

AUTONOMY, RELATEDNESS AND COMPETENCE IN LEARNING MOTIVATION: EVIDENCE FROM MALAYSIA TERTIARY LEARNERS

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(Received 13th November 2025; revised 21st February 2026; accepted 15th March 2026)

Abstract. Academic performance is viewed as a multidimensional construct influenced by learners' motivational and self-regulatory capabilities. Making Self-Determination Theory as a focal point, this quantitative study examines Malaysian students' perceptions towards learning motivation through the aspects of autonomy, relatedness and competence. A survey entailing 43 five-point Likert scale items was administered to 168 students from different academic disciplines and educational levels. Descriptive statistics revealed that learners exhibit moderate levels of autonomy and relatedness, while higher levels for competence-related strategies, cognitive strategies, and self-regulation in particular. Significant positive correlations are found between autonomy, relatedness and competence, implying that these factors correspond to the learners' motivation. Inferential analysis also indicated that no significant differences were found across academic disciplines, while a significant distinction was identified for autonomy across education levels. Overall, the findings enhance the prevalence of Self-Determination Theory, answering the learning motivation while stressing the demand for insightful pedagogical approaches that advance learners' autonomy, motivation and self-regulation.

Keywords: *autonomy, relatedness, competence, motivation, Self-Determination Theory*

Introduction

With regard to the dynamic nature of the education systems, academic achievement is progressively considered as a multifaceted concept that transcends intellectual aptitude. Intelligence, as well as the 'drive', also known as the level of motivation, were the most significant influences on academic achievement in the 1930s. Past studies showed consistency on cognitive performance and learning motivation as the major factors in academic success, even up to this date (Mok and Rahmat, 2025; Mega et al., 2014; Linnenbrink and Pintrich, 2002; De Raad and Schouwenburg, 1996; Dweck, 1986). Nonetheless, Beghetto (2004) contends that students' learning motivation may be the most prominent contribution to academic achievement, more notable than students' cognitive capabilities. This presents the significance of learning motivation in academic success. As defined by Maehr and Meyer (1997), motivation is a theoretical construct that explicates the inception, direction, intensity, persistence and goal-oriented behaviourism. Brophy (2004) added to the aforementioned, positing that it is a set of requirements, which include intrinsic and extrinsic forces and desires, which could steadily activate, stimulate and maintain behaviour. However, it is important to note that the two general types of motivations are not categorically distinct, as the outcome rather lies along a continuum of self-determination, as introduced by Ryan and Deci (2000).

Firstly, intrinsic motivation refers to the results of doing something because it is enjoyable, ideally challenging or aesthetically pleasing. On the other hand, extrinsic motivation pertains to the results of doing something that either leads to earning a reward or avoiding punishment. Besides that, there is also amotivation, which represents the lack of intention in doing something.

Due to the numerous studies on the effects of extrinsic rewards on intrinsic motivation, the Self-Determination Theory was developed (Reeve, 2012). It offers a comprehensive framework for exploring motivation, especially in the field of education. The theory highlights three fundamental psychological needs: (i) autonomy, (ii) competence, and (iii) relatedness. Students are more engaged and determined when these needs are met. Conversely, learning motivation refers to the psychological elements that influence the way learners behave during their learning process (Kleinginna and Kleinginna, 1981), as it acts as a direct internal driving force that encourages learners to engage in educational activities (Ulstad et al., 2018). In addition, Brophy (2004) also notes that in conditions that seek purposeful learning of cognitive content, it can be challenging to discern learning motives, goals and strategies. This is because the optimal forms of learning motivation and learning strategies occur simultaneously. In the case of student learning motivation in Malaysia, the desire to learn is exhibited in a variety of patterns, which encompass declines across educational levels (Xu et al., 2021). Recent papers have shown recurring patterns of low and declining motivation associated with poor academic performance, academic burnout, and a slow rate of progression (Che Mat et al., 2025; Leow et al., 2024; Toh and Lian, 2024; Govindarajoo et al., 2022; Hamzah et al., 2022). These studies indicate a prevailing downward trend, despite impediments such as modifications to student extrinsic motivation, family issues, as well as the inherent features and consequences of online learning. The results of the studies was observed that low self-esteem, lack of a sense of responsibility, along with dysfunctional families, were the primary factors contributing to students' lack of interest and motivation for learning in university.

In fact, according to FMT (2022), in 2021, seventeen thousand six hundred and thirteen (17,613) Malaysian students dropped out of public universities. These elevated figures and failing rates among students during the COVID-19 pandemic and online learning have raised public concerns. Furthermore, the Deputy Education Minister of Malaysia, Wong Kah Woh, reported that the dropout rate in 2024 was 0.06 per cent in primary schools, which equated to 1,595 students and 0.64 per cent in secondary schools, amounting to 11,412 students. Although there is a slight decrease in the school dropout rate, the minister asserted that it is still a prevalent issue and that it is a non-negotiable priority for the Malaysian Education Ministry. Hence, this concern acts as the inception of this study, as this paper aims to explore learning motivation among tertiary students in Malaysia through Self-Determination Theory (SDT) by Ryan and Deci (2000) to show the underlying self-motivation in students that would affect their learning process and behaviours. This aim is in light of how intrinsic and extrinsic motivation are susceptible to fluctuation, especially when learning activities are viewed as insignificant, challenging and devoid of intrinsic appeal (Ryan and Deci, 2020). Therefore, it is crucial for the government to implement strategies and policies to transition public universities and schools into active, competitive educational establishments where students thrive to upskill themselves with their own autonomy and willingness. With these considerations in mind, this paper aims to investigate Malaysian students' perceptions towards their autonomy, relatedness and competence in learning

motivation. Moreover, this paper also aims to discover the relationship between the factors and learning motivation, different disciplines and education levels. The significance lies in the findings of this research, where the use of SDT addresses how Malaysian students' inner resources interact with their learning motivation and conditions, which would result in varying levels of students' engagement in their learning process. Consequently, the exploration of students' learning motivation through this theory provides empirical and practical insights.

This study is done to explore learning motivation through self-determination theory. Specifically, this study is done to answer the following questions: (1) How do learners perceive their autonomy in learning motivation? (2) How do learners perceive their relatedness in learning motivation? (3) How do learners perceive their competence in learning motivation? (4) Is there a relationship between all factors for learning motivation? (H1-There is no relationship all factors for learning motivation) (5) Is there a significant difference between all factors across discipline? (H2-There is no significant difference between all factors across discipline) (6) Is there a significant difference between all factors across education levels? (H3-There is no significant difference between all factors across education levels)

Literature review

Self-Determination Theory

Motivation is one of the psychological factors that encourage learners to have a consistent schedule in learning. Either it is an intrinsic or extrinsic motivation, learners' ability to continuously learn depends on their goals and determination to succeed. Intrinsic motivation drives the learners' to learn something because the subject or the topic is enjoyable and genuinely interest them (Quesada et al., 2025; Benabou and Tirole, 2003). Extrinsic motivation requires external benefit that the learners can be rewarded with such as monetary rewards, good grades, etc. (Quesada et al., 2025). There are multiple theories and concepts that have been explored to examine learners' motivation and persistence while learning in the classroom and doing independent studying on their own. This research mainly uses Self-Determination Theory (Ryan and Deci, 2000) to examine learners' motivation in learning contexts. According to Ryan and Deci (2000), Self-Determination Theory (SDT) is a study to examine learners' self-motivation and psychological needs for growth that foster their learning process. This theory proposes three types of psychological needs that help learners understand the extend of their capabilities and interests for self-growth through learning. These three types of psychological needs are the need for competence (Harter, 1978; White, 1963), relatedness (Baumeister and Leary, 1995; Reis, 1994) and autonomy (Deci, 1975; DeCharms, 1968). These concepts also rely on the condition and environment that could foster their development and ability in learning the intended knowledge or subjects.

Autonomy is a broad ethical concept which is defined as being able to act according to one's beliefs or desires, being able to have the freedom to think critically, rationally and consistently with one's own preferences (Agich, 1994). In psychological and education spheres, autonomy involves learners' natural inclination towards comprehension, interest and exploration that is crucial to social and cognitive development based on their own curiosity and enjoyment in their life (Ryan and Deci, 2000; Ryan, 1995; Csikszentmihalyi and Rathunde, 1993). In another word, learners acknowledge that the learning process comes from their own desire, rather than based

on any external validation. In the context of this research, the learners' consistency of interest and perseverance of effort are aligned with SDT. When learners' autonomy in learning such as being given the freedom to engage with the learning materials according to their own learning style and pacing is supported by the educators, parents and peers, they will maintain the consistency and determination within their attentiveness in learning, rather than shifting and developing unstable and indecisive goals. Being able to voluntarily participate and contribute in discussions highlight the learners' consistency of interest and their unwavering effort that satisfy their psychological needs to reclaim their autonomy and ownership of their own learning capabilities. Ryan and Deci (2000) defined relatedness as a sense of belonging and connection to others, such as their educators, parents, peers and also the environment involved in their learning. By having an adult or peers present around them, their motivation to learn will increase, especially when the learners' effort is being acknowledged. This notion is supported by Ryan and Grolnick (1986), when their observation concluded that learners who experienced lower intrinsic motivation were taught by a cold and uncaring teacher. In the context of this research, self-efficacy, intrinsic value and test anxiety are all connected with the learners' capabilities to be motivated. Self-efficacy is generally defined as one's own judgement and belief of their own capabilities to perform and complete the tasks efficiently (Mookkiah and Prabu, 2019). It is highly driven by the learners' intrinsic value in learning as they feel more confident to engage and complete the tasks that are aligned with their interests and enjoyment. As their efforts are acknowledged positively by the educators, parents and peers, this will boost their self-efficacy as well as reducing test anxiety which may be caused by fear of failure and lack of competence in a critical learning context (Chakraborty, 2023; Zeidner, 1998).

The final psychological need in SDT consists of the learners' need for competence. This need is defined as the ability to achieve and complete the tasks in order to fulfil certain outcomes, satisfaction and enhance competence after successfully utilising the learned information (Escandell and Chu, 2021; Ryan and Deci, 2000). This can be achieved by applying the desired cognitive strategies to think critically and solve problems. When learners are intrinsically motivated to participate in discussions that require them to apply cognitive strategies, they are more confident in being involved with the learning process as they are able to produce a critical analysis, rather than a surface-level understanding. By applying certain cognitive strategies, this can help learners be more aware of their roles to self-regulate and monitor their own learning experience independently. This proves that they are competent to manage their goals and complete them as long as they are given the freedom to navigate their learning experience on their own (Ryan and Deci, 2000; Ryan, 1982; Fisher, 1978). To summarise, Self-Determination Theory (SDT) provides a comprehensive framework on the types of psychological needs that govern learners' motivation. The need for autonomy resonates with their consistency of interests and perseverance of effort to maintain their freedom in learning. Meanwhile, the need for relatedness is associated with learners' self-efficacy, intrinsic value of learning and test anxiety to highlight the importance of being acknowledged by the adults and peers, as well as forming a sense of belonging in the learning environment. Finally, the need for competence is rooted in the learners' ability to apply cognitive strategies and self-regulate their tasks in order to achieve the desired outcomes. When learners' psychological needs are fulfilled, they are able to achieve satisfaction and growth through a series of motivated actions.

Past studies on grit in motivation

Studies have shown how grit and motivation are interconnected with academic success. Stephen and Murugesan (2024) investigated the role of grit and motivation on academic achievement among 256 college students from different universities in Bangalore. The study suggests that there is a positive and significant correlation between academic achievement, grit, and intrinsic motivation. It parallels a study done by Lam and Zhou (2019), where learners performed better when they had a long-term goal, for instance, in achieving a higher CGPA. This supports the idea that learners who have an internal willingness in their studies perform relatively better than their counterparts (Stephen and Murugesan, 2024; Goodman et al., 2011). Concurrently, a study by Khairuddin et al. (2025) posits that learners portray perseverance when they are fulfilling a long-term goal, despite facing challenges or obstacles along their way. This resonates with a study done by Wolters and Hussain (2015), as learners demonstrate determination when they inhibit personal values and internal goals. Scrutinised as a “non-cognitive skill”, grit dwells in the domains of perseverance and endurance, thus aiding learners in their academic achievement. It is deemed a reliable predictor to achieve long-term goals (Abbas et al., 2023).

While it is undeniable that academic success can be a solid determinant to trigger positive learning motivations, Luthans et al. (2019) speculate that there are other forces at hand to destruct this flow. Psychological factors may alter this pattern, as established by Sulla et al. (2022) in their cross-sectional study that, despite the learners exercising a high level of grit, unchecked and uncontrolled stress may hamper learners’ learning motivation, which can possibly shatter goal-attainment. The undulating stress and fear of unfulfilled goals, in this case, achieving a high grade or performing academically, would disengage the notion of grit being the only reliable predictor of learning motivation. Duckworth and Gross (2014) conceptually delineate grit as a means of focused, “long-term, future goals,” but this is negated by Muenks et al. (2017) as their study problematise the lack of compelling connection between grit and future-oriented variables, indicating that grit, as a construct, should be measured akin to behaviour engagement. Under grit, there are two lower-order facets, namely perseverance of effort and consistency of interest (Duckworth and Gross, 2014), with the former being connected to motivation the most in terms of self-efficacy, task values and goal orientations (Muenks et al., 2017). Khairuddin et al. (2025) elaborate that learners’ interests may shift significantly if they are distracted or find different goals to work on during their academic journey, which echoes studies by Muenks et al. (2017) as well as Wolters and Hussain (2015). More researchers agree that the progression of learning is due to learners’ effort and persistence in completing tasks and goals instead of maintaining interest in the subject of their study (Hodge et al., 2018).

From the studies mentioned in this section, there is no doubt that grit and motivation are key determinants to enhance academic achievement. Having a long-term goal helps learners to direct their focus and effort in completing tasks that eventually lead to wider, respective academic success despite challenges and obstacles that may obstruct the path along the way. Even so, enforcing and embodying grit does not always translate into a fulfilled learning experience, as psychological factors such as stress and anxiety may intervene and ireregulate learners’ motivation. Learners’ interests, on the other hand, maintain learners’ grittiness despite a possible shift in future goals. This discussion aligns with the aim of this research, as it investigates learning motivation through Self-

Determination Theory (SDT), exploring learners' motivation through criteria of autonomy, relatedness and competence.

Past studies in motivation and Self-Regulated Learning

In consonant with Pintrich and Schunk (2002), self-regulated learning (SRL) has been described as a form of “self-generated thoughts, feelings and actions for attaining educational goals”. The learners utilise different strategies to plan, monitor, evaluate, regulate, and socialise, considering circumstances such as motivation, attitude, cognitive and metacognitive skills, to achieve their set goals. This means that self-regulated learners may view learning as an activity they initiate on their own, which makes them self-starters, rather than as a covert occurrence resulting from teaching experience. Considering the challenges of employing SRL in daily activities, some researchers have stressed the relevance and role of motivation. According to Bandura (1997), SRL's efficacy pivots on consistent self-monitoring that serves as a driving force, as it depends on individuals directing their own learning. In addition, motivation is essential to assist individuals in staying focused on their goals because people's attention can easily change owing to various conflicting factors. Numerous studies have demonstrated a favourable relationship between motivation and cognitive engagement, such as the application of self-regulation strategies (Garcia and Pintrich, 2023; Meece, 2023; Doo and Bonk, 2020).

Moreover, several studies on motivation and self-regulated learning have been done to explore the impact of motivation on self-efficacy and student engagement. As noted by Bandura (1997) and Schunk (1989), self-efficacy alludes to a person's confidence in their ability to perform a particular task. It is a crucial determinant affecting learning, emotions, effort, performance and perseverance. Alemayehu and Chen (2023) found that the influence of motivation on student engagement in an online learning environment was partially mediated by learning self-efficacy and self-monitoring. This result aligns with previous research by Doo and Bonk (2020), which observed that learning engagement and social presence were positively impacted by self-regulated learning. However, it is important to note that this research emphasised that learning engagement was indirectly influenced by self-efficacy through social presence. Furthermore, Kumar and Kapoor (2024) ascertained that the two most notable motivational factors associated with SRL were self-efficacy and intrinsic goal orientation, which findings are reinforced by the Social Cognitive Theory (SCT) by Zimmerman (1989). Therefore, it can be said that students' self-regulated learning can be shaped by both their awareness and their learning environment.

Conceptual framework of the study

When it comes to learning success, learners depend on their motivation. They also need grit and also use suitable self-regulated learning strategies. This study investigates motivating factors for learning success. Motivation can trigger learners to focus on the main goal of the learning task (Rahmat and Thasrabiab, 2024). Learners who need motivational beliefs and self-regulated learning strategies to succeed. *Figure 1* presents the conceptual framework of the study. This study is anchored in the theory of Self-Determination by Ryan and Deci (2020). The theory states that what motivates learners are factors such as autonomy, competence and relatedness. Learners need autonomy over what they are learning. Having autonomy over their learning makes them

consistent with the learning behaviour and the consistency can help them overcome and difficulties they may encounter. Hence, the variable 'autonomy is supported by Martin et al. (2022) constructs such as (i) consistency of interest and (ii) perseverance. Next, Ryan and Deci (2000) state that learners need the feeling of relatedness to motivate them. Relatedness can also refer to learners' need to be connected to them contents of the task. Sometimes, some learning tasks can be more difficult than others and when this happens learners need (i) self-efficacy, (ii) intrinsic value and make efforts to reduce their (iii) test anxiety. Lastly, competence in learning can be improved with (i) cognitive strategy use and (ii) self-regulation. Additionally, this study explores if there is relationship across all the variables.

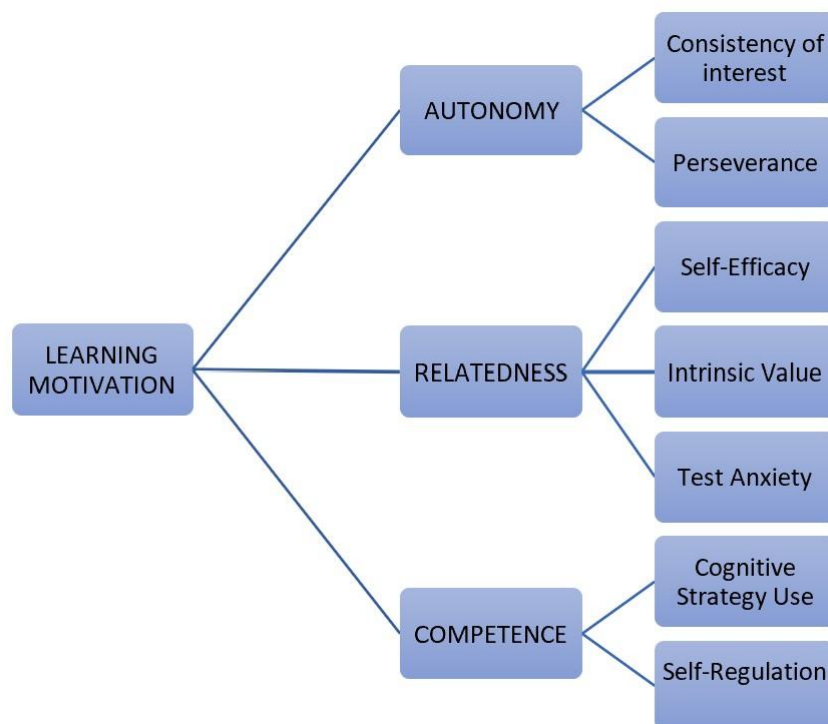


Figure 1. Conceptual framework of the study learning motivation through self-determination theory.

Materials and Methods

This study employed quantitative survey to scrutinise learning motivation through self-determination theory. The distributed survey managed to collect responses from 168 participants of Malaysian university students. Anchoring from Martin et al. (2022) as well as Ryan and Deci (2000), the instrument applied 5 Likert-scale survey, which help delineates the variables shown in table. Meanwhile, in *Table 1*, it categorises the Likert scale; 1 is for Never, 2 is for Rarely, 3 is for Sometimes, 4 is for Very Often and 5 is for Always. The distribution of items in the survey, which is acclimatise from Martin et al. (2022) as well as Ryan and Deci (2000) to suit the context of Malaysian university students, can be seen in *Table 2*. To help echo the intended variables and results, the items are divided into eight sections. The first section consists of 3 items of the participants' demographic profile. Section two and three on Grit, highlighted Consistency of Interest and Perseverance of Effort have 12 items on the first variable,

which is Autonomy. Section four until six consist of 17 items on Motivational Beliefs in Self-Efficacy, Intrinsic Value and Test Anxiety, which investigated the second variable, Relatedness. Finally, section seven and eight on Self-Regulated Learning Strategies have 14 items on Cognitive Strategy Use and Self-Regulation to investigate the final variable, which is Competence. The reliability of the instrument is determined through its value. It is crucial for the instrument to reach the value of one in order to determine its accuracy. *Table 3* shows the distribution and interpretation of Cronbach Alpha range. According to Ahmad et al. (2024), any instrument that achieve Cronbach Alpha scores between 0.7 to 0.9 is considered acceptable to excellent. *Table 2* also highlights the reliability of the survey for the three variables. It shows values of Cronbach alpha of .725 for variable one, which is Autonomy, .835 for variable two, which is Relatedness and .836 for variable three, Competence. The overall Cronbach Alpha for all 43 items is .897. Thus with this score, it reveals a good reliability of the instrument chosen and used. Further analysis using SPSS was done to present findings to answer the research questions for this study.

Table 1. Likert scale use.

Category	Description
1	Never
2	Rarely
3	Sometimes
4	Very often
5	Always

Table 2. Distribution of items in the survey.

Part	Variable	Construct	No of itens	Total item	Cronbach Alpha
Two	Autonomy	Consistency of interest	6	12	.725
		Perseverance	6		
Three	Relatedness	Self-efficacy	6	17	.835
		Intrinsic value	7		
		Test anxiety	4		
Four	Competence	Cognitive strategy use	7	14	.836
		Self-regulation	7	43	.897

Table 3. Reliability levels, Cronbach's Alpha ranges, and their interpretations.

Reliability level	Cronbach Alpha	Interpretation
Excellent	0.9 and above	Indicates very high internal consistency
Good	0.80-0.89	Reflects strong internal consistency
Acceptable	0.70-0.79	Indicates acceptable internal consistency
Questionable	0.60-0.69	Reflects questionable internal consistency
Poor	Below 0.6	Indicates poor internal consistency

Results and Discussion

Demographic analysis

Demographic data presented in percentages will establish sample representatives which will enable generalisability to a substantial population (Ziegenfuss et al., 2021). Apart from that, this section would provide an overview of the sample's attributes which assisted the researchers to understand their characteristics through the percentages. *Table 4* represents the demographic profile of the respondents participated in this survey. They came from various Malaysian tertiary educational institutions, both

public and private universities. Out of 168 students, 65% of the respondents were female, while the other 35% were male. Disciplines involved among the respondents were from Science and Technology and Social Sciences, Humanities and Business, with the former accounted for 53% and 47% for the latter. As for the educational background, majority of the respondents were in their degree studies, while the remaining 39% were in their diplomas.

Table 4. Percentage for demographic profile.

Question	Demographic profile	Categories	Percentage (%)
1	Gender	Male	35%
		Female	65%
2	Discipline	Science & Technology	53%
		Social Sciences, Humanities & Business	47%
3	Education	Diploma	39%
		Degree	61%

Findings for autonomy

This section displays the data to answer the first research question which is, How do learners perceive their autonomy in learning motivation? In the context of this study, the data is measured by two constructs which are, (i) consistency of interest (*Table 5*), and (ii) perseverance of effort (*Table 5*). For (i) Consistency of Interest, the findings reveal that learners demonstrated a moderate level of consistency of interest in their learning motivation. The highest mean score reported was (M=3.48, SD=1.07) for ‘My interests change from year to year’ followed marginally lower by (M=3.42, SD=0.94) for ‘New ideas and new projects sometimes distract me from previous ones’. The findings indicated new stimuli could be a determining factor for learners in sustaining their interest over time and are prone to experiencing difficulties. Alternatively, the lowest mean score was recorded for ‘I have been obsessed with a certain idea or project for a short time but later lost interest’ (M=3.12, SD=1.03), revealing that learners do not abandon tasks abruptly; rather their interest changes gradually. Collectively, the results imply that while learners are committed to their goals, sustaining consistent motivation over time remains challenging.

Table 5. Mean and standard deviation of descriptive statistics.

Item	Mean	Standard deviation
Consistency of interest		
GCIQ 1 I often set a goal but later choose to pursue a different one.	3.21	0.85
GCIQ 2 New ideas and new projects sometimes distract me from previous ones.	3.42	0.94
GCIQ 3 I become interested in new pursuits every few months.	3.23	0.99
GCIQ 4 My interests change from year to year.	3.48	1.07
GCIQ 5 I have been obsessed with a certain idea or project for a short time but later lost interest.	3.12	1.03
GCIQ 6 I have difficulty maintaining my focus on projects that take more than a few months to complete.	3.22	1.12
Perseverance of effort		
GCPQ 1 I have achieved a goal that took years of work.	3.52	0.92
GCPQ 2 I have overcome setbacks to conquer an important challenge.	3.51	0.80
GCPQ 3 Setbacks don't discourage me.	3.36	0.91
GCPQ 4 I finish whatever I begin.	4.12	0.82
GCPQ 5 I am a hard worker.	3.85	0.84
GCPQ 6 I am diligent.	3.66	0.84
Self-efficacy		
MBSEQ 1 Compared with others in this class, I think I'm a good student	3.38	0.98
MBSEQ 2 I'm certain I can understand the ideas taught in this course	3.71	0.70
MBSEQ 3 I expect to do very well in this class.	3.92	0.80
MBSEQ 4 Compared with others in this class, I think I'm a good student	3.09	0.98
MBSEQ 5 I am sure I can do an excellent job on the problems and tasks assigned for this class.	3.59	0.79
MBSEQ 6 I know that I will be able to learn the material for this class	3.93	0.77
Intrinsic value		

MBIVQ 1 I prefer class work that is challenging so I can learn new things.	3.47	0.87
MBIVQ 2 It is important for me to learn what is being taught in this class.	4.15	0.76
MBIVQ 3 I like what I am learning in this class.	4.01	0.80
MBIVQ 4 I think I will be able to use what I learn in this class in other classes.	3.87	0.82
MBIVQ 5 Even when I do poorly on a test I try to learn from my mistakes.	4.28	0.73
MBIVQ 6 I think that what I am learning in this class is useful for me to know.	4.21	0.83
MBIVQ 7 I think that what we are learning in this class is interesting.	4.21	0.74
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Test anxiety		
MBTAQ 1 I am so nervous during a test that I cannot remember facts I have learned.	3.51	0.95
MBTAQ 2 I have an uneasy, upset feeling when I take a test.	3.40	1.04
MBTAQ 3 I worry a great deal about tests.	3.57	0.93
MBTAQ 4 When I take a test I think about how poorly I am doing.	3.64	1.02
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Cognitive strategy use		
SRLSCSUQ 1 When I study, I put important ideas into my own words.	4.05	0.78
SRLSCSUQ 2 I always try to understand what the teacher is saying even if it doesn't make sense.	3.96	0.79
SRLSCSUQ 3 When I study for a test, I try to remember as many facts as I can.	4.23	0.72
SRLSCSUQ 4 When studying, I copy my notes over to help me remember material.	3.97	0.91
SRLSCSUQ 5 When I study for a test, I practice saying the important facts over and over to myself.	4.18	0.74
SRLSCSUQ 6 When I am studying a topic, I try to make everything fit together.	4.15	0.71
SRLSCSUQ 7 When reading I try to connect the things, I am reading about with what I already know.	4.10	0.74
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Self-regulation		
SRLSSRQ 1 I ask myself questions to make sure I know the material I have been studying.	3.92	0.78
SRLSSRQ 2 When work is hard I either give up or study only the easy parts.	3.20	1.01
SRLSSRQ 3 Even when study materials are dull and uninteresting, I keep working until I finish.	3.75	0.79
SRLSSRQ 4 Before I begin studying, I think about the things I will need to do to learn.	3.93	0.78
SRLSSRQ 5 I often find that I have been reading for class but don't know what it is all about.	3.41	0.91
SRLSSRQ 6 When I'm reading, I stop once in a while and go over what I have read.	3.83	0.78
SRLSSRQ 7 I work hard to get a good grade even when I don't like a class.	4.04	0.88

Moreover, *Table 5* suggests that learners consider strong self-regulated persistence, which promotes autonomy through goal pursuit despite the challenges faced. The highest mean presented in the table is 'I finish whatever I begin' ($M=4.12$, $SD=0.82$), succeeded by 'I am diligent' with a substantial difference ($M=3.85$, $SD=0.84$). These may imply that the learners possess autonomous motivation as mentioned in the Self-Determination Theory, where volitional efforts, such as completing tasks, demonstrates perceived control and preference in learning. Furthermore, items 'I have achieved a goal that took years of work' ($M=3.52$, $SD=0.92$), and 'I have overcome setbacks to conquer an important challenge' ($M=3.51$, $SD=0.80$) have almost similar results that disclose how learners has self-efficacy in long-term planning and resilience in facing difficulties. On the other hand, the lowest mean score shown is 'Setbacks don't discourage me' ($M=3.36$, $SD=0.91$), unveiling that learners feel discouraged when experiencing challenges. As a whole, the findings may suggest that learners perceive themselves as self-directed through perseverance, with a strong suit of completing tasks. Nonetheless, learners' might show vulnerability when facing challenges, signifying that setbacks are potential limitations for their perceived autonomy.

Findings for relatedness

This section presents data to answer the second research question which is, How do learners perceive their relatedness in learning motivation? In the context of this study, this data is measured by three constructs which are, (i) self-efficacy, (ii) intrinsic value and (iii) text anxiety. *Table 5* shows the mean for self-efficacy in how learners perceive their relatedness in learning motivation. The highest mean is reported on 'I know that I will be able to learn the material for this class' ($M=3.93$, $SD=0.77$), followed by 'I expect to do very well in this class' ($M=3.92$, $SD=0.80$). This shows that learners have high confidence in perceiving their capability to learn the materials and perform well in

class. Consequently, items involving comparison with their peers are the lowest. Item on ‘Compared with others in this class, I think I’m a good student’ has the lowest mean score ($M=3.09$, $SD=0.98$) while item on ‘Compared with others in class i expect to do well’ ($M=3.38$, $SD= 0.98$) is the second lowest. This suggests that learners feel less confident in their performance in comparison to their peers. The results showed that learners demonstrated a high level of self-efficacy in items involving their own capability to learn and perform well in class but moderate level in items that involve comparison among their peers.

Table 5 shows the mean for intrinsic value in how learners perceive their relatedness in learning motivation. Most items in the table presented mean scores above 4.0, which indicates a high level of intrinsic value motivation demonstrated by the learners. The highest mean is reported on ‘Even when i do poorly on a test i try to learn from my mistakes’ ($M=4.28$, $SD=0.73$), followed by ‘I think that i am learning in this class is useful for me to know’ ($M=4.21$, $SD= 0.83$) and ‘I think that what we are learning in this class is interesting’ ($M=4.21$, $SD=0.74$). This shows that learners demonstrate positive engagement with their course content in class and acknowledge its value that could benefit them. However, item on ‘I prefer class work that is challenging so I can learn new things’ has the lowest mean score ($M=3.47$, $SD=0.87$) while item on ‘I think i will be able to use what I learn in this class in other classes’ ($M=3.87$, $SD=0.82$) is the second lowest. This suggests that there are variations in how learners welcome challenges in their class work and apply the course content to other areas. Despite the high mean indicated in the results, the value remains moderate as learners portray individual intrinsic value perceptions in class.

Next, *Table 5* portrays the mean for test anxiety that investigates how learners perceive their relatedness in learning motivation. The highest mean is shown on item four, ‘When I take a test I think about how poorly I am doing’ ($M=3.64$, $SD=1.02$), which may suggest that learners face self-deprecation in the midst of test taking, correlate with the understanding that lesser self-efficacy and intrinsic value contributes to the rising anxiety. However, having the second highest SD proposes a variance of perception among the learners who practice self-deprecation. Meanwhile, despite having the lowest mean out of four items, I have an uneasy, upset feeling when I take a test ($M=3.40$, $SD=1.04$) has the highest spread in standard deviation, indicating there’s variation of feeling uneasy and upset during test taking, as some of them may undergo it intensely, while others might not. Last not but least, item three, which is I worry a great deal about tests ($M=3.57$, $SD=0.93$) illuminates how learners generally perceive test as worry-inducing. The findings demonstrates that learners, on average, experience a significant reading on test anxiety across four items.

Findings for competence

This section presents the data to answer the third research question 3, which is, How do learners perceive their competence in learning motivation? In the context of this study, the data is measured by two constructs which are, (i) cognitive strategy use and (ii) self-regulation. Apart from that, *Table 5* displays the mean and standard deviation for cognitive strategies used in how learners perceive their competence in learning motivation. The findings indicate that learners have strong and consistent self-perception of cognitive strategy effectiveness. Similarly, most items in the table reported mean scores above 4.0, with another two items slightly lower. The latter, which are, ‘I always try to understand what the teacher is saying even if it doesn’t make

sense' (M=3.96, SD=0.79) and 'When studying, I copy my notes over to help me remember material' (M=3.97, SD=0.91) might indicate that learners sometimes encounter competence gaps in real-time comprehension processing and they engage their brains with rewriting information for better understanding and long-term learning retention. In contrast, the highest mean is reported on 'When I study for a test, I try to remember as many facts as I can' (M=4.23, SD=0.72), followed slightly lower by 'When I study for a test, I practice saying the important facts over and over to myself' (M=4.18, SD=0.74). These may imply that learners have significant confidence in their robust memory and active recalling strategies. Overall, the findings suggest that learners perceive relatively high level of competence in cognitive strategies such as rote learning and active retrieving, which foster motivational self-efficacy.

Table 5 shows the mean for self-regulation in how learners perceive their competence in learning motivation. The highest mean is reported on 'I work hard to get a good grade even when i don't like a class' (M=4.04, SD=0.88), followed by 'Before i begin studying, i think about the things i will need to learn' (M=3.93, SD= 0.78) and 'I ask myself questions to make sure i know the material i have been studying' (M=3.92, SD=0.78). This shows that learners demonstrate a dedicated effort to learn their assigned courses regardless of their interest. Moreover, the mean scores also suggest that learners have frequent use of learning strategies especially in planning and self-monitoring their progress. However, item on 'When work is hard I either give up or study only the easy parts' has the lowest mean score (M=3.20, SD=1.01) while item on 'I often find that I have been reading for class but don't know what it is all about' (M=3.41, SD=0.91) is the second lowest. This suggests that there are some challenges in sustaining consistencies and understanding on their study when the materials presented are difficult. This result shows a moderate value between learners' strong effort in learning regardless their interest with their responses on study consistencies when the materials are challenging.

Findings for relationship between all factors for learning motivation

In this section, it presents data to answer research question 4-Is there a relationship between all factors for learning motivation? (H1- There is no relationship all factors for learning motivation). In order to answer the research question, the researcher will see if there is a relationship between (a) autonomy and relatedness, (b) autonomy and competence. *Table 6* shows there is an association between autonomy and relatedness. Based on the correlation analysis, there is a moderate significant association between autonomy and relatedness ($r=.461^{**}$) and ($p<.001$). Coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale (He, 2024). Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This reflects a moderate positive relationship between autonomy and relatedness. *Table 6* also shows there is an association between autonomy and competence. Correlation analysis shows that there is a high significant association between autonomy and competence ($r=.357^{**}$) and ($p<.001$). According to He (2024), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between autonomy and competence. Therefore, the null hypothesis is rejected for relationships for all factors for learning motivation.

Table 6. Correlation between all factors for learning motivation.

Category		Autonomy	Relatedness	Competence
Autonomy	Pearson (Correlation)	1	.461**	.357**
	Sig (2-tailed)	-	<.001	<.001
	N	168	168	168
Relatedness	Pearson (Correlation)	.461**	1	.656**
	Sig (2-tailed)	<.001	-	<.001
	N	168	168	168
Competence	Pearson (Correlation)	.357**	.656**	-
	Sig (2-tailed)	<.001	<.001	-
	N	168	168	168

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

Significant difference for all factors across discipline

This section presents data to answer research question 5-Is there a significant difference between all factors across discipline? With reference to Table 7, a T-test was conducted to inspect the effects of all factors across disciplines. The analysis in Table 7 shows there is no significant difference between autonomy (F=.000, p=0.082), relatedness (F=3.315, p=-0.100) and competence (F=0.040, p=0.569) across disciplines. The null hypothesis is therefore accepted.

Table 7. Independent samples test.

Category		LTE				TTE				95%	
		F	S	t	df	1S	2S	MD	SED	L	U
AUT	EVA	.000	.985	1.749	166	.041	.082	.12466	.07129	-.01610	.26542
	EVNA			1.749	162.600	.041	.083	.12466	.07140	-.01633	.26565
REL	EVA	3.315	.070	1.656	166	.050	.100	.11460	.06921	-.02204	.25125
	EVNA			1.634	148.800	.052	.104	.11460	.07014	-.02400	.25320
COM	EVA	.040	.842	.571	166	.284	.569	.04069	.07124	-.09997	.18135
	EVNA			.571	163.054	.285	.569	.04069	.07131	-.10011	.18149

Note: AUT=Autonomy; EVA=Equal Variance Assumed; EVNA=Equal Variance Not Assumed; REL=Relatedness; COM=Competence; LTE=Levene’s Test for Equality of variables; S=Significance; TTE=t-test for equality of means; 1S=significance 1-Sided p; 2S=significance 2-Sided p; MD=Mean Difference; SED=Standard Error Difference; 95%=95% confidence interval of the difference; L=Lower; U=Upper.

Significant difference for all factors across education levels

This section presents data to answer research question 6-Is there a significant difference between all factors across education levels? With reference to Table 8, a T-test was conducted to examine the effects of all factors across education levels. The analysis in Table 8 shows there is a significant difference between autonomy (F=0.068, p=-0.012) across education levels. The null hypothesis is therefore rejected. However, there is no significant difference for relatedness (F=0.094, p=-0.591) and competence (F=0.012,p=0.143) across education levels. Hence, null hypothesis is accepted for relatedness and competence across education levels.

Table 8. T-Test for all factors across education.

Category		LTE				TTE				95%	
		F	S	t	df	1S	2S	MD	SED	L	U
AUT	EVA	.068	.794	-2.547	166	.006	.012	-.18424	.07233	-.32705	-.04143
	EVNA			-2.529	133.020	.006	.013	-.18424	.07285	-.32834	-.04015
REL	EVA	.094	.760	-.538	166	.296	.591	-.03843	.07145	-.17949	.10263
	EVNA			-.544	141.014	.294	.587	-.03843	.07068	-.17816	.10130
COM	EVA	.012	.914	-1.471	166	.072	.143	-.10681	.07261	-.25016	.03655
	EVNA			-1.486	140.894	.070	.139	-.10681	.07185	-.24885	.03524

Note: AUT=Autonomy; EVA=Equal Variance Assumed; EVNA=Equal Variance Not Assumed; REL=Relatedness; COM=Competence; LTE=Levene's Test for Equality of variables; S=Significance; TTE=t-test for equality of means; 1S=significance 1-Sided p; 2S=significance 2-Sided p; MD=Mean Difference; SED=Standard Error Difference; 95%=95% confidence interval of the difference; L=Lower; U=Upper.

This study explored Malaysian learners' learning motivation through the lens of Self-Determination Theory (SDT) centering on autonomy, relatedness, and competence. Through the integration of grit, motivation and self-regulated learning strategies, the findings revealed a nuanced understanding of how these factors interact across disciplines and educational contexts. The findings reinforce the relevance of SDT in accounting for the Malaysian tertiary context, while simultaneously suggesting theoretical strain between perceived effort, emotional regulation and sustained engagement. RQ 1 How do learners perceive their autonomy in learning motivation? In terms of autonomy, learners exhibited a moderate level of autonomy as implied by their consistency of interest and perseverance of effort. This pattern also reveals that although learners are able to sustain their motivation to complete a task, maintaining long-term interest remains difficult. This finding is consistent with Martin et al. (2022), who observed that in structured academic settings, perseverance often lasts even if consistency of interest declines. It finds echo with studies by Khairuddin et al. (2025), Muenks et al. (2017) as well as Wolters and Hussain (2015), as learners maintain the perseverance of effort despite even wavering or changing in goals pertaining academic excellence. Anchoring this to SDT (Ryan and Deci, 2000), this reveals that learners persevere due to expectations and goal attainments than by fully volitional interest. This pattern is also consistent with Rahmat and Thasrabiab (2024), who found that when autonomous learners do not feel supported, it may lead to motivational fragility. RQ 2 How do learners perceive their relatedness in learning motivation? In relation to relatedness, the findings indicate high intrinsic value and self-efficacy among learners coupled with a moderate level of test anxiety. This suggests that learners perceive their learning as meaningful and useful which is consistent with SDT's claim on perceived value as a drive of intrinsic motivation (Ryan and Deci, 2000). It is also reported in Mok and Rahmat (2025) Malaysian learners' motivation is sustained despite substantial academic pressure when learning is perceived as essential. However, the presence of test anxiety may lead to learners undermining their self-efficacy, weakening their motivation (Bandura, 1997; Schunk, 1989). This aligns with Sulla et al. (2022) as they included stress as one of many psychology factors that dampens learning motivation among learners even with consistent perseverance. Consequently, emotional pressure may translate into feeling demotivated despite feeling connected with their learning goals.

RQ 3 How do learners perceive their competence in learning motivation? Addressing competence, learners reported high perceived competence, particularly through the integration of cognitive strategies and self-regulation. This is consistent with Meece (2023) as well as Doo and Bonk (2020), which reported close association between competence beliefs and strategic learning. By regularly engaging with rehearsal, organization and self-monitoring, learners translate their competence to concrete learning behaviours. However, it is worth noting that competence may be task-dependent as it fluctuates when learners are confronted with challenging tasks, echoing Garcia and Pintrich (2023) contention that self-regulation is shaped by the demand of the task and motivational conditions. RQ 4 Is there a relationship between all factors for

learning motivation? The findings of this study reveal a strong relationship between autonomy, relatedness and competence which show that these three aspects are interrelated and do not work in isolation (Ryan and Deci, 2000), consistent with SDT's central claim. The strongest association between relatedness and competence highlights that a sense of connectedness to one's learning material or environment results in a stronger self-regulation. This supports Ulstad et al. (2018), who claimed that motivational needs to operate as a 'package' to maintain engagement and effort, which also resonated with Stephen and Murugesan (2024) study. RQ 5 Is there a significant difference between all factors across disciplines? For RQ5, there is no significant difference between all factors across discipline which outline that motivational behaviour grounded in SDT operates the same regardless of one's discipline of study, a finding that mirrors Linnenbrink and Pintrich (2002) who noted that when the demands are consistent, motivations function similarly across different learning domains. RQ 6 Is there a significant difference between all factors across education levels? For RQ6, findings indicate that there is a significant variation identified from the aspect of autonomy across education levels but not for relatedness and competence. This implies as learners progress academically, their sense of control over learning grows considerably due to exposure to independent learning. This supports Xu et al. (2021), who reported that learners' perceptions of agency might differ across educational stages. The claim can be further corroborated how learners are in a continual of exploring and developing their learning experience (Muenks et al., 2017). Nevertheless, there is no significant difference for relatedness and competence across levels suggest that educational structures may standardise these dimensions limiting their variability.

Conclusion

The results reinforce the relevance of Self-Determination Theory as a comprehensive lens for learning motivation in Malaysian tertiary education. The relationship among autonomy, relatedness and competence affirms SDT's claim that psychological needs are interdependent (Ryan and Deci, 2000). This study also expands Martin et al. (2022), by integrating grit and self-regulated learning into SDT, revealing that perseverance and strategic learning behaviour may coexist with moderate levels of autonomy. This pattern addresses the need for a more nuanced understanding of grit within motivational theory as this study reported persistence may not translate to psychological ownership of one's learning. From the standpoint of pedagogical practice, the findings indicate that the instructional practice must move beyond encouraging effort alone as high emphasis should also be placed on motivational quality. The findings addressed that while learners are diligent, moderate autonomy and persistent test anxiety point to the need for learning environments that offer stronger autonomy support. Educators are encouraged to build learning environments that foster a stronger case of agency through providing meaningful choice, relevance and opportunities for personal goal setting, as advocated by Reeve (2012). Additionally, uneven self-regulation when facing difficulties, paired with strong competence called for explicit instruction in metacognitive and emotional regulation strategies. The incorporation of a reflective learning environment may also address the test anxiety while also support the motivational engagement of the learners. Future researchers could examine how autonomy, relatedness and competence evolve over time by employing a longitudinal study across educational levels. Augmented understanding into why learners sustain perseverance despite change of interest over

time may be acquired through qualitative or mixed-method research. Also, as this study focuses primarily on learners' perception, future studies could also explore the relationship between institutional and instructional aspects in supporting learners' autonomy.

Acknowledgement

This research is self-funded.

Conflict of interest

The authors confirm that there is no conflict of interest involve with any parties in this research study.

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