical students: relationship to their academic performance. *J Medical teacher, 34*(sup1), S37-S41.

Al-Hazimi, A., Zaini, R., Al-Hyiani, A., Hassan, N., Gunaid, A., Ponnamperuma, G., . . . Davis, M. (2004). Educational environment in traditional and innovative medical schools: a study in four undergraduate medical schools. *J EDUCATION FOR HEALTH-., 17*(2), 192-203.

Al-Janabi, A., Al-Wahdani, B., Ammar, W., Arsenault, C., Asiedu, E. K., Etiebet, M. A., . . . Thapa, G. (2018). Bellagio Declaration on high-quality health systems: from a quality moment to a quality movement. *Lancet Glob Health, 6*(11), e1144-e1145. doi:10.1016/S2214-109X(18)30372-3

Alderman, M. K. (2013). *Motivation for achievement: Possibilities for teaching and learning*: Routledge.

Ames. (1992). Classrooms: Goals, structures, and student motivation. *Journal of educational Psychology, 84*(3), 261.

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *J Journal of educational psychology 80*(3), 260.

Amini, M., Dehghani, M., Kojuri, J., Mahbudi, A., Bazrafkan, L., Saber, M., . . . Ardekain, G. (2008). A qualitative study of factors associated with medical students' academic success. *J J Soc Sci, 4*(4), 347-351.

Artino, A. R., La Rochelle, J. S., & Durning, S. (2010). Second-year medical students' motivational beliefs, emotions, and achievement. *J Medical education 44*(12), 1203-1212.

Atkinson, W. (1957). Motivational determinants of risk-taking behavior. *J Psychological review 64*(6p1), 359.

Bandura, A. (1986). Social foundations of thought and action. *J Englewood Cliffs, NJ, 1986*.

Bandura, A. (1988). Self-regulation of motivation and action through goal systems. In *Cognitive perspectives on emotion and motivation* (pp. 37-61): Springer.

Bandura, A. (1989). Human agency in social cognitive theory. *J American psychologist, 44*(9), 1175.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist, 28*(2), 117-148.

Bandura, A. (1994). Self-efficacy. Encyclopedia of human behavior In (Vol. 4, pp. 71-81): New York: Academic Press.

Bandura, A. (1997). *Self-efficacy: The exercise of control*: Macmillan.

Bandura, A. (2011). A Social Cognitive perspective on Positive Psychology. *Revista de Psicología Social, 26*(1), 7-20. doi:10.1174/021347411794078444

Baum, K. D., & Axtell, S. J. T. K. j. o. m. (2005). Trends in North American medical education. *54*(1), 22-28.

Bell, J. (2005). Doing your research project . Berkshire. *Open University Press. Berridge, KC & Kringelbach, ML (2008) Affective neuroscience of pleasure: reward in humans and animals, Psychopharmacology, 199*, 457-480.

Black, A. E., & Deci, E. L. (2000). The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: A self-determination theory perspective. *Science education, 84*(6), 740-756.

Boggiano, A. K., Flink, C., Shields, A., Seelbach, A., & Barrett, M. (1993). Use of techniques promoting students' self-determination: Effects on students' analytic problem-solving skills. *Motivation and emotion, 17*(4), 319-336.

Bong, M. (2004). Academic motivation in self-efficacy, task value, achievement goal orientations, and attributional beliefs. *J The Journal of Educational Research 97*(6), 287-298.

Brophy, J. (2013). *Motivating students to learn*: Routledge.

Brydges, R., & Butler, D. (2012). A reflective analysis of medical education research on self-regulation in learning and practice. *J Medical education, 46*(1), 71-79.

Brydges, R., Manzone, J., Shanks, D., Hatala, R., Hamstra, S. J., Zendejas, B., & Cook, D. A. (2015). Self-regulated learning in simulation-based training: a systematic review and meta-analysis. *J Medical education 49*(4), 368-378.

Buddeberg-Fischer, B., Klaghofer, R., Abel, T., & Buddeberg, C. (2003). The influence of gender and personality traits on the career planning of Swiss medical students. *Swiss Medical Weekly, 133*(39-40), 535-540.

Burstein, A. G., Loucks, S., Kobos, J., Johnson, G., Talbert, R. L., & Stanton, B. (1980). A longitudinal study of personality characteristics of medical students. *J Medical education 55*(9), 786-787.

Cantillon, P., & Macdermott, M. (2008). Does responsibility drive learning? Lessons from intern rotations in general practice. *Med Teach, 30*(3), 254-259. doi:10.1080/01421590701798703

Collins, M. A., & Amabile, T. M. (1999). I5 motivation and creativity. *J Handbook of creativity 297*, 1051-1057.

Colquitt, J. A., & Simmering, M. J. (1998). Conscientiousness, goal orientation, and motivation to learn during the learning process: A longitudinal study. *Journal of applied psychology, 83*(4), 654.

Cook, D. A., & Artino, A. R., Jr. (2016). Motivation to learn: an overview of contemporary theories. *Med Educ, 50*(10), 997-1014. doi:10.1111/medu.13074

Cooper, H. M., Burger, J. M., & Good, T. L. (1981). Gender differences in the academic locus of control beliefs of young children. *Journal of Personality and Social Psychology, 40*(3), 562.

Corno, L. (2013). Volitional aspects of self-regulated learning. In *Self-regulated learning and academic achievement* (pp. 188-221): Routledge.

Cortright, R. N., Lujan, H. L., Blumberg, A. J., Cox, J. H., & DiCarlo, S. E. (2013). Higher levels of intrinsic motivation are related to higher levels of class performance for male but not female students. *J Advances in Physiology education, 37*(3), 227-232.

Council, M. M. (2013). *Minimum Qualification for Entry into a Medical Programme*. Malaysian Medical Council Retrieved from https://mmc.gov.my/wp-content/uploads/2019/11/MER.pdf

Creswell, J. W. (2014). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* SAGE publications.

Cui, Y. C., Wu, Q., Teh, S. W., Peli, A., Bu, G., Qiu, Y. S., . . . Kumar, S. S. (2018). Bone breaking infections - A focus on bacterial and mosquito-borne viral infections. *Microb Pathog, 122*, 130-136. doi:10.1016/j.micpath.2018.06.021

Da, W. C. (2012). The Changing Gender Disparity in Malaysian Higher Education: Where are the boys?

De Grave, W. S., Dolmans, D. H., & Van Der Vleuten, C. P. (2002). Student perspectives on critical incidents in the tutorial group. *Adv Health Sci Educ Theory Pract, 7*(3), 201-209.

Deci. (1985). Intrinsic motivation and self-determination in human behavior. *New York and London: Plenum.*

Deci, & Ryan, R. M. (2002). The paradox of achievement: The harder you push, the worse it gets. In *Improving academic achievement* (pp. 61-87): Elsevier.

Deci, E. (1985). Intrinsic motivation and self-determination in human behavior. *J New York London: Plenum.*

Deci, E. L., & Flaste, R. (1995). *Why we do what we do: Understanding self-motivation*: Penguins Books.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *J Psychological bulletin, 125*(6), 627-686.

Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry, 11*(4), 227-268.

Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian psychology/Psychologie canadienne, 49*(3), 182-185.

Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educational Psychologist, 26*(3-4), 325-346.

Diemers, A. D., Dolmans, D. H., Verwijnen, M. G., Heineman, E., & Scherpbier, A. J. (2008). Students' opinions about the effects of preclinical patient contacts on their learning. *Adv Health Sci Educ Theory Pract, 13*(5), 633-647. doi:10.1007/s10459-007-9070-6

Drinkwater, J., Tully, M. P., & Dornan, T. (2008). The effect of gender on medical students' aspirations: a qualitative study. *J Medical education 42*(4), 420-426.

Dweck, C. S. (1986). Motivational processes affecting learning. *American psychologist, 41*(10), 1040.

Dweck, C. S. (2000). *Self-theories: Their Role in Motivation, Personality, and Development*: Psychology Press.

Dweck, C. S. (2013). *Self-theories: Their role in motivation, personality, and development*: Psychology press.

Dweck, C. S., & Leggett, E. L. (1988b). A social-cognitive approach to motivation and personality. *J Psychological review, 95*(2), 256-273.

Eccles, J. S. (2005). Subjective task value and the Eccles et al. model of achievement-related choices. *Handbook of competence and motivation*, 105-121.

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *J Annual review of psychology 53*(1), 109-132.

Elliot, A. J., & Dweck, C. S. (2013). *Handbook of competence and motivation*: Guilford Publications.

Farber, O. N. (2018, 14th August 2018). Medical students are skipping class in droves — and making lectures increasingly obsolete. Retrieved from https://www.statnews.com/2018/08/14/medical-students-skipping-class/

Ferguson, E., James, D., & Madeley, L. (2002). Factors associated with success in medical school: systematic review of the literature. *Bmj, 324*(7343), 952-957.

Festinger, L. (1957). 1957 A Theory of Cognitive Dissonance. Stanford, Calif.: Stanford University Press.".

Field, J. (2005). *Social capital and lifelong learning*: Policy Press.

153

Fishbein, M., & Ajzen, I. (2011). *Predicting and changing behavior: The reasoned action approach*: Psychology press.

Ford, M. E. (1992). *Motivating humans: Goals, emotions, and personal agency beliefs*: Sage.

Franken, R. (1994). Human motivation . Pacific Grove, CA: Brooks. In: Cole Publishing Co.

Grapragasem, S., Krishnan, A., & Mansor, A. N. (2014). Current Trends in Malaysian Higher Education and the Effect on Education Policy and Practice: An Overview. *International Journal of Higher Education, 3*(1), 85-93.

Greenfield, T. (2002). Research Methods for postgraduates 2nd ed. In: Madison Ave, New York: Arnold Publishers.

Greenhalgh, T., Seyan, K., & Boynton, P. (2004a). "Not a university type": focus group study of social class, ethnic, and sex differences in school pupils' perceptions about medical school. *BMJ 328*(7455), 1541.

Greeno, J. G., Collins, A. M., & Resnick, L. B. (1996). Cognition and learning. *J Handbook of educational psychology 77*, 15-46.

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: an experimental and individual difference investigation. *J Journal of personality social psychology, 52*(5), 890.

Guay, F., Chanal, J., Ratelle, C. F., Marsh, H. W., Larose, S., & Boivin, M. (2010). Intrinsic, identified, and controlled types of motivation for school subjects in young elementary school children. *J British Journal of Educational Psychology 80*(4), 711-735.

Gupta, A., & Saks, N. S. (2013). Exploring medical student decisions regarding attending live lectures and using recorded lectures. *J Medical Teacher 35*(9), 767-771.

GÜVERCİN, Ö., Tekkaya, C., & Sungur, S. (2010). A cross age study of elementary students' motivation towards science learning. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 39*(39), 233-243.

Hair, JF, Black, WC, Babin, BJ, Anderson, RE, & Tatham, RL. (2014). Multivariate Data Analysis , Edinburgh Gate Harlow. In: Pearson Education, UK.

Hamann, C., Volkan, K., Fishman, M. B., Silvestri, R. C., Simon, S. R., & Fletcher, S. W. (2002). How well do second-year students learn physical diagnosis? Observational study of an objective structured clinical examination (OSCE). *BMC Medical Education, 2*(1), 1. doi:10.1186/1472-6920-2-1

Harackiewicz, J. M., Barron, K. E., Pintrich, P. R., Elliot, A. J., & Thrash, T. M. (2002). Revision of achievement goal theory: Necessary and illuminating.

Hardre, P. L., Davis, K. A., & Sullivan, D. W. (2008). Measuring teacher perceptions of the "how" and "why" of student motivation. *J Educational Research Evaluation 14*(2), 155-179.

Hardré, P. L., & Hennessey, M. N. (2013). What they think, what they know, what they do: Rural secondary teachers' motivational beliefs and strategies. *J Learning Environments Research 16*(3), 411-436.

Hardré, P. L., Huang, S. H., Chen, C. H., Chiang, C. T., Jen, F. L., & Warden, L. (2006). High school teachers' motivational perceptions and strategies in an East Asian nation. *J Asia‑Pacific Journal of Teacher Education 34*(2), 199-221.

Hardre, P. L., & Reeve, J. (2003). A motivational model of rural students' intentions to persist in, versus drop out of, high school. *Journal of educational Psychology, 95*(2), 347-356.

Hardré, P. L., & Sullivan, D. W. (2008). Teacher perceptions and individual differences: How they influence rural teachers' motivating strategies. *J Teaching Teacher Education 24*(8), 2059-2075.

Hardré, P. L., & Sullivan, D. W. (2009). Motivating adolescents: High school teachers' perceptions and classroom practices. *J Teacher Development 13*(1), 1-16.

Harth, S., Biggs, J., & Thong, Y. (1990). Mature-age entrants to medical school: a controlled study of sociodemographic characteristics, career choice and job satisfaction. *J Medical Education, 24*(6), 488-498.

Heyman, G. D., & Compton, B. J. (2006). Context sensitivity in children's reasoning about ability across the elementary school years. *J Developmental Science 9*(6), 616-627.

Hong, Peng, Y., & Rowell, L. L. (2009). Homework self-regulation: Grade, gender, and achievement-level differences. *J Learning Individual Differences19*(2), 269-276.

Hong, E. (1998). Differential stability of state and trait self-regulation in academic performance. *The journal of educational research, 91*(3), 148-159.

Hong, E., & O'Neil, H. F. (2001). Construct validation of a trait self-regulation model. *International Journal of Psychology, 36*(3), 186-194.

Hong, Y.-y., Chiu, C.-y., Dweck, C. S., Lin, D. M.-S., & Wan, W. (1999). Implicit theories, attributions, and coping: a meaning system approach. *J Journal of Personality Social psychology, 77*(3), 588-599.

Honigsfeld, A. (2002). A comparative analysis of the learning styles of adolescents from diverse nations by age, gender, academic achievement level, and nationality.

Hoschl, C., & Kozeny, J. (1997). Predicting academic performance of medical students: The first three years. *J American Journal of Psychiatry 154*(6), 87.

Hulsman, R. L., Van Der Ende, J. S., Oort, F. J., Michels, R. P., Casteelen, G., & Griffioen, F. M. (2007). Effectiveness of selection in medical school admissions: evaluation of the outcomes among freshmen. *J Medical Education 41*(4), 369-377.

Hustinx, P. W., Kuyper, H., van der Werf, M. P., & Dijkstra, P. (2009). Achievement motivation revisited: New longitudinal data to demonstrate its predictive power. *J Educational Psychology 29*(5), 561-582.

Islam, R., & Ismail, Y. (2011). Prioritizing issues of Malaysian vision 2020: An application of the analytic hierarchy process and quality function deployment. *International Journal of Economics, Management and Accounting, 19*(1).

Jack, B. M., & Lin, H.-S. (2014). Igniting and sustaining interest among students who have grown cold toward science. *Science education, 98*(5), 792-814.

Jacobs, J. E., Finken, L. L., Griffin, N. L., & Wright, J. D. (1998). The career plans of science-talented rural adolescent girls. *J American Educational Research Journal35*(4), 681-704.

Jaju, A., Kwak, H., & Zinkhan, G. M. (2002). Learning styles of undergraduate business students: A cross-cultural comparison between the US, India, and Korea. *Marketing Education Review, 12*(2), 49-60.

Kaiser, J., Retelsdorf, J., Südkamp, A., & Möller, J. (2013). Achievement and engagement: How student characteristics influence teacher judgments. *J Learning Instruction 28*, 73-84.

Kaplan, A., & Maehr, M. L. (2007). The contributions and prospects of goal orientation theory. *J Educational psychology review 19*(2), 141-184.

Kelley, H. H., & Michela, J. L. (1980). Attribution theory and research. *J Annual review of psychology, 31*(1), 457-501.

Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling vs. informational styles on intrinsic motivation and creativity. *Journal of personality, 52*(3), 233-248.

Kong, S. (1993). Minat pelajar terhadap sains dan teknologi: Satu pandangan sedunia. *Buletin JNSP, 3*, 15-21.

Kronqvist, P., Mäkinen, J., Ranne, S., Kääpä, P., & Vainio, O. (2007a). Study orientations of graduate entry medical students. *J Medical teacher, 29*(8), 836-838.

Kunanitthaworn, N., Wongpakaran, T., Wongpakaran, N., Paiboonsithiwong, S., Songtrijuck, N., Kuntawong, P., & Wedding, D. (2018). Factors associated with motivation in medical education: a path analysis. *BMC Medical Education, 18*(1), 140-140. doi:10.1186/s12909-018-1256-5

Kusurkar, R., Croiset, G., Custers, E., & Ten Cate ThJ, P. (2012). Development of motivation theories and how they relate to development of medical education. *J Motivation in medical students 37*.

Kusurkar, R., Croiset, G., Kruitwagen, C., & ten Cate, O. (2011). Validity evidence for the measurement of the strength of motivation for medical school. *J Advances in health sciences education 16*(2), 183-195.

Kusurkar, R., Kruitwagen, C., ten Cate, O., & Croiset, G. (2010). Effects of age, gender and educational background on strength of motivation for medical school. *Adv Health Sci Educ Theory Pract, 15*(3), 303-313. doi:10.1007/s10459-009-9198-7

Kusurkar, R., & ten Cate, O. (2013). AM last page: education is not filling a bucket, but lighting a fire: self-determination theory and motivation in medical students. *J Academic Medicine 88*(6), 904.

Kusurkar, R., Ten Cate, O., Van Asperen, M., & Croiset, G. (2011). Motivation as an independent and a dependent variable in medical education: a review of the literature. *J Medical teacher 33*(5), e242-e262.

Kusurkar, R., Ten Cate, O., Vos, C., Westers, P., & Croiset, G. (2013). How motivation affects academic performance: a structural equation modelling analysis. *J Advances in health sciences education 18*(1), 57-69.

Kusurkar, R. A., Croiset, G., Galindo-Garré, F., & Ten Cate, O. (2013a). Motivational profiles of medical students: association with study effort, academic performance and exhaustion. *BMC medical education, 13*(1), 87.

Kusurkar, R. A., Ten Cate, T. J., van Asperen, M., & Croiset, G. (2011). Motivation as an independent and a dependent variable in medical education: A review of the literature. *Medical Teacher, 33*(5), e242-e262. doi:10.3109/0142159X.2011.558539

Kutner, N. G., & Brogan, D. R. (1980). The decision to enter medicine: Motivations, social support, and discouragements for women. *J Psychology of Women Quarterly 5*(2), 341-357.

Lambert, T. W., Goldacre, M. J., Davidson, J. M., & Parkhouse, J. (2001). Graduate status and age at entry to medical school as predictors of doctors' choice of long-term career. *J Medical Education 35*(5), 450-454.

Legault, L. (2017). Self-determination theory. *J Encyclopedia of Personality* 1-9.

Levesque, C., Zuehlke, A. N., Stanek, L. R., & Ryan, R. M. (2004). Autonomy and competence in German and American university students: A comparative study based on self-determination theory. *Journal of educational Psychology, 96*(1), 68.

Li, R., Bunk, J., & Smidt, E. (2017). Understanding Faculty and Student Attitudes about Distance Education: The Importance of Excitement and Fear. In *Handbook of Research on Humanizing the Distance Learning Experience* (pp. 410-434): IGI Global.

Liem, A. D., Lau, S., & Nie, Y. (2008). The role of self-efficacy, task value, and achievement goals in predicting learning strategies, task disengagement, peer relationship, and achievement outcome. *J Contemporary educational psychology 33*(4), 486-512.

Linnenbrink, E. A., & Pintrich, P. R. (2002). Achievement Goal Theory and Affect: An Asymmetrical Bidirectional Model. *Educational Psychologist, 37*(2), 69-78. doi:10.1207/S15326985EP3702_2

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting & task performance*: Prentice-Hall, Inc.

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *J American psychologist 57*(9), 705-717.

Loucks, S., Kobos, J. C., Stanton, B., Burstein, A. G., & Lawlis, G. F. (1979a). Sex-related psychological characteristics of medical students. *The journal of Psychology, 102*(1), 119-123.

Luan, W. S. (2009). Uncovering Malaysian Students" Motivation to Learning Science. *European Journal of Social Sciences, 8*(2).

Lucchetti, G., Damiano, R. F., DiLalla, L. F., Lucchetti, A. L. G., Moutinho, I. L. D., da Silva Ezequiel, O., & Dorsey, J. K. (2018). Cross-cultural differences in mental health, quality of life, empathy, and burnout between US and Brazilian medical students. *J Academic Psychiatry 42*(1), 62-67.

Luqman, M. (2013). Relationship of academic success of medical students with motivation and pre-admission grades. *J Coll Physician Surg Pak 23*(1), 31-36.

Marley, J., & Carman, I. (1999). Selecting medical students: a case report of the need for change. *Med Educ, 33*(6), 455-459. doi:10.1046/j.1365-2923.1999.00345.x

Maslow. (1968). Toward a Psychology of Being. In: (NewYork, Van Reinhold).

Maslow. (1970). A theory of achievement motivation. *J Twentieth century psychology*, 22-48.

Mattick, K., & Knight, L. (2009). The importance of vocational and social aspects of approaches to learning for medical students. *Advances in health sciences education, 14*(5), 629-644.

McManus, I., Livingston, G., & Katona, C. (2006a). The attractions of medicine: the generic motivations of medical school applicants in relation to demography, personality and achievement. *J BMC Medical Education 6*(1), 11.

McManus, I., Livingston, G., & Katona, C. J. B. M. E. (2006c). The attractions of medicine: the generic motivations of medical school applicants in relation to demography, personality and achievement. *6*(1), 11.

Midgley, C., & Urdan, T. (1995). Predictors of middle school students' use of self-handicapping strategies. *The Journal of Early Adolescence, 15*(4), 389-411.

Millan, L. R., Azevedo, R. S., Rossi, E., De Marco, O. L. N., Millan, M. P. B., & Arruda, P. C. V. d. (2005a). What is behind a student's choice for becoming a doctor? *Clinics, 60*(2), 143-150.

Mindell, J. S., Giampaoli, S., Goesswald, A., Kamtsiuris, P., Mann, C., Männistö, S., . . . Group, H. E. S. R. R. (2015). Sample selection, recruitment and participation rates in health examination surveys in Europe--experience from seven national surveys. *BMC medical research methodology, 15*, 78-78. doi:10.1186/s12874-015-0072-4

Ministry of Education, M. (2016). Malaysia Education Blueprint, 2013-2025., *27*.

Moulaert, V., Verwijnen, M. G., Rikers, R., & Scherpbier, A. J. J. M. e. (2004). The effects of deliberate practice in undergraduate medical education. *38*(10), 1044-1052.

Mullola, S., Ravaja, N., Lipsanen, J., Alatupa, S., Hintsanen, M., Jokela, M., & Keltikangas-Järvinen, L. (2012). Gender differences in teachers' perceptions of students' temperament, educational competence, and teachability. *J British Journal of Educational Psychology 82*(2), 185-206.

Murphy, B. (2019). *Why some medical students are cutting class to get ahead*. Retrieved from

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. *Theory and research in Education, 7*(2), 133-144.

Nieuwhof, M. G., ThJ ten Cate, O., Oosterveld, P., & Soethout, M. B. (2004). Measuring strength of motivation for medical school. *Medical Education Online, 9*(1), 4355.

nPERF. (2019). Cellular Network Coverage Jenjarum. Retrieved from https://www.nperf.com

OECD, W. (2013). UNCTAD (2013). *Implications of global value chains for trade, investment, development and jobs, 20*.

Osborne, J., Simon, S., & Collins, S. (2003). Attitudes towards science: A review of the literature and its implications. *International journal of science education, 25*(9), 1049-1079.

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of educational research, 66*(4), 543-578.

Pajares, F. (2008). Motivational role of self-efficacy beliefs in self-regulated learning. *J Motivation self-regulated learning: Theory, research,applications*, 111-139.

Parashar, R., Hulke, S., & Pakhare, A. (2019). Learning styles among first professional northern and central India medical students during digitization. *Advances in medical education and practice, 10*, 1.

Park, J., Chung, S., An, H., Park, S., Lee, C., Kim, S. Y., . . . Kim, K.-S. (2012). A structural model of stress, motivation, and academic performance in medical students. *J Psychiatry investigation 9*(2), 143.

Pintrich. (2000). An achievement goal theory perspective on issues in motivation terminology, theory, and research. *J Contemporary educational psychology, 25*(1), 92-104.

Pintrich, P. R. (2000). Multiple goals, multiple pathways: The role of goal orientation in learning and achievement. *Journal of educational Psychology, 92*(3), 544-555.

Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of educational Psychology, 95*(4), 667.

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of educational Psychology, 82*(1), 33.

Pintrich, P. R., Wolters, C. A., & Baxter, G. P. (2000). Assessing metacognition and self-regulated learning.

Powell, A., Boakes, J., & Slater, P. (1987). What motivates medical students: How they see themselves and their profession. *J Medical education, 21*(3), 176-182.

Premkumar, K., Vinod, E., Sathishkumar, S., Pulimood, A. B., Umaefulam, V., Samuel, P. P., & John, T. A. (2018). Self-directed learning readiness of Indian medical students: A mixed method study. *BMC Medical Education, 18*(1), 134.

Price, J., Williams, G., & Wiltshire, E. B. (1994). Influence of motivational and demographic factors on performance in the medical course: a prospective study. *Med Educ, 28*(2), 107-115. doi:10.1111/j.1365-2923.1994.tb02528.x

Quek, D. (2011). *The Standards of Medical Education in Malaysia and Its Acceptability*.

Rafidah, K., Azizah, A., Norzaidi, M., Chong, S. C., Salwani, M. I., & Noraini, I. (2009). The impact of perceived stress and stress factors on academic performance of pre-diploma science students: a Malaysian study. *International journal of scientific research in education, 2*(1), 13-26.

Rajiah, K., & Saravanan, C. (2014). The effectiveness of psychoeducation and systematic desensitization to reduce test anxiety among first-year pharmacy students. *American journal of pharmaceutical education, 78*(9), 163.

Ratelle, C. F., Guay, F., Vallerand, R. J., Larose, S., & Senécal, C. (2007). Autonomous, controlled, and amotivated types of academic motivation: A person-oriented analysis. *Journal of educational Psychology, 99*(4), 734.

Razali, S. (1996). Medical school entrance and career plans of Malaysian medical students. *Medical education, 30*(6), 418-423.

Reeve, J., & Halusic, M. (2009). How K-12 teachers can put self-determination theory principles into practice. *Theory and research in Education, 7*(2), 145-154.

Robbins, L., Robbins, E. S., Katz, S. E., Geliebter, B., & Stern, M. (1983). Achievement motivation in medical students. *J Journal of medical education*

Roeser, R. W., Eccles, J. S., & Strobel, K. R. (1998). Linking the study of schooling and mental health: Selected issues and empirical illustrations at. *J Educational Psychologist 33*(4), 153-176.

Rogers, C. R. (1969). Freedom to learn: A view of what education might be. *Merrill, Columbus, OH*.

Rolfe, I. E., Ringland, C., & Pearson, S. A. (2004). Graduate entry to medical school? Testing some assumptions. *Med Educ, 38*(7), 778-786. doi:10.1111/j.1365-2929.2004.01891.x

Ryan, R., & Deci, E. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *J Contemporary educational psychology, 25*(1), 54-67.

Ryan, R. M., & Deci, E. L. (2000b). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *J American psychologist 55*(1), 68-78.

Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of personality, 74*(6), 1557-1586.

Salam, A., Mahadevan, R., Rahman, A. A., Abdullah, N., Harith, A. A. A., & Shan, C. P. (2015). Stress among first and third year medical students at University Kebangsaan Malaysia. *Pakistan journal of medical sciences, 31*(1), 169.

Saravanan, C., Kingston, R., & Gin, M. (2014). Is test anxiety a problem among medical students: A cross sectional study on outcome of test anxiety among medical students? *International journal of psychological studies, 6*(3), 24.

Scheel, M. J., Madabhushi, S., & Backhaus, A. (2009). The academic motivation of at-risk students in a counseling prevention program. *J The Counseling Psychologist 37*(8), 1147-1178.

Schunk, D. (1991). Self-efficacy and academic motivation. *J Educational Psychologist, 26*(3-4), 207-231.

Schunk, D. H. (1994). Self-regulation of self-efficacy and attributions in academic settings.

Schunk, D. H., Meece, J. R., & Pintrich, P. R. (2012). *Motivation in education: Theory, research, and applications*: Pearson Higher Ed.

Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In *Development of achievement motivation* (pp. 15-31): Elsevier.

Schunk, D. H., & Zimmerman, B. J. (1997). Developing self-efficacious readers and writers: The role of social and self-regulatory processes. *Reading engagement: Motivating readers through integrated instruction, 34*, 50.

Seale, C., Gobo, G., Gubrium, J. F., & Silverman, D. (2004). *Qualitative research practice*: Sage.

Senko, C., Durik, A. M., & Harackiewicz, J. M. (2008). Historical perspectives and new directions in achievement goal theory: Understanding the effects of mastery and performance-approach goals. 100-113.

Sethuraman, K. (2006). *Professionalism in medicine.* Paper presented at the Regional Health Forum.

Sevinc, B., Ozmen, H., & Yigit, N. (2011). Investigation of Primary Students' Motivation Levels towards Science Learning. *J Science Education International 22*(3), 218-232.

Simpson, R. D., & Steve Oliver, J. (1990). A summary of major influences on attitude toward and achievement in science among adolescent students. *Science education, 74*(1), 1-18.

Skinner, B. F. (1965). *Science and human behavior*: Simon and Schuster.

Skinner, B. F. (1978). Reflections on behaviorism and society.

Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *J Journal of educational psychology 85*(4), 571.

Slater, J. A., Lujan, H. L., & DiCarlo, S. E. (2007). Does gender influence learning style preferences of first-year medical students? *Advances in Physiology Education, 31*(4), 336-342.

Sobral, D. T. (2004). What kind of motivation drives medical students' learning quests? *Medical education, 38*(9), 950-957.

Sobral, D. T. (2008). Student-selected courses in a medical school: scope and relationships. *Medical teacher, 30*(2), 199-205.

Soenens, B., & Vansteenkiste, M. (2005). Antecedents and outcomes of self-determination in 3 life domains: The role of parents' and teachers' autonomy support. *Journal of Youth and Adolescence, 34*(6), 589-604.

Stegers-Jager, K. M., Cohen-Schotanus, J., & Themmen, A. P. (2012). Motivation, learning strategies, participation and medical school performance. *J Medical education 46*(7), 678-688.

Steinmayr, R., & Spinath, B. (2009). The importance of motivation as a predictor of school achievement. *J Learning individual differences19*(1), 80-90.

Tanaka, M., Mizuno, K., Fukuda, S., Tajima, S., & Watanabe, Y. (2009). Personality traits associated with intrinsic academic motivation in medical students. *Medical education, 43*(4), 384-387.

Ten Cate, O., Snell, L., Mann, K., & Vermunt, J. (2004). Orienting teaching toward the learning process. *J Academic Medicine 79*(3), 219-228.

Todisco, J., Hayes, S., & Farnill, D. (1995). Career motivations of male and female medical students. *J Psychological reports 77*(3_suppl), 1199-1202.

Tohidi, H., & Jabbari, M. M. (2012). The effects of motivation in education. *Procedia-Social and Behavioral Sciences, 31*, 820-824.

Treffinger, D., Isaksen, S., & Dorval, B. (2011). Creative Aproches to Problem Solving. In: Estados Unidos: SAGE Publicationes Inc.

Tschannen-Moran, M., Hoy, A. W., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *J Review of educational research 68*(2), 202-248.

Turner, R., & Nicholson, S. (2011). Reasons selectors give for accepting and rejecting medical applicants before interview. *Medical education, 45*(3), 298-307.

Vaglum, P., Wiers-Fenssen, F., & Ekeberg, Ø. (1999). Motivation for medical school: the relationship to gender and specialty preferences in a nationwide sample. *J Medical Education 236-242.

Vaglum, P., Wiers-Fenssen, F., & Ekeberg, Ø. J. M. E. (1999). Motivation for medical school: the relationship to gender and specialty preferences in a nationwide sample.

Vaglum, P., Wiers-Jenssen, J., & Ekeberg, O. (1999). Motivation for medical school: the relationship to gender and specialty preferences in a nationwide sample. *Med Educ, 33*(4), 236-242.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: toward a motivational model of high school dropout. *Journal of personality and social psychology, 72*(5), 1161-1176.

Vallerand, R. J., & O'Connor, B. P. (1989). Motivation in the elderly: A theoretical framework and some promising findings. *Canadian Psychology/Psychologie canadienne, 30*(3), 538.

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992a). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and psychological measurement, 52*(4), 1003-1017.

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992b). The Academic Motivation Scale: A measure of intrinsic,

extrinsic, and amotivation in education. *J Educationalpsychological measurement 52*(4), 1003-1017.

VandeWalle, D., & Cummings, L. L. (1997). A test of the influence of goal orientation on the feedback-seeking process. *Journal of applied psychology, 82*(3), 390.

Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *J Educational psychologist 41*(1), 19-31.

Vansteenkiste, M., Sierens, E., Soenens, B., Luyckx, K., & Lens, W. (2009). Motivational profiles from a self-determination perspective: The quality of motivation matters. *Journal of educational Psychology, 101*(3), 671.

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004a). Motivating learning, performance, and persistence: the synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *J Journal of personality social psychology 87*(2), 246-260.

Vansteenkiste, M., Zhou, M., Lens, W., & Soenens, B. (2005b). Experiences of autonomy and control among Chinese learners: Vitalizing or immobilizing? *J Journal of educational psychology 97*(3), 468-483.

Vedder-Weiss, D., & Fortus, D. (2012). Adolescents' declining motivation to learn science: A follow-up study. *Journal of Research in Science Teaching, 49*(9), 1057-1095.

Vermunt, J. D. (1996). Metacognitive, cognitive and affective aspects of learning styles and strategies: A phenomenographic analysis. *J Higher education, 31*(1), 25-50.

Vermunt, J. D. (1998). The regulation of constructive learning processes. *J British journal of educational psychology68*(2), 149-171.

Vispoel, W. P., & Austin, J. R. (1995). Success and failure in junior high school: A critical incident approach to understanding students' attributional beliefs. *J American Educational Research Journal 32*(2), 377-412.

von Below, B., Hellquist, G., Rodjer, S., Gunnarsson, R., Bjorkelund, C., & Wahlqvist, M. (2008). Medical students' and facilitators' experiences of an Early Professional Contact course: active and motivated students, strained facilitators. *BMC Med Educ, 8*, 56. doi:10.1186/1472-6920-8-56

Wagoner, N. E., & Bridwell, S. D. (1989). High school students' motivations for a career as a physician. *J Academic Medicine*

Walker, C. O., Greene, B. A., & Mansell, R. A. (2006). Identification with academics, intrinsic/extrinsic motivation, and self-efficacy as predictors of cognitive engagement. *J Learning individual differences16*(1), 1-12.

Walsh, K. (2014). Why is medical education so expensive? *Journal of biomedical research, 28*(4), 326-327. doi:10.7555/JBR.28.20140040

Webb, C. T., Sedlacek, W., Cohen, D., Shields, P., Gracely, E., Hawkins, M., & Nieman, L. (1997). The impact of nonacademic variables on performance at two medical schools. *Journal of the National Medical Association, 89*(3), 173.

Weiner. (1994). Ability versus effort revisited: The moral determinants of achievement evaluation and achievement as a moral system. *Educational Psychologist, 29*(3), 163-172.

Weiner. (2005). Motivation from an attribution perspective and the social psychology of perceived competence. *Handbook of competence and motivation*, 73-84.

Weiner, B. (1974). *Achievement motivation and attribution theory*: General Learning Press.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *J Psychological review, 92*(4), 548-573.

Wentzel, K. R. (1999). Social-motivational processes and interpersonal relationships: Implications for understanding motivation at school. *J Journal of educational psychology 91*(1), 76.

White, C. B. (2007). Smoothing out transitions: how pedagogy influences medical students' achievement of self-regulated learning goals. *Adv Health Sci Educ Theory Pract, 12*(3), 279-297. doi:10.1007/s10459-006-9000-z

White, C. B., Gruppen, L. D., & Fantone, J. C. (2014a). Self-regulated learning in medical education. *Understanding medical education*, 271-282.

Wierenga, A., Branday, J., Simeon, D., Pottinger, A., & Brathwaite, B. (2003). Motivation for and concerns about entering a medical programme. *The West Indian medical journal, 52*(4), 304-310.

Wigfield, & Eccles, J. S. (1992). The development of achievement task values: A theoretical analysis. *Developmental review, 12*(3), 265-310.

Wigfield, & Eccles, J. S. (2000). Expectancy–value theory of achievement motivation. *J Contemporary educational psychology 25*(1), 68-81.

Wigfield, A., Lutz, S. L., & Wagner, A. L. (2005). Early adolescents' development across the middle school years: Implications for school counselors. *Professional school counseling, 9*(2), 2156759X0500900206.

Wigfield, A., & Wentzel, K. R. (2007). Introduction to motivation at school: Interventions that work. *J Educational Psychologist, 42*(4), 191-196.

Wilkinson, T. J., Wells, J. E., & Bushnell, J. A. (2004). Are differences between graduates and undergraduates in a medical course due to age or prior degree? *J Medical education, 38*(11), 1141-1146.

Wilkinson, T. J., Wells, J. E., & Bushnell, J. A. (2007). Medical student characteristics associated with time in study: Is spending more time always a good thing? *J Medical Teacher 29*(2-3), 106-110.

Williams, G. C., Saizow, R., Ross, L., & Deci, E. L. (1997). Motivation underlying career choice for internal medicine and surgery. *Soc Sci Med, 45*(11), 1705-1713.

Williams, G. C., Saizow, R. B., & Ryan, R. M. (1999b). The Importance of Self—determination Theory for. *J Medical teacher, 74992*, 992-995.

Williams, K. C., & Williams, C. C. (2011). Five key ingredients for improving student motivation. *Research in Higher Education Journal, 12*, 1.

Wilson, J. I. (2009). A two factor model of performance approach goals in student motivation for starting medical school. *Issues Educ Res, 19*(3), 271-281.

Wong, R. S. Y., & Abdul Kadir, S. Y. (2017). Medical education in Malaysia: quality versus quantity. *Perspectives on Medical Education, 6*(1), 10-11.

Woolfolk, A., Hoy, A. W., & McCune-Nicolich, L. (1980). *Educational psychology for teachers*: Prentice Hall.

Wouters, A., Croiset, G., Galindo-Garre, F., & Kusurkar, R. A. (2016). Motivation of medical students: selection by motivation or motivation by selection. *J BMC medical education 16*(1), 37.

Yates, J., Smith, J., James, D., & Ferguson, E. (2009). Should applicants to Nottingham University Medical School study a non-science A-level? A cohort study. *BMC Medical Education, 9*(1), 5.

Yeoh, M. P., & Ierardi, E. (2015). Motivation and achievement of Malaysian students in studying Matriculation Biology. *International Journal of Advanced Research, 3*(11), 966-978.

Yong, J. (2017). The Gender Gap in Malaysian Public Universities: Examining The 'Lost Boys'. *Journal of International and Comparative Education, 6*, 1-16. doi:10.14425/JICE.2017.6.1.0116

Yousefy, A., Ghassemi, G., & Firouznia, S. (2012). Motivation and academic achievement in medical students. *Journal of education and health promotion, 1*, 4. doi:10.4103/2277-9531.94412

Zimmerman, B., & Schunk, D. (2006). Competence and control beliefs: Distinguishing the means and ends. *J Handbook of educational psychology*, 349-367.

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of educational Psychology, 81*(3), 329.

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In *Handbook of self-regulation* (pp. 13-39): Elsevier.

Zimmerman, B. J. (2000a). Self-efficacy: An essential motive to learn. *J Contemporary educational psychology 25*(1), 82-91.

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *J American educational research journal 45*(1), 166-183.

Zoghi, M., Brown, T., Williams, B., Roller, L., Jaberzadeh, S., Palermo, C., . . . Schneider-Kolsky, M. (2010). Learning style preferences of Australian health science students. *Journal of allied health, 39*(2), 95-103.