

Motivation and Study Engagement: A Study of Muslim Undergraduates in Malaysia

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ABSTRACT

There has always been a serious concern about students' academic performance in schools and institutions of higher learning. Mostly, it has been seen in terms of lack of motivation. However, little attention has been given to the reasons for poor motivation. The Self-Determination Theory (SDT) of motivation provides a new perspective on motivation. This paper investigates students' motivation and study engagement using the SDT framework. It examines the role of learning climate, intrinsic motivation resulting from basic needs satisfaction, self-perception of choice and self-awareness on students' study engagement. This study attempts to validate SDT propositions on students' motivation and study engagement in the Asian context and within an Islamic institution of higher education. Data were collected from 432 undergraduate students (Females = 62.2%) representing several study disciplines. Standardised instruments were employed to measure the constructs of learning climate, basic needs, perceived self-determination and study engagement. Results provided strong support for the SDT propositions suggesting that an autonomy supportive learning climate significantly contributed to intrinsic need satisfaction of autonomy, competence and relatedness. It was also found that the autonomy supportive learning climate and satisfaction of competency need contributed to greater study engagement. This study provides good empirical support to the SDT propositions from a non-Western cultural context.

Keywords: Self-determination, Intrinsic motivation, learning climate, study engagement

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INTRODUCTION

Student engagement has re-emerged to become one of the most popular constructs in the educational context (McCormick & Plucker, 2013). It has been found that student engagement is related to improvement in their overall academic performance and greater achievement and thus, it is considered a key component of their success (Schaufeli et al., 2002). Engaged students usually have intrinsic motivation and thus, they invest time and effort in learning, attend classes and actively participate in their academic activities (Bakker et al., 2014). They ask questions out of curiosity and enjoy learning challenges. They feel energetically immersed in their studies and feel vigorous and dedicated, and that what makes them successful (Salanova et al., 2010).

To get students engaged in their learning, they need to be motivated. As motivation and engagement are inherently linked and each influences the other, engagement is seen as an outcome of the motivational processes and motivation as a source of engagement (Reeve, 2012). Motivation is traditionally being viewed as something that differs in degree, hence, parents and teachers would like to *increase* the motivation level of less motivated students. However, the Self-Determination Theory (SDT) of motivation by Ryan and Deci (2000) places more emphasis on the type rather than degree of motivation. They argue that people differ in motivation based not only in terms of degree but also in types. Thus, an individual may engage in an activity because

it is of interest to him/her. Another person may do the same but expect some outcomes such as better grade for example. Therefore, SDT distinguishes between two types of motivation, namely intrinsic motivation which means doing something because it is interesting and enjoyable, and extrinsic motivation which means doing an action because it leads to separable outcomes.

Motivation can arise from various sources including needs, cognitions, emotions and environmental events (Reeve, 2012). However, in the present study, it is viewed from the needs perspective within the SDT framework, where motivation is equated with the satisfaction of students' inner psychological needs. The SDT argues that students' performance and the quality of experience in learning are much better when their needs of autonomy, competence and relatedness are satisfied while the opposite is true when these needs are frustrated (Deci & Ryan, 2000). Further, social context plays a key role in facilitating or thwarting students' needs as they interact with teachers and peers in classrooms.

RESEARCH MOTIVATION AND OBJECTIVE

The theoretical propositions of SDT on motivation need to be tested in different cultural as well as organisational contexts. In particular, SDT along with student engagement have not been tested in Muslim countries and Islamic institutions. Some of the unique cultural characteristics that may be observed in Asian as well as Muslim countries such as Malaysia include

collectivism, relationship orientation, conformity to social and religious norms, face saving, power distance and obedience to authority (Abdullah, 1996; Fontaine & Richardson, 2005; Terpstra-Tong et al., 2014). There are arguments that the basic propositions of SDT should not apply in such cultures (Bond, 1988; Markus et al., 1996; Markus & Kitayama, 2003, as cited in Jang et al., 2009). According to these scholars, in Eastern collectivistic cultures like Malaysia, priority is given to maintaining social obligations over autonomy support. The preferred parenting and teaching styles, therefore, are characterised by controlling rather than encouraging autonomy (Quoss & Zhao, 1995). As such, psychological needs satisfaction proposed in SDT may not yield the same impact on positive educational outcomes (namely engagement) as found in Western contexts (Iyengar & DeVoe, 2003; Tseng, 2004). Though studies have been conducted to examine parenting as well as teaching styles in Asian cultures, no study has challenged the validity of SDT propositions. The theory proposes that the need for autonomy, competence and relatedness are universal needs and when satisfied, will promote positive learning outcomes among students. Therefore, the objective of this study was to test the premises of SDT in Malaysian as well as institutional (Islamic) context.

THEORETICAL BACKGROUND

Students' Study Engagement

Educational researchers would agree that engagement features three highly interrelated

yet distinct aspects, namely behavioural, emotional and cognitive (Fredricks et al., 2004). Behavioural engagement is about the active involvement of students in learning activities such as their effort, attention and concentration (Fredricks et al., 2004). Emotional engagement refers to the presence of emotions that help in facilitating learning tasks such as interest and the absence of emotions that may cause withdrawal from tasks such as distress (Reeve, 2012). The last aspect of student engagement, which is cognitive, refers to what Reeve (2012) calls "sophisticated rather than superficial learning strategies" (p. 150). According to Reeve, sophisticated learning strategies entails energy (i.e., intensity and vigour), direction (i.e., purpose and guidance) and durability (i.e., tenacity and commitment)

Another slightly different approach to engagement was proposed by Schaufeli et al. (2002) who define engagement in the work context as a positive, fulfilling state of mind that is characterised by vigour, dedication and absorption. As such, study engagement may be defined as students' positive and fulfilling mental state that is reflected in their vigour, dedication, and absorption levels in studies. Vigour refers to high levels of energy and resilience while studying. Dedication is characterised by being strongly involved in one's activities and experiencing a sense of significance and enthusiasm. Absorption is the state of being fully concentrated and happily engrossed. Such conceptualisations could be seen as consistent with other conceptualisations where behavioural, emotional and cognitive

aspects entail vigour, dedication and absorption aspects, respectively. It is argued that engaged students are very energetic and enthusiastic about their studies and they can be fully immersed in their learning activities to a degree that time passes without them noticing (Bakker et al., 2014). Therefore, engaging students in classroom settings is very important. Not only can engagement predict important outcomes such as learning and development, it also reveals the underlying motivation (Guay et al., 2001)

Self-Determination Theory

Self-Determination Theory (SDT) is a macro theory of motivation. It posits that all students, regardless of their backgrounds, possess inherent growth tendencies and readiness to learn, to explore, to grow and to assimilate knowledge and to develop new skills (Ryan & Deci, 2000). These tendencies (e.g., intrinsic motivation, curiosity, psychological needs) could provide a motivational foundation for students to be highly engaged and positively function in classrooms (Ryan & Deci, 2000; Reeve, 2012).

The SDT classifies motivation into two main categories, namely intrinsic and extrinsic motivation. When intrinsically motivated, students engage in activities for the potential fun, excitement and challenge. These behaviours originate from within the self-associated feelings of curiosity and interest, rather than being brought about by any external contingencies (Niemi & Ryan, 2009). Due to the fact that not all

activities are intrinsically interesting and enjoyable to derive satisfaction from them, an individual needs some instrumental and extrinsic factors to get him/her motivated. Extrinsic motivation refers to doing an activity with the expectations of external reward or avoidance of punishment. The SDT argues that extrinsic motivation can vary in degrees and not as one category (Ryan & Deci, 2000). Extrinsic motivation can vary in degrees from fully controlled by contingencies external to individuals, such as expecting rewards or avoiding punishments (doing an assignment because students fear losing their grades), to autonomous motivation (doing an assignment because students perceive it valuable to their careers) which can be considered as identical to intrinsic motivation. Doing an assignment because of fear of loss and because it is perceived valuable are still extrinsic motivation but they vary in their degrees. What differentiates both behaviours is that in the first one, students are pressurised to do so. However, in the second behaviour, it involves some sort of endorsement and relative autonomy (Ryan & Deci, 2000).

Given the classification of motivation (intrinsic and extrinsic) and how extrinsic motivation can be further divided into sub-groups, SDT proposes that people have three universal, psychological needs in order for them to develop and function optimally. These three needs are autonomy, or the perception that one's behaviour is self-congruent and volitional; competence, or the perception that one is capable of influencing the environment in desirable ways and

relatedness, or the feeling of closeness and connectedness with others (Weinstein & Ryan, 2011). It is suggested that the social, contextual factors that provide people the opportunity to satisfy these needs will facilitate intrinsic motivation and the integration (the fullest type of internalisation) of extrinsic motivation, whereas those that prevented satisfaction of these needs will decrease intrinsic motivation and the integration of extrinsic motivation (Deci & Ryan, 2000). Weinstein and Ryan (2011) argue that individuals move towards motivational states that are characterised as self-volitional or autonomous when their environments support their needs. But, if environmental factors do not support the basic needs, motivation is pressured or controlled.

Benware and Deci (1984) conducted a study on university students to test whether those who learn with an active orientation (learn to teach) would be more intrinsically motivated than those who learn with a passive orientation (learn to take exam on the same material given to the active orientation group). Findings show that students with the passive orientation were less intrinsically motivated, had lower conceptual learning scores and had lower perception of themselves to be more actively engaged with the environment than the students with the active orientation. Niemiec and Ryan (2009) report that two studies conducted in the USA (Grolnick & Ryan, 1987) and Japan (Kage & Namiki, 1990) found that evaluative pressures undermined students' intrinsic motivation

for classroom topics and materials, as well as their performance in school, whereas autonomy support facilitated it.

As postulated by SDT that satisfying students' needs is vital for their academic motivation internalisation, Jang et al. (2009) found that experiencing the feelings of autonomy and competence enhances intrinsic motivation. They conducted a series of studies testing SDT in South Korea, which is collectivistic, using middle-class students as samples. As it is argued that collectivistic culture does not value autonomy, the authors, specifically, wanted to examine whether those students enjoy learning activities that afford basic psychological need satisfaction. Findings show that the basic assumptions of SDT held true even in a collectivistic culture. It was found that basic needs satisfaction led to more satisfying learning experiences and greater academic achievement.

Some scholars have questioned the universality of SDT. Brickman and Miller (2001, cited in Zhou et al., 2009) for instance, argue that students acquire their needs, values and attitudes from their culture which in turn influence their motivation for learning. Accordingly, children in collectivist cultures are inclined to develop a strong sense of belonging as these cultures do not value autonomy, whereas children in individualistic cultures are raised to develop a strong need for autonomy. To be autonomously motivated, the three needs should be met. However, it has been suggested that autonomy is not important for school outcomes in collectivist cultures

such as China. Using a sample of elementary school students, Zhou et al. (2009) applied SDT in a study to investigate the motivation for learning among rural collectivist Chinese children. Findings supported SDT as it shows that students' autonomous motivation was associated with a higher level of interest, perceived competence and choice whereas controlled motivation was related to a lower level of perceived choice and reduced interest. Further, students' perception of teachers' autonomy supports positively predicted changes in autonomous motivation, controlled motivation and perceived competence (Zhou et al., 2009).

In their review of SDT application to education, Niemiec and Ryan (2009) concluded that intrinsic motivation and autonomous types of extrinsic motivation are essential to students' engagement and optimal learning in educational contexts. They also reported that students' academic performance and well-being are facilitated by the perceptions of their teachers' support of their basic psychological needs for autonomy, competence and relatedness. Students' academic performance was also found to be influenced by their perceived autonomy and competence (Fortier et al., 1995).

Teachers' Motivational Support

Students differ in their perception of the learning environment and thus, their engagement relies on what they perceive. Hardré et al. (2006) mention that students' outcomes are the results of systematic interactions of factors that involve students,

teachers and their educational institutions. The characteristics that teachers and students bring to their educational settings and culture of that setting interact and affect students' outcomes either positively or negatively. Guay et al. (2001) argue that the congruence between students' self-determined inner motives and their classroom activity are facilitated by autonomy-supportive teachers through identifying and nurturing students' needs, interests and preference. In contrast, these inner and self-determined motives could be degraded by controlling teachers as they shape their agendas of what students should think, feel and do. As teachers' agendas are shaped, controlling teachers introduce extrinsic incentives in order to shape student adherence to those agendas, which essentially bypass students' inner motives.

According to Guay et al. (2001), teachers can be supportive of students' inner resources if they are trained to do so. They reported that trained teachers, who participated in an informational session on how to support students' autonomy and who engaged themselves in independent study on the study-specific website, were able to display greater autonomy-supportive behaviours than the non-trained ones. Furthermore, they found that students' engagement was more enhanced with teachers who used autonomy support during instruction.

Lack of motivation towards learning among students is one of the pressing issues in academic contexts. Students lose the desire to do the tasks assigned to them and thus,

feelings of frustration and discontentment arise and their productivity and well-being can be encumbered (Legault et al., 2006). Generally, various positive outcomes are associated with self-determined motivation and negative outcomes are associated with less self-determined forms of extrinsic motivation. In the academic context, boredom and poor concentration in class, higher perceived stress at school, poor psychosocial adjustment to college while studying, and high school dropout have been associated with *Amotivation* (Legault et al., 2006). Amotivation is defined as a state in which students lack the intention to learn. Amotivated students are not able to sense the connection between their behaviour and its subsequent outcomes (Deci & Ryan, 2000). Amotivation and factors affecting it have been given little attention whereas motivation has been extensively studied (Legault et al., 2006). Amotivation has been treated as one-dimensional when it is believed to be multidimensional. Legault et al. (2006) conducted three studies to explore and validate this claim and to determine the factors that give rise to academic amotivation. Four dimensions were identified: (1) ability beliefs, (2) effort beliefs, (3) characteristics of the task and (4) individual values relative to the task. Results show support and validation of the four sub-dimensions of amotivation. They also show distinct classes of reasons that give rise to students' amotivation. These include lack of belief in their ability, lack of belief in their effort capacity, unappealing characteristics of the academic task and

finally, lack of value placed on the task (Legault et al., 2006). Also, the study further shows that inadequate social support (from parents, teachers and friends) gives rise to amotivation and thus, negatively affects students' academic outcomes (e.g., achievement, academic self-esteem, intention to drop out).

As SDT is argued to be universal and that its propositions predict several positive outcomes, the following hypotheses were developed for examination:

H1: *The autonomy supportive learning climate, sense of choice and self-awareness foster the satisfaction of the three basic needs of undergraduate students.*

H2: *The satisfaction of the three basic needs, which constitute the ingredients of intrinsic motivation, contribute to undergraduate students' study engagement.*

METHODOLOGY

Sample

A sample of 432 undergraduates from several faculties participated in this study. They included 270 (62.2%) females. The sample largely conformed to the population distribution in terms of female versus male students in the university where data were collected. All 432 students were Malaysians and Muslims. Stratified random sampling was used for sample selection. One department each was randomly selected from the total seven faculties located in one campus of the University. Subsequently, two

lecturers were randomly selected from these departments to distribute the questionnaires in their classroom. All students attending the class sessions responded to the questionnaire.

Measures

The following scales were used to measure the constructs, namely basic needs satisfaction, self-determination, learning climate, and study engagement. All the scales were adopted from the published sources.

Basic Psychological Needs Scale (BPN). This 7-point scale included three sub-scales that measure autonomy (7 items), competence (6 items) and relatedness (8 items) needs. However, one item measuring relatedness need was removed as it obtained low reliability value. Examples of items are: "I feel like I am free to decide for myself how to live my life" (Autonomy), "People I know tell me that I am good at what I do" (Competence) and "I get along with people I come in contact with" (Relatedness). The BPN scale was developed by Deci et al. (2001) and has been widely used in several studies (Kasser, Davey & Ryan, 1992; Ilardi, Leone, Kasser & Ryan, 1993; Deci et al., 2001) and has provided good empirical validity.

The Self Determination Scale (SDS). This scale was designed by Deci and Ryan (2000) to assess individual differences in the extent to which people tend to function in a self-determined way. It is thus considered as a relatively enduring aspect of people's personalities which reflect: (a) being more

aware of their feelings and their sense of self and (b) feeling a sense of choice with respect to their behaviour. The SDS is a 10-item scale with two 5-item sub-scales. The first sub-scale measures awareness of oneself and the second is perceived choice in one's actions. Responses were recorded on a 5-point scale. The scale has been extensively used by researchers in several contexts thus, providing it the empirical validity (Sheldon et al., 1996; Sheldon, 1995).

Learning Climate Questionnaire (LCQ). The 15-item scale developed by Williams and Deci (1996) was adapted to measure students' perception of autonomy support provided to them by faculty members. Responses were solicited on a 7-point scale (1 = strongly disagree; 7= strongly agree). Example item is: "I feel that my lecturers provide me choices and options." Several studies using this scale in different contexts have provided good empirical support to this scale (Williams et al., 1994; Black & Deci, 2000).

Study Engagement Scale (SES). This scale measures the degree to which students feel engaged in their studies. Items of this scale were adapted from Utrecht's Work Engagement Scale (UWES) (Schaufeli & Bakker, 2004). The construct of work engagement includes vigour, dedication and absorption. This 9-item scale has been reworded to measure students' study engagement. Responses were obtained on a 5-point scale. Items included: "I am immersed in my studies". The alpha value measured in the present study for this scale is .86 (See Table 1).

Background Information. A few relevant pieces of background information were also collected such as gender, nationality (local/international), faculty, department, and year of study. Apart from these demographics, the survey was anonymous.

Method of Data Collection

Data were collected during class time with the support extended by the faculty members. Instructions were provided on the cover page of the printed questionnaire. Respondents were requested not to disclose their identity anywhere on the questionnaire to ensure anonymity and to encourage candid responses.

RESULTS

General Findings

Table 1 summarises the general findings. The mean values of the three basic needs satisfaction indicate endorsement in the following order: autonomy, competence and relatedness. Learning climate was also rated slightly above average. The self-

determination constructs (self-awareness and choice) and students’ engagement too received moderate to high scores on a five-point scale: choice (Mean = 3.31), self-awareness (Mean = 3.58) and engagement (Mean = 3.44). The reliability for all scales was generally good (alphas ranged from .70 to .91). Almost all the variables were significantly correlated to one another. Though not reported in Table 1, no significant mean differences was found between male and female students on any variable.

Learning Climate and Basic Needs Satisfaction

According to SDT, teachers play an important role in creating a learning climate that is either controlling or providing choice to the students which in turn would determine student satisfaction of the three basic needs, namely autonomy, competence and relatedness.

The theory also posits that individuals differ in the extent to which they tend to function in a self-determined way. It is considered as a relatively enduring aspect

Table 1
Descriptive Statistics, Alpha and Correlations

	Mean	SD	Alpha	1	2	3	4	5	6	7
1. Autonomy (6)	5.22	.84	.70	-						
2. Competence (6)	4.50	.74	.72	.54**	-					
3. Relatedness (8)	4.96	.81	.78	.42**	.50**	-				
4. L. Climate (15)	4.53	.88	.91	.27**	.24**	.28**	-			
5. Self-awareness (5)	3.58	.77	.79	.33**	.27**	.31**	.23**	-		
6. Choice (5)	3.31	.85	.86	.38**	.25**	.27**	.17**	.30**	-	
7. Engagement (9)	3.44	.57	.86	.29**	.37**	.19**	.37**	.29**	.17**	-

** p < .01; *p < .05, Numbers in parentheses are number of items in the scale.

of people’s personalities which reflects: (a) being more aware of their feelings and their sense of self and (b) feeling a sense of choice with respect to their behaviour. This could be the result of the way they are exposed to the social environment. Thus, a strong and supportive family, school and community environment should foster greater sense of choice in life and the awareness of one’s own feelings and cognitions. Tables 3 present multiple regression results to test the hypotheses.

The results were in the expected direction. It supported the universality of SDT. The three independent variables that entered into equations significantly predicted satisfaction of autonomy, competency, and relatedness needs and explained 26%, 17% and 19% variances respectively. Thus, the results suggest that if teachers were perceived as less controlling and more autonomy supportive and if students developed a better sense of choice in life and were more aware of their thoughts and feelings, then satisfaction of the basic needs for autonomy, competence and relatedness is facilitated.

Basic Needs Satisfaction, Learning Climate, and Self-Determination as Predictors of Students Study Engagement

Overall, the model explained 22% variance and was highly significant. However, only two variables, namely competence and learning climate, significantly predicted the dependent variable i.e., study engagement. Table 3 presents the results.

DISCUSSION

The study was planned to test the universality of the Self Determination Theory of motivation in the institutional context which was non-Western, collectivistic and Islamic. It is argued that in Eastern collectivistic cultures, priority is given to maintaining social obligations over autonomy support. The preferred parenting and teaching styles, therefore, are characterised by controlling rather than encouraging autonomy (Quoss & Zhao, 1995). This holds true as well in traditional Muslim societies. For instance, it is expected that a good child should be obedient to parents and teachers, and should be forced into submission. Although

Table 2
Multiple Regressions Predicting Autonomy, Competence and Relatedness Need Satisfaction from Learning Climate, Self-Awareness, and Choice

	Autonomy		Competence		Relatedness	
	Std. β	t	Std. β	t	Std. β	t
Learning climate	.28	6.32***	.21	4.55***	.27	5.81***
Self-awareness	.18	3.94***	.21	4.52***	.20	4.22***
Choice	.27	6.04***	.17	3.75***	.15	3.23***
	Adj. R ² = .26, (F= 50.67, p<.000)		Adj. R ² = .17, (F= 30.85., p<.000)		Adj. R ² = .19, (F= 33.66, p<.000)	

*** p<.000

Table 3
Multiple Regressions Predicting Study Engagement

Predictors	Std. β	t-value	Significance
Autonomy	-.07	-1.36	.17
Competence	.30	5.38	.00
Relatedness	.00	.05	.96
Learning Climate	.29	6.18	.00
Self-awareness	.07	1.42	.15
Choice	.06	1.23	.21

Adj. $R^2 = .22$; ($F = 21.15$, $p < .00$)

Malaysia is a country in transition, family values and religious beliefs are still core foundations for successful parenting in most families (Selin, 2014). Similar parenting styles are found in other Muslim countries. For instance Al-Khawaja (1999) reported that among Egyptian college students, 64.4% of women and 33.1% of men favoured “absolute submission” to parents. As such, psychological need satisfaction proposed in the SDT should not yield the same impact on positive educational outcomes as found in Western contexts (Iyengar & DeVoe, 2003; Tseng, 2004). The results, however, did not find this to be true. On the contrary, the result supported our first hypothesis that the autonomy supportive learning climate as well as sense of personal choice and self-awareness foster satisfaction of the three basic needs, i.e., autonomy, competence and relatedness.

When it came to predicting students’ study engagement, the results partially supported our second hypothesis. Among the three basic psychological needs, the need for competence contributed significantly to students’ study engagement. The finding is consistent with previous research findings

on fulfilment of competence need and students’ positive learning outcomes and well-being (Jang et al., 2009; Skinner & Chi, 2012).

The SDT posits that the basic psychological needs function as the requisite nutriment for students’ active engagement and positive school functioning (Jang et al., 2009), and as the essential ingredient for optimal learning and well-being (Zhou et al., 2009). That is, people whose psychological needs are satisfied will be psychologically healthier and more effective in learning regardless of differences in the institutional and cultural context. Because of the claim that autonomy is insensitive to culture differences, the SDT received criticism, where it is argued that the Eastern culture may not value autonomy as much as the Western culture does (Zhou et al., 2009). Since the study was conducted in Malaysia which ranks high on collectivistic culture (Fontaine & Richardson, 2005) and moreover in an Islamic institution of higher education, the findings partially supported this argument. Neither autonomy nor relatedness need made any significant contributions to students’ study engagement.

However, students' perceptions of autonomy-supportive learning climate enhanced their engagement. This is consistent with previous research where autonomy-support predicted increase in perceived competence, autonomous self-regulation and enjoyment (Black & Deci, 2000). Also, Roth *et al.* (2009) found that autonomy-support predicts choice and academic engagement.

The contributions of other variables on study engagement, namely choice and self-awareness, were positive though not significant. As posited by SDT, choice can be either motivating or otherwise. It can promote engagement when it is offered in a way that meets students' needs. For instance, "choice is motivating when the options are relevant to the students' interests and goals (autonomy support), are not too numerous or complex (competence support), and are congruent with the values of the students' culture (relatedness support)" (Katz & Assor, 2007).

CONCLUSION

This study was mainly planned to address the issue of student motivation and engagement and how they are facilitated in the unique context of an Asian collectivistic culture and within an Islamic institution of higher education. The SDT has been largely examined in the western cultural context. Additionally, no such study has been conducted in any Islamic institutional environment. As such, this study assumes significance. The Self-Determination Theory, which proposes that humans naturally have innate needs, which when

satisfied result in optimal functioning and positive outcomes, guided this research. The findings provide empirical validity to the SDT by showing that autonomy supportive learning climate and an individual's sense of choice in life as well as being self-aware of thoughts and feelings contributed to the satisfaction of three basic needs for autonomy, competence and relatedness. The results also provided strong support for the effects of competence and learning climate (autonomy support) on study engagement. Future research should examine how the SDT proposition predicts students' academic performance while controlling for factors such as intelligence and aptitude.

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