MEDIATING EFFECT OF PSYCHOLOGICAL NEEDS SATISFACTION FOR PRESENCE, GRATITUDE, AND ACADEMIC MOTIVATION DURING ONLINE LEARNING AMONG MALAYSIAN PRIVATE UNIVERSITY UNDERGRADUATES

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FACULTY OF EDUCATION
UNIVERSITI MALAYA
KUALA LUMPUR

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THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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MEDIATING EFFECT OF PSYCHOLOGICAL NEEDS SATISFACTION FOR PRESENCE, GRATITUDE, AND ACADEMIC MOTIVATION DURING ONLINE LEARNING AMONG MALAYSIAN PRIVATE UNIVERSITY UNDERGRADUATES

Academic motivation is a vital aspect of human learning and development. It is essential to better understand both direct and indirect predictors of superior academic motivation, to address the problem of declining academic motivation among undergraduates in online learning. As lack of interaction has been cited as a central reason for reduced academic motivation in online learning, this study examined the associations between (i) presence and academic motivation and (ii) gratitude and academic motivation, as well as the mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation, particularly, among undergraduates during online learning at private universities in Malaysia. A correlational research design was employed in this study. Two hundred and fifty students who are pursuing their tertiary education in private universities across the country, recruited via convenience sampling, filled in an online survey. The variables namely presence, gratitude, academic motivation, and psychological needs satisfaction were measured using the Community of Inquiry Survey, the Gratitude Questionnaire-Six-Item Form, the Academic Motivation Scale as well as Basic Psychological Need Satisfaction and Frustration Scale respectively. Pearson's *r* with bootstrapping analyses revealed that there is a significant positive relationship between presence and autonomous academic motivation as well as between presence and controlled academic motivation. There is also a significant negative relationship between presence and academic amotivation. In addition, there is a significant positive relationship between gratitude and autonomous academic motivation. There is a significant negative relationship between

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gratitude and academic amotivation. However, it was found that there is no significant relationship gratitude and controlled academic motivation. Furthermore, PLS-SEM analyses suggested that psychological needs satisfaction significantly mediates the relationship between social presence and autonomous academic motivation (β = 0.100, p = .021), but not the relationship between cognitive (β = 0.061, p = .140) and teaching presences (β = -0.039, p = .315) and autonomous academic motivation. Psychological needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation (β = 0.090, p = .003). However, it was found that psychological needs satisfaction does not significantly mediate the relationships between cognitive (β = 0.004, p = .846), social (β = 0.006, p = .826), and teaching presences (β = -0.002, p = .866) and controlled academic motivation. Psychological needs satisfaction does not significantly mediate the relationship between gratitude and controlled academic motivation as well (β = 0.006, p = .827). Further, psychological needs satisfaction was found to significantly mediate the relationship between social presence and academic amotivation (β = -0.125, p = .013), but not the relationship between cognitive (β = -0.076, p = .122) and teaching presences (β = 0.049, p = .311) and academic amotivation. Psychological needs satisfaction significantly mediates the relationship between gratitude and academic amotivation (β = -0.113, p = .001). The findings of the current study provide insights into addressing the problem of low academic motivation among students during online learning, in turn, aid university administrations to address the higher rates of attrition in online learning.

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KESAN PERANTARAAN KEPUASAN KEPERLUAN PSIKOLOGI UNTUK KEHADIRAN, KESYUKURAN, DAN MOTIVASI AKADEMIK SEMASA PEMBELAJARAN DALAM TALIAN DALAM KALANGAN MAHASISWA UNIVERSITI SWASTA MALAYSIA

Motivasi akademik adalah aspek penting dalam pembelajaran dan pembangunan manusia. Adalah penting untuk lebih memahami peramal langsung dan tidak langsung motivasi akademik untuk menangani masalah kemerosotan motivasi akademik dalam kalangan mahasiswa semasa pembelajaran dalam talian. Oleh kerana kekurangan interaksi telah dicatat sebagai sebab utama kemerosotan motivasi akademik semasa pembelajaran dalam talian, kajian ini mengkaji korelasi antara (i) kehadiran dan motivasi akademik dan (ii) kesyukuran dan motivasi akademik. Tinjauan kajian lepas mendapati kepuasan keperluan psikologi berkorelasi dengan motivasi autonomi dan kesejahteraan. Oleh itu, kajian ini juga mengkaji peranan perantaraan kepuasan keperluan psikologi dalam korelasi antara (i) kehadiran dan motivasi akademik dan (ii) kesyukuran dan motivasi akademik, khususnya, dalam kalangan mahasiswa semasa pembelajaran dalam talian di universiti swasta di Malaysia. Reka bentuk penyelidikan korelasi telah digunakan dalam kajian ini. Dua ratus lima puluh orang pelajar yang mengikuti pengajian tinggi di universiti swasta di seluruh negara, dipilih melalui persampelan mudah, telah mengisi tinjauan dalam talian. Pembolehubah kajian, iaitu kehadiran, kesyukuran, motivasi akademik dan kepuasan keperluan psikologi telah masing-masing diukur menggunakan *Community of Inquiry Survey*, *Gratitude Questionnaire-Six-Item Form*, *Academic Motivation Scale* dan *Basic Psychological Need Satisfaction and Frustration Scale*. Pearson's *r* dengan analisis bootstrapping mendedahkan bahawa terdapat korelasi positif yang signifikan antara kehadiran dan motivasi akademik autonomi. Terdapat juga korelasi negatif yang signifikan antara kehadiran dan motivasi akademik. Di samping itu,

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terdapat korelasi positif yang signifikan antara kesyukuran dan motivasi akademik autonomi dan antara kehadiran dan motivasi akademik terkawal. Terdapat korelasi negatif yang signifikan antara kesyukuran dan motivasi akademik. Walau bagaimanapun, didapati tidak terdapat korelasi yang signifikan antara kesyukuran dan motivasi akademik terkawal. Tambahan pula, analisis PLS-SEM mencadangkan bahawa kepuasan keperluan psikologi menjadi perantara korelasi antara kehadiran sosial dan motivasi akademik autonomi secara signifikan (β = 0.100, p = .021), tetapi bukan korelasi antara kehadiran kognitif (β = 0.061, p = .140) dan pengajaran (β = -0.039, p = .315) dan motivasi akademik autonomi. Kepuasan keperluan psikologi menjadi perantara korelasi antara kesyukuran dan motivasi akademik autonomi secara signifikan (β = 0.090, p = .003). Walau bagaimanapun, didapati bahawa kepuasan keperluan psikologi tidak menjadi perantara korelasi antara kehadiran kognitif (β = 0.004, p = .846), sosial (β = 0.006, p = .826) dan pengajaran (β = -0.002, p = .866) dan motivasi akademik terkawal secara signifikan. Kepuasan keperluan psikologi tidak menjadi perantara korelasi antara kesyukuran dan motivasi akademik terkawal secara signifikan (β = 0.006, p = .827). Selanjutnya, kepuasan keperluan psikologi didapati menjadi perantara korelasi antara kehadiran sosial dan motivasi akademik secara signifikan (β = -0.125, p = .013), tetapi bukan korelasi antara kehadiran kognitif (β = -0.076, p = .122) dan pengajaran (β = 0.049, p = .311) dan motivasi akademik. Kepuasan keperluan psikologi menjadi perantara korelasi antara kesyukuran dan motivasi akademik secara signifikan (β = -0.113, p = .001). Penemuan kajian ini memberi panduan untuk menangani masalah motivasi akademik yang rendah dalam kalangan pelajar semasa pembelajaran dalam talian, seterusnya, membantu pentadbiran universiti untuk menangani kadar keciciran yang lebih tinggi semasa pembelajaran dalam talian.

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The escalation in the number of online learning programmes is witnessed across the globe due to the benefits it brings to students, teaching faculty, as well as educational institutions (Cleary, 2021). The recent COVID-19 pandemic has accelerated the adoption of online learning in all different educational settings, and this trend is expected to persist for years to come (Kim & Gurvitch, 2020). By providing flexible access to education, online learning allows students who are not able to take full-time, on-campus programs due to reasons such as employment, travel cost, and caretaking responsibility, to still pursue their educational dreams. Similarly, it offers greater flexibility to instructors. Online learning allows educational institutions to expand enrolments to nontraditional learners as well. Accordingly, globalized online learning has been outlined as one of the 10 shifts that would stimulate sustained excellence of higher education in the Malaysia Education Blueprint 2015-2025 (Higher Education; Ministry of Education Malaysia, 2015).

Experts assert that the proliferation of online learning has created a parallel attrition problem at the tertiary education level across the globe. Declining academic motivation has been cited as one of the primary reasons for students dropping out of their undergraduate studies (Cleary, 2021; Colferai & Gregory, 2015). Academic motivation refers to the cause of behaviours that are associated with academic functioning and success (Schunk et al., 2008). As academic motivation is viewed as one of the most essential aspects of human learning and development (Rowell & Hong, 2013), it becomes paramount to better understand the predictors of superior academic motivation.

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Presence, which is the sense of being in a place and belonging to a group, has been suggested as an important predictor of academic motivation (Kucuk & Richardson, 2019; Zilka et al., 2018). Similarly, gratitude, conceptualized as a life orientation towards noticing and appreciating the positive in the world, has been shown to predict academic motivation (King & Datu, 2018; Nawa & Yamagishi, 2021). Even though the associations between (i) presence and academic motivation and (ii) gratitude and academic motivation have been suggested in existing literature, the studies investigating the explanatory mechanisms of these relationships remain limited.

Recent systematic reviews and meta-analyses have found psychological needs satisfaction, defined as fulfilment of autonomy, competence, and relatedness needs, to be related to motivation (Tang et al., 2019; Vasconcellos et al., 2020). Studies investigating the alluded mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation, particularly in collectivistic cultures, remain limited. In addition, private university students are likely to have lower levels of academic motivation than public university students (Chong & Ahmed, 2012). Consequently, this study is an attempt to investigate the mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation during online learning among Malaysian private university undergraduates.

1.2 Rationale of the Study

Academic motivation is regarded as one of the most important psychological dimensions that are crucial for human learning and development (Rowell & Hong, 2013). Specifically, academic motivation enhances academic achievement (Gangolu, 2019; Meriac, 2015; Wu, 2019; Zimmerman, 2000). Academic motivation promotes student

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engagement, including among the low-achieving students (Crumpton & Gregory, 2011; Wu, 2019). Academic motivation enhances students' study involvement as well (Parameswari & Maharishi, 2015). Students' academic motivation influences their study habits and efforts including class attendance, completion of assignments, and amount of studying. These in turn are reflected in their final grades (Maurer et al., 2013). Precisely, higher levels of intrinsic motivation and extrinsic motivation contribute to greater levels of study habits, efforts, and final grades. The reverse is true for amotivation. Lack of academic motivation is one of the primary reasons for underachievement (Scheel et al., 2009). In addition, intrinsic motivation facilitates students' capacity to adapt to the intellectual demands of tertiary education (Clark et al., 2014).

Further, students' academic motivation enhances their processing and regulation strategies (Vermunt & Vermetten, 2004). Specifically, autonomous motivation promotes concentration, time management, and active study behaviour, and reduces performance anxiety. Autonomous motivation also promotes deep and concrete processing, and self-regulation (Donche et al., 2013). The resulting deep study strategies and study effort lead to better academic performance (Kusurkar et al., 2013). Autonomous motivation empowers persistence in the academic programme and reduces the intention to drop out (Ratelle et al., 2007; Renaud-Dubé et al., 2015; Rump et al., 2017). Controlled motivation, on the other hand, undermines students' concentration, deep and concrete processing, self-regulation, and time management, and increases their performance anxiety, passive–avoidant school behavior, and dropping out from course (Donche et al., 2013; Vansteenkiste et al., 2005). Autonomous motivation enables certainty of study choice and intrinsic career goals as well (Levpušček & Podlesek, 2017). Ultimately, academic motivation contributes to students' future implementation of evidence-based professional practice (Amit-Aharon et al., 2020).

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In addition, academic motivation promotes psychological adjustment. Autonomous motivation lowers stress, and contributes to greater life satisfaction and improved psychological wellbeing. Autonomous motivation also facilitates hedonic wellbeing as opposed to eudaimonic wellbeing (Breva & Galindo, 2020; Ozer & Schwartz, 2020). Similarly, intrinsic motivation enables greater subjective wellbeing and meaning in life (Bailey & Phillips, 2016). In contrast, amotivated students have poorer psychosocial adjustment to university, greater levels of perceived stress, and greater levels of psychological distress during studying (Baker, 2004). Academic motivation lowers career stress as well (Çetinkaya, 2019). Consequently, superior academic motivation has been implicated in lower levels of depression and suicide risk (Lee et al., 2019).

Presence has been suggested as one of the important predictors of academic motivation. Presence influences student participation, critical thinking, metacognition, knowledge construction, perceived learning, sense of community, and student satisfaction (Arbaugh, 2008; Caskurlu et al., 2020; Choy & Quek, 2016; Garrison & Arbaugh, 2007; Khodabandelou et al., 2014; Liu & Yang, 2014; Richardson et al., 2017; Rockinson-Szapkiw et al., 2016; Thompson et al., 2017; Vaughan & Wah, 2020; van der Merwe, 2014; Yildirim & Seferoglu, 2020). Presence predicts intrinsic, extrinsic, and germane loads (Kozan, 2016). Presence facilitates the attainment of student learning outcomes and ultimately learning performance as well (Law et al., 2019; Yang et al., 2016; Yussiff et al., 2018).

Further, social presence is a crucial determinant of student retention in online learning (Boston et al., 2009). Similarly, cognitive presence promotes student satisfaction in low disenrollment online courses (Ice et al., 2011). Additionally, cognitive presence facilitates student participation and academic achievement (Cakiroglu, 2019; Choy & Quek, 2016;

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Hind et al., 2018; Maddrell et al., 2011). Teaching, cognitive, and social presences enable online learners' engagement, perceived learning, and satisfaction as well (Akyol & Garrison, 2019; Joo et al., 2011; Kucuk & Richardson, 2019; Patwardhan et al., 2020).

Moreover, gratitude is one of the critical contributing factors of academic motivation and general wellbeing. Gratitude enhances psychological and physical health by increasing positive affect, reducing symptoms of depression and anxiety, strengthening positive social relationships, increasing satisfaction with life, boosting a sense of meaning in life, facilitating a higher quality of sleep, and promoting greater involvement in health behaviours (Alkozei et al., 2017; Datu & Mateo, 2015; Wood et al., 2010). Gratitude also encourages prosocial behaviours and, reduces envy and materialistic attitudes (Mccullough et al., 2002).

In addition to promoting general wellbeing, gratitude plays a desirable role in teaching and learning contexts. First, gratitude promotes greater cognitive, emotional, and behavioural engagement of students (Jin & Wang, 2019; King & Datu, 2018; Valdez et al., 2022). Gratitude motivates students towards self-improvement and positive change, via increases in connectedness, elevation, and humility (Armenta et al., 2017; 2020). Thus, gratitude enhances students' academic motivation, particularly autonomous motivation, and decreases amotivation (King & Datu, 2018; Nawa & Yamagishi, 2021). Ultimately, gratitude promotes students' psychological resilience and academic performance (Zainoodin et al., 2021).

Consistent with Armenta et al. (2017; 2020), gratitude's positive role in teaching and learning contexts can be attributed to the fact that gratitude increases positive thinking, perceived social support, and desire to pay back parents and other significant persons

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(Valdez et al., 2022). To put another way, gratitude increases basic psychological needs satisfaction (Jin & Wang, 2019; Lee et al., 2015; Reyes et al., 2021; Tsang et al., 2014). Specifically, gratitude enhances relatedness needs satisfaction by playing a crucial role in forming and maintaining important interpersonal relationships (Algoe, 2012). Gratitude also makes it easier for individuals to freely engage in necessary daily tasks, thus increasing autonomy needs satisfaction (Tsang et al., 2014). Similarly, gratitude promotes greater use of coping strategies such as positive reframing, acceptance, humour, and emotional social support seeking in the face of life challenges, hence enhancing competence needs satisfaction (Lau & Cheng, 2017).

Furthermore, psychological needs satisfaction has been shown to play a positive role in students' academic motivation. Psychological needs satisfaction increases students' engagement (Buzzai et al., 2021; De Francisco et al., 2018; Fang et al., 2019; Guo, 2018; Gutiérrez et al., 2018; Saeki & Quirk, 2015). Students with greater psychological needs satisfaction have greater academic, emotional, and social school adjustment (Raižienė et al., 2017), positive affect in school, and school satisfaction (Tian et al., 2014). Psychological needs satisfaction plays a role in motivational outcomes such as practice time, and in global self-esteem (Evans & Liu, 2019). Psychological needs satisfaction also promotes students' self-efficacy (Macakova & Wood, 2020) and the use of self-regulated learning in problem-solving situations (Zhang & Whitebread, 2019).

Psychological needs satisfaction aids superior academic achievement (Macakova & Wood, 2020; Wang et al., 2019). Psychological needs satisfaction predicts individuals' intrinsic values as well (Ahn & Reeve, 2021). Relatedly, psychological needs satisfaction increases autonomous motivation and reduces amotivation (Chen, 2014; Liu & Chung, 2016; Ma et al., 2017; Matsumoto & Takenaka, 2021; Orsini et al., 2018; Tang et al.,

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2019; Trenshaw et al., 2016; Vasconcellos et al., 2020). Additionally, individuals with greater levels of psychological needs satisfaction have higher levels of personal and social responsibility, and lower levels of victimization and aggression (Kuzucu & Şimşek, 2013; Menéndez Santurio et al., 2021). Ultimately, psychological needs satisfaction enhances aspects of subjective wellbeing including life satisfaction and positive affect (Akbag & Ümmet, 2017; Feng & Zhang, 2021; Guo, 2018; Li & Feng, 2018; Tay & Diener, 2011; Tian et al., 2016). Further, psychological needs satisfaction facilitates grit tendency (Akbag & Ümmet, 2017). Psychological needs satisfaction is one of the strongest predictors of happiness as well (Demir & Davidson, 2013).

In addition, psychological needs satisfaction plays a role in mental wellbeing and mental toughness (Bean et al., 2019; Li et al., 2019). Psychological needs satisfaction contributes to indicators of wellbeing such as meaning in life, life satisfaction, and positive affect, and reduces depression and apathy (Tang et al., 2019). Individuals with higher psychological needs satisfaction report lower perceived stress, and greater psychological functioning and subjective wellbeing during the COVID-19 pandemic as well (Avsec et al., 2021; Ginoux et al., 2021). Further, psychological needs satisfaction promotes work engagement (Wang et al., 2020) and job satisfaction (Wininger & Birkholz, 2013).

Finally, it is critical to investigate the relation between presence, gratitude, and academic motivation among undergraduates during online learning as online learning is being increasingly adopted in all different educational settings including tertiary institutions (Kim & Gurvitch, 2020), in addition to being identified as one of the shifts that would stimulate sustained excellence of higher education in Malaysia (Ministry of Education Malaysia, 2015).

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1.3 Statement of Problem

While academic motivation is regarded as one of the most essential aspects of human learning and development, it has been found to decline at the tertiary education level (Blaich & Wise, 2011; Brouse et al., 2010; Li et al., 2013; Trolian & Jach, 2020). This declining academic motivation becomes an even more serious problem in online learning contexts, which leads to undesirable consequences such as dropping out of studies. Experts claim that the proliferation of online learning has created a parallel attrition problem across the globe (Cleary, 2021; Colferai & Gregory, 2015).

Lack of motivation has been identified as one of the top challenges faced by university students in Malaysia, especially amidst the COVID-19 pandemic (Chung et al., 2020). Consistently, academic motivation during online learning was found to be low (means ranging from 1.72 to 1.95 over 5.00 only) among university students in Malaysia (Allam et al., 2020). Similarly, another study involving university students from East Malaysia recorded a mean motivation score of 2.59 (over 5.00) only in e-Learning contexts (Mahdi et al., 2020). In addition, close to 20% of undergraduate students have reported low levels of academic motivation while an additional 29.3% of undergraduates reported moderate levels of academic motivation only (Ahmad et al., 2021).

Further, Tan (2021) reported that students lose motivation in online learning environments, particularly during the COVID-19 pandemic. Specifically, students self-reported a statistically significant decrease in learning motivation between before (4.87 over 6.00) and after (3.39 over 6.00) the implementation of online learning methods. The abovementioned findings are also corroborated by a recent qualitative study by Ang et al. (2021). Particularly, the participants have made remarks such as “Can’t focus during online class, don’t feel like doing anything” and “Feel lazy because study alone in the

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house" (p. 44). Similar low levels of academic motivation are also recorded in research reports from other neighbouring collectivistic nations. For instance, 40% of Thailand university students have only medium to low levels of motivation in e-Learning (Na et al., 2020). Similarly, university students in Pakistan reported a mean motivation level of 2.46 (over 5.00) only (Munir et al., 2021). Students from Indonesia are reported to be demotivated in online learning contexts as well (Minda, 2020).

It is important to note that the recorded lack of motivation among university students, particularly in Malaysia, was due to the absence of face-to-face interaction with the lecturers and peers (Allam et al., 2020; Chung et al., 2020). Moreover, undergraduates in Malaysia were found to be more dissatisfied with their online learning than being satisfied. These learners also regarded online learning to be less effective than traditional physical classroom learning. Specifically, 77.7% of undergraduates reported that online classes do not offer an equivalent educational value as traditional classes (Wijeratne et al., 2020). This is consistent with the claim that online learning and isolation from peers create unwarranted frustration, anger, resentment, and ultimately anxiety among university students in Malaysia (Sundarasen et al., 2020). As such, it is of paramount importance to examine predictors of academic motivation to address the problem of declining academic motivation in online learning. However, the literature on the conditions that maintain academic motivation, particularly, the different types of academic motivation is still relatively scarce (Levpušček & Podlesek, 2019).

As lack of interaction has been repeatedly cited as the reason for reduced academic motivation in online learning (Allam et al., 2020; Chung et al., 2020), presence, which is the sense of being in a place and belonging to a group, emerges as an important factor to consider. Although the association between presence and academic motivation has been

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suggested in existing literature, studies examining the explicit link between presence and academic motivation are still relatively scarce. The majority of studies on presence, especially those grounded in the Community of Inquiry Framework (which is adopted in the current study), have been concentrated in North American contexts (Castellanos-Reyes, 2020). Studies examining the association between presence and academic motivation in the Malaysian context remain limited.

Similarly, gratitude, which plays a crucial role in forming and maintaining important interpersonal relationships (Algoe, 2012), is another vital factor to study in understanding academic motivation. Although the association between gratitude and academic motivation has been proposed in existing literature, a fair amount of the relevant studies have conceptualized gratitude as an emotion only (Wood et al., 2010). Studies examining gratitude as a life orientation towards appreciating the positive in the world generally, beyond a grateful emotion felt in reaction to others' help, are still uncommon. Additionally, while gratitude has been shown to promote greater use of coping strategies in the face of life challenges (Lau & Cheng, 2017), studies exploring its role in academic motivation of online students faced by a global pandemic are relatively scarce.

Moreover, even though the association between presence and academic motivation has been suggested in existing literature, the studies investigating the explanatory mechanisms of this relationship remain limited. The same is true for the association between gratitude and academic motivation. While existing literature alludes to the possibility of psychological needs satisfaction, literature search using electronic databases such as EBSCOhost, ProQuest, and PsycInfo, with the keywords including "presence," "gratitude," "psychological needs satisfaction," and "academic motivation" discovered that no study has examined the mediating role of psychological needs

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satisfaction on the association between presence and academic motivation, or the association between gratitude and academic motivation. Further, despite the existence of a considerable amount of research on psychological needs satisfaction, they are limited in their capacity to generalize to collectivistic cultures as most researchers have utilized Western individualistic samples. As such, researchers have called for further investigation of psychological needs satisfaction in collectivistic cultures like Malaysia (Feng & Zhang, 2021).

Furthermore, private university students are likely to have lower levels of academic motivation than public university students (Chong & Ahmed, 2012). Tertiary education in Malaysia is provided by both public universities and private universities. The government-funded public universities consider students' merit in admitting students into their various academic programs. Due to the limit of students the public institutions can take in each year, public universities tend to have more rigorous entry requirements. For instance, UNITAR International University (a private university in Malaysia) requires a minimum CGPA of 2.00 in the Malaysian Higher School Certificate (*Sijil Tinggi Persekolahan Malaysia; STPM*) to enrol in their Bachelor of Guidance and Counseling program (UNITAR International University, 2021). In contrast, University Putra Malaysia (a public university in Malaysia) requires a minimum CGPA of 2.50 in the Malaysian Higher School Certificate to enrol in the same program (University Putra Malaysia, 2021). Thus, academically superior students are generally admitted into public universities while the less academically superior students pursue their tertiary education in private universities. These students in private universities are likely to have lower levels of academic motivation, given the extensive body of research on the association between academic achievement and academic motivation (Gangolu, 2019; Meriac, 2015; Wu, 2019; Zimmerman, 2000). This is also further supported by the empirical finding

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that private university students have lower levels of academic motivation than their public university counterparts (Chong & Ahmed, 2012). However, studies exploring the academic motivation of students in private universities remain limited.

To summarize the literature gaps, although the association between presence and academic motivation has been suggested, studies examining the explicit link between presence and different types of academic motivation are still relatively scarce. Relatedly, the majority of studies on presence, especially those grounded in the Community of Inquiry Framework, have been concentrated in North American contexts, warranting further research in the Malaysian context. In addition, although the association between gratitude and academic motivation has been proposed in existing literature, a fair amount of relevant studies have conceptualized gratitude as an emotion only. Studies examining gratitude as a life orientation towards appreciating the positive in the world generally, beyond a grateful emotion felt in reaction to others' help, remain limited. Research on gratitude within higher education is still relatively scarce as a fair number of the studies on gratitude have utilized high school students as sample. Moreover, even though the association between presence and academic motivation has been suggested in existing literature, the studies investigating the explanatory mechanisms of this relationship remain limited. The same is true for the association between gratitude and academic motivation.

A mediator variable (*M*) provides an explanation as to how the effect of the predictor variable (*X*) on the criterion variable (*Y*) operates, which can be represented in the following sequence: $X \rightarrow M \rightarrow Y$. In other words, a mediator variable is causally located between the predictor variable and the criterion variable; it is affected by the predictor variable and in turn affects the criterion variable (Hayes & Rockwood, 2017). Literature

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suggests that presence promotes meaning making, personal expression, and building understanding, which in turn, facilitates psychological needs satisfaction. Similarly, gratitude is posited to expand students' personal and social resources, which results in greater psychological needs satisfaction. Psychological needs satisfaction, in turn, promotes interest, enjoyment, and internalization that results in increased academic motivation (Deci & Ryan, 2000, 2017; Fredrickson, 1998, 2001, 2004a). The model is also informed by recent systematic reviews and meta-analyses that recorded psychological needs satisfaction to be related to autonomous motivation and indicators of wellbeing (Tang et al., 2019; Vasconcellos et al., 2020). The model is further strengthened by a relatively recent study that established psychological needs satisfaction as a mediator of the relationship between support from social agents (i.e., parents, teachers, peers) and student motivation (Zhou et al., 2019).

While existing literature alludes to the possibility of psychological needs satisfaction, no study has examined the mediating role of psychological needs satisfaction on the association between presence and academic motivation, or the association between gratitude and academic motivation. Further, despite the existence of a considerable amount of research on psychological needs satisfaction, they are limited in their capacity to generalize to collectivistic cultures as most researchers have utilized Western individualistic samples.

1.4 Purpose of the Study

Given that academic motivation is an essential aspect of human learning and development, and that academic motivation among undergraduates in online learning has been declining (Cleary, 2021; Colferai & Gregory, 2015), it is crucial to better understand both direct and indirect predictors of superior academic motivation. This research aspires

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to do exactly that. As lack of interaction has been cited as a central reason for reduced academic motivation in online learning, presence and gratitude emerge as important factors to consider (Allam et al., 2020; Chung et al., 2020). Specifically, this study examines the associations between (i) presence and academic motivation and (ii) gratitude and academic motivation.

In addition, the study aims to investigate an explanatory mechanism for the associations between (i) presence and academic motivation and (ii) gratitude and academic motivation. Informed by recent systematic reviews and meta-analyses that recorded psychological needs satisfaction to be related to autonomous motivation and indicators of wellbeing (Tang et al., 2019; Vasconcellos et al., 2020), this study examines the mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation, particularly, in a collectivistic nation, Malaysia.

In sum, the purpose of the current research is to examine the mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation among undergraduates during online learning at private universities in Malaysia. Academic motivation is the criterion variable of the study *(Y)* with three components namely autonomous academic motivation, controlled academic motivation, and academic amotivation. Presence is the first predictor variable of the study *(X_1)* with three components, which are cognitive presence, social presence, and teaching presence. Gratitude is the second predictor variable in the model *(X_2)*. Psychological needs satisfaction is the mediator *(M)* with three components: autonomy needs satisfaction, competence needs satisfaction, and relatedness needs satisfaction. The purpose of the current study is in line with the

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identification of globalized online learning as one of the 10 shifts that would stimulate sustained excellence of higher education in the Malaysia Education Blueprint 2015-2025 (Higher Education; Ministry of Education Malaysia, 2015).

1.5 Objectives of the Study

The objectives of the current study are:

i. To examine if there is a significant relationship between cognitive, social, and teaching presences, and autonomous academic motivation.

ii. To examine if there is a significant relationship between gratitude and autonomous academic motivation.

iii. To examine if there is a significant relationship between cognitive, social, and teaching presences, and controlled academic motivation.

iv. To examine if there is a significant relationship between gratitude and controlled academic motivation.

v. To examine if there is a significant relationship between cognitive, social, and teaching presences, and academic amotivation.

vi. To examine if there is a significant relationship between gratitude and academic amotivation.

vii. To examine if psychological needs satisfaction significantly mediates the relationship between cognitive, social, and teaching presences, and autonomous academic motivation.

viii. To examine if psychological needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation.

ix. To examine if psychological needs satisfaction significantly mediates the relationship between cognitive, social, and teaching presences, and controlled academic motivation.

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x. To examine if psychological needs satisfaction significantly mediates the relationship between gratitude and controlled academic motivation.

xi. To examine if psychological needs satisfaction significantly mediates the relationship between cognitive, social, and teaching presences, and academic amotivation.

xii. To examine if psychological needs satisfaction significantly mediates the relationship between gratitude and academic amotivation.

1.6 Research Questions of the Study

The research questions of the current study are:

i. a. Is there a significant relationship between cognitive presence and autonomous academic motivation?

b. Is there a significant relationship between social presence and autonomous academic motivation?

c. Is there a significant relationship between teaching presence and autonomous academic motivation?

ii. Is there a significant relationship between gratitude and autonomous academic motivation?

iii. a. Is there a significant relationship between cognitive presence and controlled academic motivation?

b. Is there a significant relationship between social presence and controlled academic motivation?

c. Is there a significant relationship between teaching presence and controlled academic motivation?

iv. Is there a significant relationship between gratitude and controlled academic motivation?

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v. a. Is there a significant relationship between cognitive presence and academic amotivation?

b. Is there a significant relationship between social presence and academic amotivation?

c. Is there a significant relationship between teaching presence and academic amotivation?

vi. Is there a significant relationship between gratitude and academic amotivation?

vii. a. Does psychological needs satisfaction significantly mediate the relationship between cognitive presence and autonomous academic motivation?

b. Does psychological needs satisfaction significantly mediate the relationship between social presence and autonomous academic motivation?

c. Does psychological needs satisfaction significantly mediate the relationship between teaching presence and autonomous academic motivation?

viii. Does psychological needs satisfaction significantly mediate the relationship between gratitude and autonomous academic motivation?

ix. a. Does psychological needs satisfaction significantly mediate the relationship between cognitive presence and controlled academic motivation?

b. Does psychological needs satisfaction significantly mediate the relationship between social presence and controlled academic motivation?

c. Does psychological needs satisfaction significantly mediate the relationship between teaching presence and controlled academic motivation?

x. Does psychological needs satisfaction significantly mediate the relationship between gratitude and controlled academic motivation?

xi. a. Does psychological needs satisfaction significantly mediate the relationship between cognitive presence and academic amotivation?

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b. Does psychological needs satisfaction significantly mediate the relationship between social presence and academic amotivation?

c. Does psychological needs satisfaction significantly mediate the relationship between teaching presence and academic amotivation?

xii. Does psychological needs satisfaction significantly mediate the relationship between gratitude and academic amotivation?

1.7 Hypotheses of the Study

Figure 1.1 below depicts the a priori model of the study. The relationship between presence and academic motivation (direct effect – c_1) is tested via hypotheses 1, 3, and 5. The relationship between gratitude and academic motivation (direct effect – c_2) is tested via hypotheses 2, 4, and 6. The mediating effect of psychological needs satisfaction on the relationship between presence and academic motivation (indirect effect – c'_1) is tested via hypotheses 7, 9, and 11 while the mediating effect of psychological needs satisfaction on the relationship between gratitude and academic motivation (indirect effect – c'_2) is tested via hypotheses 8, 10, and 12.

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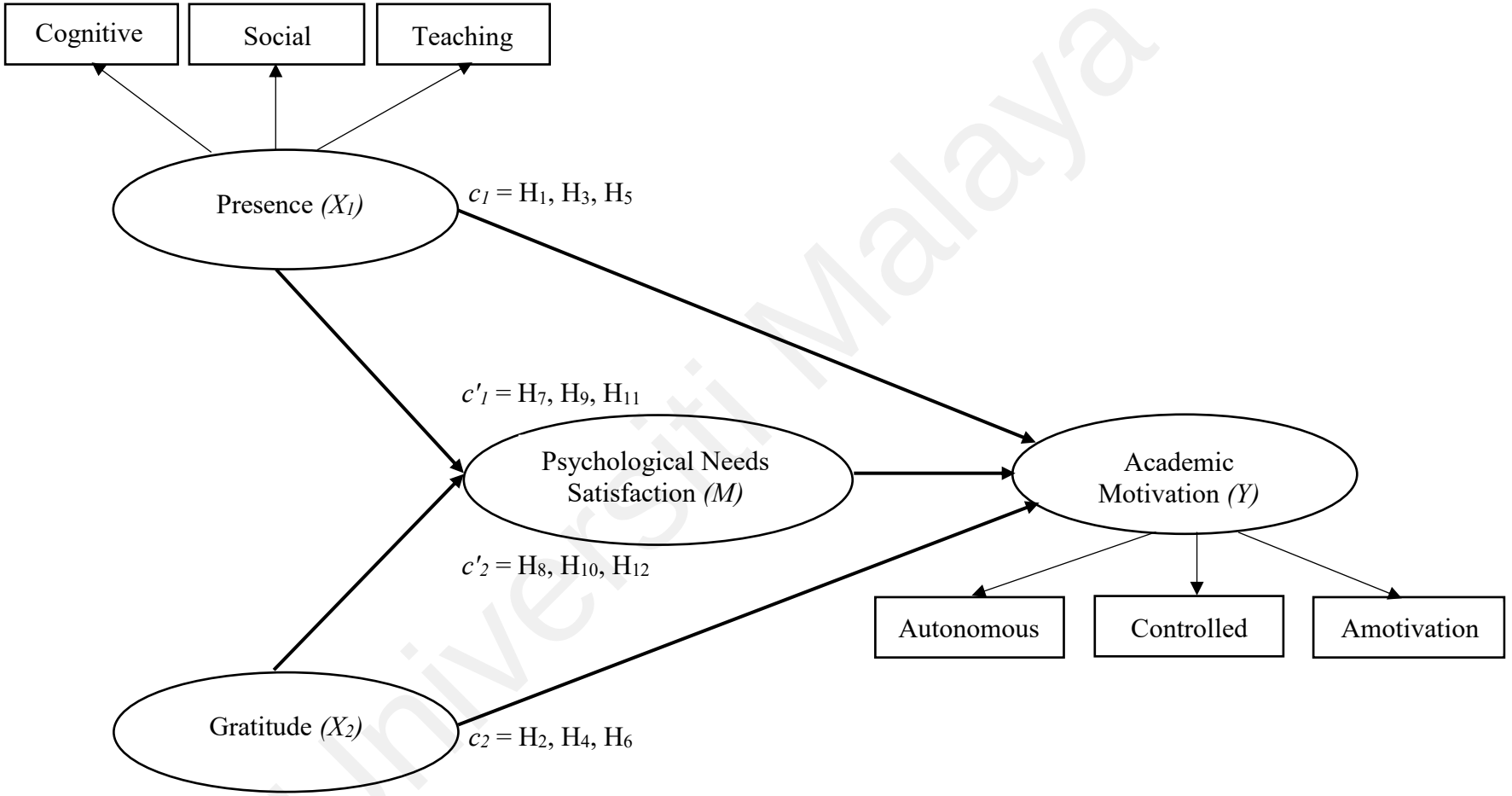
Figure 1.1

A Priori Model of the Study



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The full list of null and alternative hypotheses of the current study are presented below.

H_{01a}: There is no significant relationship between cognitive presence and autonomous academic motivation.

H_{a1a}: There is a significant relationship between cognitive presence and autonomous academic motivation.

H_{01b}: There is no significant relationship between social presence and autonomous academic motivation.

H_{a1b}: There is a significant relationship between social presence and autonomous academic motivation.

H_{01c}: There is no significant relationship between teaching presence and autonomous academic motivation.

H_{a1c}: There is a significant relationship between teaching presence and autonomous academic motivation.

H_{02}: There is no significant relationship between gratitude and autonomous academic motivation.

H_{a2}: There is a significant relationship between gratitude and autonomous academic motivation.

H_{03a}: There is no significant relationship between cognitive presence and controlled academic motivation.

H_{a3a}: There is a significant relationship between cognitive presence and controlled academic motivation.

H_{03b}: There is no significant relationship between social presence and controlled academic motivation.

H_{a3b}: There is a significant relationship between social presence and controlled academic motivation.

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H_{03c}: There is no significant relationship between teaching presence and controlled academic motivation.

H_{a3c}: There is a significant relationship between teaching presence and controlled academic motivation.

H_{04}: There is no significant relationship between gratitude and controlled academic motivation.

H_{a4}: There is a significant relationship between gratitude and controlled academic motivation.

H_{05a}: There is no significant relationship between cognitive presence and academic amotivation.

H_{a5a}: There is a significant relationship between cognitive presence and academic amotivation.

H_{05b}: There is no significant relationship between social presence and academic amotivation.

H_{a5b}: There is a significant relationship between social presence and academic amotivation.

H_{05c}: There is no significant relationship between teaching presence and academic amotivation.

H_{a5c}: There is a significant relationship between teaching presence and academic amotivation.

H_{06}: There is no significant relationship between gratitude and academic amotivation.

H_{a6}: There is a significant relationship between gratitude and academic amotivation.

H_{07a}: Psychological needs satisfaction does not significantly mediate the relationship between cognitive presence and autonomous academic motivation.

H_{a7a}: Psychological needs satisfaction significantly mediates the relationship between cognitive presence and autonomous academic motivation.

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H_{07b}: Psychological needs satisfaction does not significantly mediate the relationship between social presence and autonomous academic motivation.

H_{a7b}: Psychological needs satisfaction significantly mediates the relationship between social presence and autonomous academic motivation.

H_{07c}: Psychological needs satisfaction does not significantly mediate the relationship between teaching presence and autonomous academic motivation.

H_{a7c}: Psychological needs satisfaction significantly mediates the relationship between teaching presence and autonomous academic motivation.

H_{08}: Psychological needs satisfaction does not significantly mediate the relationship between gratitude and autonomous academic motivation.

H_{a8}: Psychological needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation.

H_{09a}: Psychological needs satisfaction does not significantly mediate the relationship between cognitive presence and controlled academic motivation.

H_{a9a}: Psychological needs satisfaction significantly mediates the relationship between cognitive presence and controlled academic motivation.

H_{09b}: Psychological needs satisfaction does not significantly mediate the relationship between social presence and controlled academic motivation.

H_{a9b}: Psychological needs satisfaction significantly mediates the relationship between social presence and controlled academic motivation.

H_{09c}: Psychological needs satisfaction does not significantly mediate the relationship between teaching presence and controlled academic motivation.

H_{a9c}: Psychological needs satisfaction significantly mediates the relationship between teaching presence and controlled academic motivation.

H_{010}: Psychological needs satisfaction does not significantly mediate the relationship between gratitude and controlled academic motivation.

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H_{a10}: Psychological needs satisfaction significantly mediates the relationship between gratitude and controlled academic motivation.

H_{011a}: Psychological needs satisfaction does not significantly mediate the relationship between cognitive presence and academic amotivation.

H_{a11a}: Psychological needs satisfaction significantly mediates the relationship between cognitive presence and academic amotivation.

H_{011b}: Psychological needs satisfaction does not significantly mediate the relationship between social presence and academic amotivation.

H_{a11b}: Psychological needs satisfaction significantly mediates the relationship between social presence and academic amotivation.

H_{011c}: Psychological needs satisfaction does not significantly mediate the relationship between teaching presence and academic amotivation.

H_{a11c}: Psychological needs satisfaction significantly mediates the relationship between teaching presence and academic amotivation.

H_{012}: Psychological needs satisfaction does not significantly mediate the relationship between gratitude and academic amotivation.

H_{a12}: Psychological needs satisfaction significantly mediates the relationship between gratitude and academic amotivation.

1.8 Significance of the Study

The findings from the current research offer further insight into the associations between (i) presence and academic motivation and (ii) gratitude and academic motivation of undergraduates, particularly if the associations are mediated by psychological needs satisfaction. A significant relationship between presence and academic motivation reinforces the need to enhance presence in online learning. Subsequently, university lecturers can be more mindful and continuously work on enhancing presence in an effort

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to increase students' academic motivation. For instance, both teaching and social presences will address the problem of isolation from peers and lecturers which is frequently cited as a factor for reduced motivation during online learning. This effort can be supported by the university administration, by providing the essential tools and training. Similarly, a significant relationship between gratitude and academic motivation provides another evidence-based factor to target to boost students' academic motivation. University administrations can then invest in interventions that promote gratitude in students with the ultimate goal of enhancing academic motivation.

In addition, having established psychological needs satisfaction as a mediator, the study provides an explanatory mechanism for the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation. Consequently, tertiary institutions may focus on students' psychological needs satisfaction more to improve academic motivation. University administration can work with both the faculty members and students to create new or enhance existing avenues that promote students' psychological needs satisfaction. Even in the event that some results reveal non-significant direct and indirect relationships between the study variables, they still shed light on the nature of relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation. Further, they enlighten if psychological needs satisfaction mediates the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation in reality, despite the theoretical basis.

Collectively, the findings of the current study assist in addressing the problem of low academic motivation among students in online learning, particularly private university undergraduates who are likely to have even lower academic motivation than their public university counterparts. Enhanced academic motivation in turn will allow students to reap

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the benefits of superior academic motivation including academic achievement and psychological adjustment. The findings also aid university administration to address the higher rates of attrition in online learning by tackling the low academic motivation problem. Ultimately, it will drive higher education institutions toward realizing the shift towards globalized online learning for sustained excellence, as envisioned in the Malaysia Education Blueprint 2015-2025.

This study also addresses the researchers' call to investigate psychological needs satisfaction in collectivistic cultures such as Malaysia. Further, as most studies examining the association between presence and academic motivation have been concentrated in North American contexts, employing a Malaysian sample in this study provides unique insights on the topic as systematic differences could be expected in teaching and learning processes in different regions of the world.

1.9 Limitations of the Study

While this research shed light on the mediation effect of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation of undergraduates during online learning at private universities, it has some limitations. Firstly, the study is not able to establish cause and effect between study variables due to the correlational nature of the study. Further, as the study has employed convenience sampling, individual factors such as students' ethnicity, socioeconomic status, academic major, and crucially, the specific private university are not fully controlled. This limits the generalizability of the study findings to all private university undergraduates in Malaysia and beyond as there could be systematic variations between students of different sociodemographic backgrounds.

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In addition, this study involves self-reporting of undergraduates' perception of several variables including academic motivation, presence, gratitude, and psychological needs satisfaction. Although data gathered via self-report provide vital insights into the topic of study, they may have been contaminated by participants' social desirability bias. The resulting data may not be as objective. The current study is also cross-sectional in nature. As such, long-term changes in academic motivation and its predictors are not captured. Despite its limitations, guided by sound research methodology, this program of research still has valuable theoretical and practical implications in regard to undergraduates' academic motivation.

1.10 Operational Definitions

1.10.1 Presence

Presence is defined as a sense of being in a place and belonging to a group, and is comprised of three types namely cognitive presence, social presence, and teaching presence (Garrison et al., 2000; Joo et al., 2011). Cognitive presence refers to the extent to which an individual is able to construct meaning through continued communication. Social presence refers to the extent to which a learner is able to project their personal characteristics, thus presenting themselves as "real" persons to other individuals. Lastly, teaching presence refers to the design, facilitation, and direction of cognitive and social processes to realize personally and educationally meaningful learning outcomes (Anderson et al., 2001; Garrison et al., 2000).

In this study, presence is measured via undergraduate participants reporting on the Community of Inquiry Survey (COI Survey; Arbaugh et al., 2008). Specifically, cognitive presence refers to the mean score on triggering event, exploration, integration, and resolution subscales of the COI Survey. Social presence refers to the mean score on

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affective expression, open communication, and group cohesion subscales of the COI Survey. Lastly, teaching presence refers to the mean score on design and organization, facilitation, and direct instruction subscales of the COI Survey.

1.10.2 Gratitude

Gratitude is conceptualized as a life orientation towards noticing and appreciating the positive in the world (Wood et al., 2010). This conceptualization incorporates interpersonal gratitude, which is the grateful emotion felt in reaction to other individuals' benevolence, as well as an appreciation of the present moment. The latter includes an appreciation of more abstract aspects of life such as waking up in the morning and beauty of nature (Wood et al., 2010). In this study, gratitude is operationalized as undergraduate participants' mean score on the Gratitude Questionnaire - Six Item Form (GQ-6; Mccullough et al., 2002).

1.10.3 Psychological Needs Satisfaction

Needs are defined as inherent psychological nutrients critical for psychological integrity, wellbeing, and growth (Deci & Ryan, 2000). Three psychological needs have been identified namely autonomy needs, competence needs, and relatedness needs. Accordingly, psychological needs satisfaction refers to the fulfilment of autonomy, competence, and relatedness needs. Autonomy needs satisfaction refers to the fulfilment of an individual's need for freedom to self-organize and make own choices, that are consistent with their integrated sense of self. Competence needs satisfaction refers to the fulfilment of a person's desire to have an impact on their environment and accomplish valued outcomes in it. Lastly, relatedness needs satisfaction refers to the fulfilment of an individual's need to feel genuinely connected to, love, and care for others, and to be loved and cared for by others (Deci & Ryan, 2000).

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In this study, psychological needs satisfaction refers to participants' composite scores on the Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS; Chen et al., 2014). Specifically, autonomous needs satisfaction is measured via the mean score on the autonomous satisfaction subscale plus reverse scored autonomous frustration subscale of the BPNSFS. Similarly, competence needs satisfaction is measured via the mean score on the competence satisfaction subscale plus reverse scored competence frustration subscale of the BPNSFS. Finally, relatedness needs satisfaction is measured via the mean score on the relatedness satisfaction subscale plus reverse scored relatedness frustration subscale of the BPNSFS.

1.10.4 Academic Motivation

Academic motivation refers to the cause of behaviours that are associated with academic functioning and success (Schunk et al., 2008). Consistent with Deci, Vallerand, Pelletier, and Ryan's (1991) theorization, Vallerand et al. (1992) proposed that academic behaviours can be intrinsically motivated, extrinsically motivated, or amotivated. Extrinsic motivation constitutes external regulation, introjected regulation, identified regulation, and integrated regulation. Deci and Ryan (2000) conceptualized motivation to be varying on a self-determination continuum and proposed three alternative types of motivation namely, autonomous motivation, controlled motivation, and amotivation. Autonomous motivation refers to the cause of behaviours that are self-determined, with a full sense of volition and choice. Both intrinsic motivation, and identified and integrated regulations of external motivation make up autonomous motivation. Controlled motivation refers to the cause of behaviours that are non-self-determined, that is, with a sense of pressure to perform an action. External and introjected regulations of extrinsic motivation form controlled motivation. Finally, amotivation refers to a state of lack of intention to act.

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In this study, academic motivation refers to undergraduate participants' scores on the Academic Motivation Scale (AMS; Vallerand et al., 1992). Specifically, autonomous academic motivation is measured via the mean score on intrinsic motivation to know, intrinsic motivation toward accomplishment, intrinsic motivation to experience stimulation, and identified regulation subscales of the AMS. Controlled academic motivation is measured via the mean score on external regulation and introjected regulation subscales of the AMS, while academic amotivation is measured via the mean score on amotivation subscale of the AMS.

1.10.5 Undergraduates at Malaysian Private Universities

Undergraduates are learners who are studying for their first degrees in universities upon completing their secondary education (Cambridge University Press, 2021). These students are typically 18 to 23 years old. These learners are enrolled in diverse majors such as engineering, business, education, and psychology. English is used as the primary medium of instruction for these students. Private university is defined university belonging to and run by independent persons or companies as opposed to the state or federal government (Cambridge University Press, 2021). Collectively, in this study, undergraduates at Malaysian private universities refer to students who are enrolled in their first degree programs at private universities in Malaysia. To clarify, students from university colleges in Malaysia are not included in the current study.

1.10.6 Online Learning

Online learning refers to teaching delivered via a digital device with the goal of supporting students' learning (Clark & Mayer, 2016). In essence, online learning involves delivery of most – more than 80% – or all of course content online, typically with no face-to-face sessions (Goralski & Falk, 2017). The materials shared in online learning sessions

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may consist of verbal or written words as well as graphics such as diagrams, photos, and animations. The mentioned digital device can be a computer, tablet, or smartphone. In this study, online learning refers to completing at least one academic course fully online, that is, attending lectures and/or tutorials and completing assessments online, in the current academic semester. Participants are not required to do online learning for the full duration of their undergraduate programme.

1.11 Summary

Academic motivation is a vital aspect of human learning and development. It is essential to better understand both direct and indirect predictors of superior academic motivation, to address the problem of declining academic motivation among undergraduates in online learning. As lack of interaction has been cited as a central reason for reduced academic motivation in online learning, this study examines the associations between (i) presence and academic motivation and (ii) gratitude and academic motivation. Recent systematic reviews and meta-analyses have found psychological needs satisfaction to be related to autonomous motivation and indicators of wellbeing. As such, this study examines the mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation, particularly, in a collectivistic nation, Malaysia.

The findings of the current study provide insights into the mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation. University teaching faculty and administration may utilize the insights to assist in enhancing the academic motivation of undergraduates during online learning at private universities in Malaysia. The chapter also discussed the limitation and operational definitions of the study variables.

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In the next chapter, a review of the related theories and models together with the theoretical framework of the study will be presented. This will be followed by the reviews of academic motivation, presence, gratitude, and psychological needs satisfaction. Furthermore, essential past studies on presence, gratitude, psychological needs satisfaction, and academic motivation, and the conceptual framework of the study will be presented.

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CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, the related theories and models are reviewed. Specifically, Deci and Ryan's Self-Determination Theory, Garrison et al.'s Community of Inquiry Framework, Fredrickson's Broaden-and-Build Theory, and Deci and Ryan's Basic Psychological Needs Theory are discussed and related to the variables of interest. A theoretical framework of the study is also presented. This is followed by the reviews of academic motivation, presence, gratitude, and psychological needs satisfaction. Then, a review of essential past studies on presence, gratitude, psychological needs satisfaction, and academic motivation, and the conceptual framework of the study are presented. The chapter ends with a summary.

2.2 Related Theories and Models

2.2.1 Deci and Ryan's Self-Determination Theory

Self-Determination Theory proposed by Deci and Ryan posited that humans are naturally active, self-motivated, inquisitive, interested, energetic, and eager to succeed as success is personally satisfying. The theory proposed the interaction between individuals' inherent active nature and their social environments that support or impede the stated nature result in different types of motivation (Deci & Ryan, 2000; Ryan & Deci, 2000). Further, social contexts that support a person being autonomous, competent, and related will promote motivation. In its earliest conceptualization, Self-Determination Theory focused on intrinsic motivation and extrinsic motivation as the primary types of motivation.

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Intrinsic motivation refers to performing a behaviour for its own sake, that is, for the interesting, pleasurable, and spontaneously satisfying nature of the activity. Intrinsic motivation involves engaging in activities that are personally interesting, freely and wilfully, without needing any tangible rewards or constraints. Extrinsic motivation, on the other hand, refers to performing a behaviour for a separable consequence, such as obtaining tangible rewards or avoiding punishments. As such, extrinsic motivation is instrumental in nature (Deci & Ryan, 1985). Although initially extrinsic motivation was assumed to be not self-determined, it was later postulated that extrinsically motivated behaviours can differ on the extent to which they are self-determined, built around the notion of internalization. Internalization refers to the proactive process of transforming regulation by external contingencies into regulation by internal processes. Consequently, four types of extrinsic motivation were identified: external regulation, introjected regulation, identified regulation, and integrated regulation (Deci & Ryan, 1985).

External regulation refers to behaviours with locus of initiation that is external to the person, and thus making it the least self-determined form of extrinsic motivation. Introjected regulation refers to behaviours that involve internalized rules or demands, supported by certain rewards or sanctions. The regulation is within the person, but is not part of the integrated self, and thus not considered self-determined. Identified regulation refers to behaviours that are performed upon identification with and acceptance of the regulatory process. As the regulatory process has become a part of the self, the behaviours are performed more freely and willingly, that is, in a self-determined manner. Finally, integrated regulation refers to behaviours that involve regulatory process that is fully integrated with the person's sense of self. The resulting behaviours are fully self-determined and thus considered the most advanced form of extrinsic motivation (Deci & Ryan, 1985; Deci et al., 1991).

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Deci and Ryan (2000) then conceptualized motivation to be varying on a self-determination continuum and proposed three alternative types of motivation namely, autonomous motivation, controlled motivation, and amotivation. Autonomous motivation refers to the cause of behaviours that are self-determined, with a full sense of volition and choice. Both intrinsic motivation, and identified and integrated regulations of external motivation make up autonomous motivation. Controlled motivation refers to the cause of behaviours that are non-self-determined, that is, with a sense of pressure to perform an action. External and introjected regulations of extrinsic motivation form controlled motivation. Finally, amotivation refers to a state of lack of intention to act.

Extending the theorization to teaching and learning contexts**,** academic behaviours can be autonomous, controlled, or amotivated. Deci et al. (1991) suggested that autonomous support of students and interpersonal involvement of significant adults like educators in autonomy-supporting way in educational endeavours will promote students' autonomous academic motivation.

2.2.2 Garrison et al.'s Community of Inquiry Framework

Garrison et al.'s (2000) Community of Inquiry Framework is a collaborative-constructivist process model that describes the critical elements of an effective online higher education learning experience. The framework is rooted in John Dewey's educational philosophy and social constructivism (Garrison, 2017), and is one of the most extensively used frameworks in online teaching and learning (Castellanos-Reyes, 2020). The framework suggests that learning occurs through the interaction of three core elements called presences: cognitive presence, social presence, and teaching presence.

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Cognitive presence refers to the extent to which an individual is able to construct meaning through continued communication. Categories of cognitive presence indicators include triggering event, exploration, integration, and resolution. Triggering event is the state of dissonance, uneasiness, or puzzlement following an experience. Exploration is the search for information and clarifications that would aid in understanding the situation or problem. The third category, integration, refers to consolidation of information into coherent idea or concept to comprehend the acquired information. Finally, resolution is solving of the problem. The latter category is also described as the application of ideas or hypotheses (Garrison et al., 2000). Consequently, when students of their own accord actively engage in the process of exploring a problem and integrating the acquired information to ultimately resolve the problem, they are likely to feel more autonomous and competent. Accordingly, the students are likely to feel greater levels of academic motivation.

Social presence refers to the extent to which a learner is able to project their personal characteristics, thus presenting themselves as "real" persons, that is, showing their full personality, to other individuals. Categories of social presence indicators are emotional expression, open communication, and group cohesion. Emotional expression is shown by the capacity and confidence in expressing feelings related to the educational experience. Emotions are closely related to task motivation and persistence, and thus academic motivation. An example of emotional expression, self-disclosure, which is the sharing of feelings, interests, and experiences, promotes trust, support, and a sense of belonging. Open communication refers to reciprocal and respectful exchanges. This involves being aware and recognizing each other's contributions in online learning settings (e.g., messages, comments). Respectfully responding to the contributions of others facilitates the development and maintenance of exchange relationships. Finally, group cohesion is

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demonstrated via tasks that build and sustain group commitment. Group cohesion allows students to see themselves as part of a group rather than as individuals only, and thus promotes sharing of personal meanings. Hence, social presence indirectly supports cognitive presence (Garrison et al., 2000). Both open communication and group cohesion elements of social presence will also promote academic motivation as they allow students to freely express their personal meanings and experience a sense of belonging.

Lastly, teaching presence refers to the design, facilitation, and direction of cognitive and social processes to realize personally and educationally meaningful learning outcomes. There are three teaching presence indicators namely instructional management, building understanding, and direct instruction. Instructional management denotes structural concerns such as curriculum setting, and learning activities and assessments design. Building understanding concerns productive and valid knowledge acquisition. This involves creating a learning process that is challenging and stimulating. This process will ultimately create an effective group consciousness for sharing meaning, identifying agreements and disagreements, and reaching consensus and understanding among students. As a part of this process, educators may engage less active participants, recognize individual contributions, reinforce appropriate contributions, and generally enable educational transactions. Collectively, the process of building understanding enables students to have personally meaningful learning experiences, coupled with a greater sense of competence and belongingness, and thus facilitating greater levels of academic motivation. Direct instruction involves assessment of discourse and efficacy of the educational processes. The teachers are expected to present content, guide discussion, and confirm understanding via various assessments. The latter is followed by constructive explanatory feedback as well (Garrison et al., 2000). Such direct instruction can help

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students to appreciate their acquired knowledge and skills. The students are likely to experience a sense of competence and thus be more motivated in their academic journey.

2.2.3 Fredrickson's Broaden-and-Build Theory

Fredrickson's Broaden-and-Build Theory posits that positive emotions broaden individuals' transitory thought–action repertoires and build their lasting personal resources (1998, 2001, 2004a). That is, positive emotions like gratitude expand the range of the thoughts and behaviours that come to mind which then help individuals to acquire personal resources including physical, psychological, intellectual, and social resources, which can be drawn on in subsequent situations. Fredrickson (2004b) further argues that gratitude widens individuals' mode of thinking as they creatively formulate actions that may promote the wellbeing of others including the original benefactor. Such actions also build and strengthen friendships and other social bonds, and by extension, social support. These personal and social resources serve as reserves that can be tapped into in times of need. In the context of teaching and learning, such acquired personal and social resources will enable students to navigate the learning process with greater ease, with a sense of competence and belonging, and thus likely to experience greater levels of academic motivation.

2.2.4 Deci and Ryan's Basic Psychological Needs Theory

Basic Psychological Needs Theory is one of six mini-theories of Self-Determination Theory proposed by Deci and Ryan (2000). Needs are defined as inherent psychological nutrients critical for psychological integrity, wellbeing, and growth. Three psychological needs have been identified namely autonomy needs, competence needs, and relatedness needs. Autonomy needs refers to an individual's need for freedom to self-organize and make own choices, that are consistent with their integrated sense of self (Deci & Ryan,

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2000). Satisfaction of autonomy needs means that a person's thoughts, emotions, and behaviours are self-endorsed and authentic, and thus the person experiences a sense of integrity. A sense of pressure and conflict such as feeling pushed in an unwelcome route result when autonomy needs are not satisfied (Ryan, & Deci, 2017).

Competence needs refers to a person's desire to have an impact on their environment and accomplish valued outcomes in it (Deci & Ryan, 2000). A person's capability to engage in activities and chances to use and extend skills and expertise lead to competence needs satisfaction. If competence needs are unsatisfied, the person experiences a sense of ineffectiveness, helplessness, and failure (Ryan, & Deci, 2017). Lastly, relatedness needs refers to an individual's need to feel genuinely connected to, love, and care for others, and to be loved and cared for by others (Deci & Ryan, 2000). A sense of connection and significance to others result in relatedness needs satisfaction. In contrast, dissatisfaction of relatedness needs leads to a sense of social alienation, exclusion, and loneliness (Ryan, & Deci, 2017).

Autonomy needs and competence needs are proposed to be essential in developing and maintaining intrinsic motivation (Ryan, & Deci, 2017). For instance, positive feedback promotes competence needs satisfaction and thus greater interest and enjoyment of an activity. External rewards on the other hand may lead to a frustration of autonomy needs and thus lower intrinsic motivation (Vansteenkiste et al., 2020). Autonomy needs, competence needs, and relatedness needs are also suggested to enable identified and integrated regulations of external motivation (Ryan, & Deci, 2017). That is, a sense of volition resulting in autonomy needs satisfaction, a sense of effectiveness resulting in competence needs satisfaction, and a sense of connection with those who encourage goals and activities resulting in relatedness needs satisfaction enable internalization – the

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essential element of identified and integrated regulations of external motivation (Vansteenkiste et al., 2020). Collectively, these propositions mean that psychological needs satisfaction facilitates autonomous motivation. Extending this argument to academic motivation, it is expected that psychological needs satisfaction promotes greater autonomous academic motivation.

2.3 Theoretical Framework of the Study

Figure 2.1 depicts the theoretical framework of the study. It was hypothesized that psychological needs satisfaction mediates the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation. Consistent with Garrison et al.'s (2000) Community of Inquiry Framework, presence facilitates meaning making, personal expression, and building understanding among students. Specifically, cognitive presence promotes meaning making via the process of resolving challenges in learning contexts. Social presence encourages open expression of personal meanings and emotions in educational contexts, while teaching presence enables building understanding of the learning materials and realization of personally and educationally meaningful learning outcomes via teacher guidance. Consistent with Deci and Ryan's (2000, 2017) Basic Psychological Needs Theory, meaning making, personal expression, and building understanding promoted by presence, in turn, enhance psychological needs satisfaction. Precisely, meaning making enables students to realize themselves as free and authentic individuals – autonomous needs satisfaction. Personal expression allows students to feel a sense of connection and significance to others – relatedness needs satisfaction. Finally, building understanding helps students to experience a sense of efficacy and accomplishment – competence needs satisfaction. Similarly, consistent with Fredrickson's (1998, 2001, 2004a) Broaden-and-Build Theory, gratitude expands students' personal and social resources. Consistent with Deci and Ryan's (2000, 2017)

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Basic Psychological Needs Theory, these resources then promote greater psychological needs satisfaction, specifically by creating a sense of competence and belonging.

Ultimately, consistent with Deci and Ryan's (2000, 2017) Self-Determination Theory and Basic Psychological Needs Theory, and Fredrickson's (1998, 2001, 2004a) Broaden-and-Build Theory, psychological needs satisfaction, in turn, promotes academic motivation. That is, psychological needs satisfaction enhances interest and enjoyment of academic tasks, which results in higher intrinsic motivation. Psychological needs satisfaction also boosts internalization (transforming regulation into regulation by internal processes), which is the essential element of identified and integrated regulations of external motivation. Collectively, interest, enjoyment, and internalization that result from psychological needs satisfaction facilitate autonomous academic motivation.

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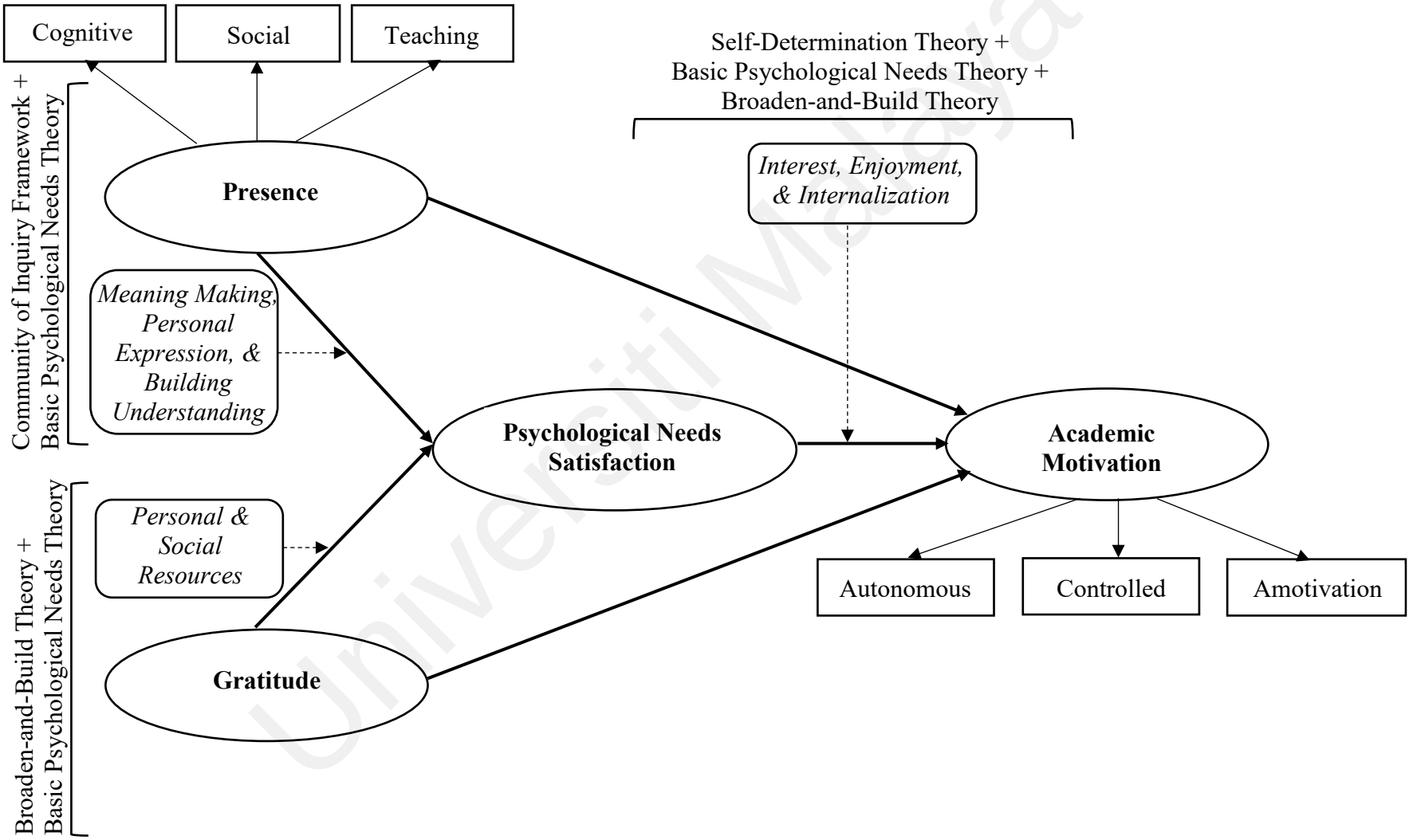
Figure 2.1

Theoretical Framework of the Study



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2.4 Academic Motivation

2.4.1 Academic Motivation and Academic Functioning

Academic motivation is regarded as one of the most important psychological dimensions that are crucial for human learning and development (Rowell & Hong, 2013). An extensive body of research has established that academic motivation positively predicts academic achievement (Gangolu, 2019; Meriac, 2015; Wu, 2019; Zimmerman, 2000). Academic motivation promotes student engagement, including among the low achieving students (Crumpton & Gregory, 2011; Wu, 2019). Academic motivation is positively associated with study involvement (Parameswari & Maharishi, 2015). Students' academic motivation influences their study habits and efforts including class attendance, completion of assignments, and amount of studying. These in turn are reflected in their final grades (Maurer et al., 2013). Precisely, higher levels of intrinsic motivation and extrinsic motivation are associated with greater levels of study habits, efforts, and final grades. The reverse is true for amotivation. Lack of academic motivation is one of the primary reasons for underachievement (Scheel et al., 2009). In addition, intrinsic motivation predicts students' capacity to adapt to the intellectual demands of tertiary education (Clark et al., 2014). The strong association between academic motivation and academic functioning remains evident even when cognitive skills are statistically controlled (Wigfield & Wentzel, 2007).

Research studies have established an association between students' academic motivation, and their processing and regulation strategies (Vermunt & Vermetten, 2004). Specifically, autonomous motivation is positively correlated with concentration, time management, and active study behaviour, and negatively associated with performance anxiety. An almost opposite pattern of findings has been found for controlled motivation. That is, controlled motivation is negatively associated with concentration and time

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management, and positively associated with performance anxiety, passive–avoidant school behaviour, and dropping out from course (Vansteenkiste et al., 2005). Similarly, researchers have found that autonomous motivation is positively associated with deep and concrete processing, and self-regulation (Donche et al., 2013). These findings are consistent with latter research which recorded that autonomous motivation is positively associated with deep study strategies and study effort, which in turn results in better academic performance (Kusurkar et al., 2013).

Controlled motivation, on the other hand, is negatively associated with deep and concrete processing, and self-regulation. Controlled motivation is also positively associated with external regulation and surface processing (Donche et al., 2013). The researchers have recorded a positive association between amotivation and lack of regulation as well. Extending on Vansteenkiste and colleagues' (2005) finding on dropping out, scholars have found autonomous motivation to be positively correlated with persistence in the academic program and negatively correlated with intention to drop out (Ratelle et al., 2007; Renaud-Dubé et al., 2015; Rump et al., 2017). Autonomous motivation has also been shown to be associated with certainty of study choice and intrinsic career goals (Levpušček & Podlesek, 2017). Academic motivation predicts students' future implementation of evidence-based professional practice as well (Amit-Aharon et al., 2020).

2.4.2 Academic Motivation and Psychological WellBeing

In addition to contributing to superior academic functioning, academic motivation is positively associated with psychological adjustment. Amotivated students report poorer psychosocial adjustment to university, greater levels of perceived stress, and greater levels of psychological distress during studying (Baker, 2004). Autonomous motivation

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on the other hand predicts lower stress, greater life satisfaction, and improved psychological wellbeing. Autonomous motivation is also associated with hedonic wellbeing as opposed to eudaimonic wellbeing (Breva & Galindo, 2020; Ozer & Schwartz, 2020). Similarly, intrinsic motivation is correlated with greater subjective wellbeing and meaning in life (Bailey & Phillips, 2016). Academic motivation has been found to negatively predict career stress as well (Çetinkaya, 2019). Consequently, superior academic motivation has been implicated in lower levels of depression and suicide risk (Lee et al., 2019).

2.4.3 Determinants of Academic Motivation

Van Etten and colleagues (2008) identified a number of factors that can influence students' academic motivation. These include (a) student social class, (b) student beliefs (e.g., belief about control, belief about learning and mastery), (c) student expectations about courses and instructors, (d) academic-related factors (i.e., course-, examination-, and assignment-related characteristics, reward, and feedback), (e) social factors (i.e., instructors, family members, and peers), (f) general college environment (i.e., physical environment, academic associations, internship/volunteer opportunities), and (g) extracurricular activities (e.g., fraternities, sports).

To elaborate, student personality characteristics such as perfectionism plays a role in academic motivation. For instance, students with higher levels of self-critical perfectionism share feeling highly controlled about academic goals while students with higher levels of personal standard perfectionism report feeling highly autonomous about their academic goals (Harvey et al., 2015). Similarly, students' levels of conscientiousness, openness to experience, neuroticism, and agreeableness have been found to be associated with their academic motivation (Clark & Schroth, 2010;

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Komarraju et al., 2009). Hope, grit, and familismo (a central Latinx cultural value involving dedication, commitment, and loyalty to family) have been found to positively predict academic motivation as well (Piña-Watson et al., 2015). Consistently, students' epistemological beliefs (e.g., belief on effort, belief on ability, belief on one truth) and learning strategies (e.g., deep learning, strategic learning) significantly predict their academic motivation (Karataş & Erden, 2017). Scholars have also found students' achievement anxiety and self-efficacy to predict their academic motivation (Hidajat et al., 2020). Further, students' goal orientations including mastery orientation and performance orientation have been positively associated with academic motivation (D'Lima et al., 2014; Hidajat et al., 2020). Not surprisingly, students' academic achievement further enhances their academic motivation (Sivrikaya, 2019). In contrast, academic skepticism and bicultural stress negatively predict academic motivation (Piña-Watson et al., 2015).

The expectancy-value model of motivation suggests that there are two general sources of motivation, namely students' expectation of success and the value that students place on a goal (Wigfield, Tonk, & Eccles, 2004). Students are more likely to motivated when they value a particular goal and expect to succeed in attaining the goal. In addition, research has shown that out-of-class instructor support, in the form of responsiveness to students' needs; communication of care; validation of students' worth, feelings, or actions; and helping of students with stressful situations by providing necessary information, assistance, or tangible resources, increases motivation to learn (Jones, 2008). Similarly, student-faculty interaction, which includes frequency and quality of faculty contact, research with faculty, personal discussion with faculty, and out-of-class interactions with faculty, positively influences academic motivation (Trolian et al., 2016; Trolian & Jach, 2020). This pattern remains even when a range of student background and institutional characteristics including precollege measure of academic motivation are controlled.

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High-quality teacher–student interpersonal relationships have been longitudinally linked with academic motivation as well (Maulana et al., 2014). Relatedly, autonomy-supportive learning environment and the quantity and quality of feedback positively predict autonomous academic motivation and negatively predict academic amotivation (Orsini et al., 2018). Applied learning experiences such as applying concepts to novel or practical situations and engaging in course assessments that require the use of course content to address problems are associated with increased academic motivation as well (Trolian & Jach, 2020).

Furthermore, peer relations have been shown to contribute to students' academic motivation (Li et al., 2013). This association is mediated by healthy attachment to the university. That is, having friends give a sense of belongingness, and thus encourages students to be more motivated in their studies. Peer support via collaborative learning tasks also activates and sustains students' academic motivation (Wu, 2019). Social support from peers, in addition to support from family and significant others, has been found to enhance academic motivation too (Fatima et al., 2018; Vatankhah & Tanbakooei, 2014; Hidajat et al., 2020). Lack of perceived social support on the other hand has been associated with academic amotivation (Legault et al., 2006). In essence, lecturers and peers provide a sociocultural environment for students to foster academic motivation. Relatedly, parental control strategies and degree of parents' involvement in making academic decisions are associated with academic motivation (Usaci, 2015). For instance, helicopter parenting, characterized by overprotectiveness to the point of undermining children's independence, has been associated with controlled academic motivation (Schiffrin & Liss, 2017).

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More recent studies, particularly in the wake of COVID-19 pandemic have provided further insights on students' academic motivation during online learning. For instance, Yu (2022) suggested teaching strategies, teacher-student cooperation, gamification or computer applications to improve motivation in online learning environments. Researchers have also reported the mediating role of attitude to online learning on the relationships between students' intrinsic motivation to know and engagement as well as between extrinsic motivation and engagement (Ferrer et al., 2022). Relatedly, learning motivation has been found to mediate the predictive effects of self-efficacy belief on learning achievement (Teng et al., 2023). Scholars have reported that the association between the learning format and academic motivation is mediated by college belongingness and satisfaction with academic life as well (Bolatov et al., 2022).

2.5 Presence

2.5.1 Presence and Academic Functioning

Presence has been shown to influence student participation, critical thinking, metacognition, knowledge construction, perceived learning, sense of community, and student satisfaction (Arbaugh, 2008; Choy & Quek, 2016; Garrison & Arbaugh, 2007; Khodabandelou et al., 2014; Liu & Yang, 2014; Rockinson-Szapkiw et al., 2016; Thompson et al., 2017; Vaughan & Wah, 2020; van der Merwe, 2014; Yildirim & Seferoglu, 2020). The association between presence and student satisfaction and learning in online environments has been further established in recent quantitative meta-analyses conducted by Caskurlu et al. (2020) and Richardson et al. (2017). Presence is shown to predict intrinsic, extrinsic, and germane loads (Kozan, 2016). Presence predicts attainment of student learning outcomes as well (Yussiff et al., 2018). Researchers have found presence to predict students' learning performance, specifically, both subjective (e.g., students' self-report) and objective learning outcomes (e.g., assignments; Guo et

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al., 2021; Law et al., 2019; Yang et al., 2016). Social presence, particularly, elements such as social respect, social sharing, and social identity are highly correlated with academic performance (Al-dheleai, & Tasir, 2020). As social presence increases, students' motivation, engagement, and perceived learning increase as well (Mitchell et al., 2021). Recent research has further shown that augmenting social presence indicators including affective association, community cohesion, instructor involvement, and interaction intensity can enhance online learning environments, even with the challenges posed by the COVID-19 pandemic (Munoz et al., 2021). Further, social presence is a crucial predictor of student retention in online learning (Boston et al., 2009). Social presence is also positively related to students' value for online learning (Edwards, 2021) and student satisfaction toward online courses (Jaradat & Ajlouni, 2020; Nasir, 2020).

Similarly, cognitive presence has been found to be a significant predictor of student satisfaction in low disenrollment online courses (Ice et al., 2011). Additionally, cognitive presence is reported to be correlated with student participation and academic achievement (Almasi & Zhu, 2020; Cakiroglu, 2019; Choy & Quek, 2016; Galikyan & Admiraal, 2019; Hind et al., 2018; Maddrell et al., 2011). Cognitive presence is also linked with learner prominence, both of which interact to enhance students' academic performance (Galikyan & Admiraal, 2019). In addition, teaching presence facilitates students' interactions and collaborative knowledge constructions (Wang & Liu, 2020). Teaching presence can also facilitate students' reflection and involve them in cognitive conflict and engagement (Wang & Stein, 2021). Students have expressed teaching presence to be associated with their critical thinking (Hosler & Arend, 2012). That is, instructors who design courses that are organized with clear goals and relevant assignments, provide direct, encouraging, timely, and specific feedback, and facilitate discussions enthusiastically enable the development of their students' critical thinking. Teaching

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presence also promotes a sense of learning community in online courses (Shea et al., 2006). Relatedly, researchers have established links between teaching presence and Rogerian constructs of level of regard and empathy (Swan et al., 2020). Further, teaching and cognitive presences are found to predict online learners' engagement, perceived learning, and satisfaction (Akyol & Garrison, 2019; Choo et al., 2020; Joo et al., 2011; Khalid & Quick, 2016; Kucuk & Richardson, 2019; Puranen & Vurdien, 2020; Zhang et al., 2016). More recently, researchers have reported teaching presence and social presence to be associated with student satisfaction as well (Patwardhan et al., 2020). Moreover, student enrolment is also positively associated with cognitive presence and social presence (Law et al., 2019).

2.5.2 Determinants of Presence

Students' responses to questions designed with the Practical Inquiry Model, which revolves around four elements namely triggering events, exploration, integration, and resolution, resulted in higher levels of cognitive presence (Sadaf & Olesova, 2017). Peer facilitation, especially asking initiating questions, has been found to affect students' level of cognitive presence (Chen et al., 2019). Similarly, Almasi and Zhu (2020) found that integrating and applying knowledge via peer discussion, peer teaching, and practicing learned materials promote higher levels of cognitive performance among students while lack of prompts for feedback, time constraints, and lack of confidence undermine it. Case-based discussions also lead to high levels of cognitive presence than non-case-based discussions (Sadaf & Kim, 2019). Further, higher level questions lead to greater levels of cognitive presence than lower level questions (Olesova et al., 2016). Discussion strategies that require students to take a perspective in authentic scenarios enable cognitive presence as well (Darabi et al., 2011). Similarly, high-quality interactions – deep and meaningful – among students are shown to facilitate cognitive presence (Garrison & Cleveland-Innes,

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2005). Students' voice-recorded reflections are also shown to facilitate cognitive presence (Taddei & Budhai, 2016).

Researchers have reported that students' cognitive presence is positively influenced by the role of the instructor and the affordances of web conferencing system (Cakiroglu, 2019). Technologies that reduce transactional distance and increase group cohesion are found to increase students' cognitive presence, in addition to social and teaching presences (Holbeck & Hartman, 2018; Traphagan et al., 2010). Relatedly, students with advanced ICT skills reported higher levels of cognitive presence, in addition to higher levels of social and teaching presences (Almasi et al., 2018). More recently, researchers have identified Integrated Online – Team-Based Learning, an online learning design that combines the flexibility of asynchronous engagement and connectedness of synchronous sessions, to foster cognitive presence, in addition to higher levels of social and teaching presences (Parrish et al., 2021). Ground rules are shown to sustain cognitive presence as well (Wang & Chen, 2019).

Aragon (2003) proposed several strategies to create social presence. First, course design elements like developing welcome messages, including student profiles, incorporating audio, limiting class size, and structuring collaborative learning activities can be targeted. Instructors can facilitate the process by contributing to discussion boards, promptly answering emails, providing frequent feedback, striking up conversations, sharing personal stories and experiences, using humour and emoticons, addressing students by name, and allowing options for students to address the instructor. Consistently, researchers have found that practices that enable two-way communications and psychological connections, both faculty-to-student and student-to-student, reduce transactional distance and increase social presence (Mitchell et al., 2021). Well-designed

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collaborative learning activities can thus be effective in facilitating social presence (Oyarzun et al., 2018). Size and duration of courses, and previous relationships are also found to influence social presence (Chen & Liu, 2020; Lowenthal & Dunlap, 2020; Poquet et al., 2018). Students report that strategies such as providing regular and detailed feedback, posing questions and inviting responses, and addressing students by name contribute greatly in establishing social presence (Izmirli & Izmirli, 2019). Students' self-regulation and self-efficacy are also found to contribute to social presence (Doo & Bonk, 2020).

Further, Web 2.0 tools foster students' social presence in online learning-based interactions (Al-dheleai & Tasir, 2019). The integration of social media such as Facebook and Twitter in teaching and learning contexts has been shown to enhance students' social presence (Akcaoglu & Lee, 2018; Baisley-Nodine et al., 2018; Elverici, 2021). Intimate and immediate nature of discussions on social networking sites facilitate social presence (Johannesen et al., 2019). Web-based interactive environments like Social Performance Optimization Tool, which allow students to interact with their peers via animated avatars that reflect learning performance and emotional states, enhance students' social presence (Wang et al., 2019). Similarly, video-based discussions can foster students' social presence (Milovic & Dingus, 2021). Students with continued discussion activities also report greater levels of social presence (Hostetter, 2013; Poquet et al., 2018). Requiring students to reply to peers' posts is found to influence social presence as well (Chen & Liu, 2020).

Delaney and Betts (2021) proposed a number of approaches that educators can utilize to strengthen teaching presence in online learning. These include planning ahead through course design strategies, being aware of students' level of efficacy with online learning,

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incorporating technological knowledge via collaboration, recognizing the need for just-in-time supports, displaying consistency with response time, and adopting a humanizing approach to online teaching and communication. Similarly, providing multiple means of notifying students of key course items and encouraging faculty-student and student-student interactions, and student involvement with the course materials have been suggested to promote teaching presence (Jones, 2011). Dzubinski (2014) echoed the importance of having regular public and private interaction with students to promote teaching presence. They further proposed providing effective feedback, and recognizing and appreciating cultural differences as additional means to encourage teaching presence. Communication timeliness in asynchronous in online courses is also associated with teaching presence (Skramstad et al., 2012). Tailoring teaching practices, providing encouraging words, and validating student contributions can aid in promoting teaching presence as well (Wisneski et al., 2015).

In addition, macro-level comments on courses, formative feedback for academic tasks like homework and discussions, and full utilization of technological tools in teaching are suggested as factors that boost teaching presence (Wang et al., 2021). Delivering higher education seminars using holographic videoconferencing has been shown to enhance teaching presence more compared to using alternative non-holographic videoconferencing means (Li & Lefevre, 2020). Using mini audio presentations in online forums is found to facilitate teaching presence (Dringus et al., 2010). Similarly, using asynchronous audio feedback is found to promote greater teacher presence as it communicates that the instructor cares more about the student (Ice et al., 2019). Further, supplementing worksheets as fillable Portable Document Format (PDF) files, proactive reiteration of concepts as opposed to counting on facial signs of recognition alone, and more regular check-ins for technology issues can strengthen teaching presence in online

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instruction (Budhai & Williams, 2021). Flipped learning approach has also been suggested to foster teaching presence (Marshall & Kostka, 2020).

2.6 Gratitude

2.6.1 Gratitude and Psychological Wellbeing

Gratitude is one of the critical contributing factors of wellbeing. Gratitude enhances psychological and physical health by increasing positive affect, reducing symptoms of depression and anxiety, strengthening positive social relationships, increasing satisfaction with life, boosting a sense of meaning in life, facilitating higher quality of sleep, and promoting greater involvement in health behaviors (Alkozei et al., 2017; Datu & Mateo, 2015; Wood et al., 2010). Gratitude also encourages prosocial behaviours towards both the benefactors and others, and reduces envy and materialistic attitudes (Ma et al., 2017; Mccullough et al., 2002; Shoshani et al., 2020). Gratitude promotes cooperative behaviours (Balconi et al., 2019) and reduces competitive behaviours in threatening social interactions (Sasaki et al., 2020). Gratitude has been shown to increase perceived interpersonal warmth (e.g., friendliness, thoughtfulness), which then facilitates social affiliation (Williams & Bartlett, 2015). Scholars have also shown that gratefulness positively predicts social connectedness and presence of meaning in life, which, in turn, predict subjective wellbeing (Liao & Weng, 2018).

2.6.2 Gratitude and Academic Functioning

In addition to promoting general wellbeing, gratitude plays a desirable role in teaching and learning contexts. First, gratitude promotes greater cognitive, emotional, and behavioural engagement of students (Jin & Wang, 2019; King & Datu, 2018; Valdez et al., 2022). Gratitude motivates students towards self-improvement and positive change, via increases in connectedness, elevation, and humility (Armenta et al., 2017; 2020).

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Thus, gratitude enhances students' academic motivation, particularly autonomous motivation, and decreases academic amotivation (King & Datu, 2018; Nawa & Yamagishi, 2021). Ultimately, gratitude promotes students' psychological resilience and academic performance (Zainoodin et al., 2021). Gratitude promotes psychosocial adjustment and academic adjustment as well (Wu et al., 2020). Students have also shared that gratitude positively influences their learning resilience (Mason, 2020; Wilson, 2016). Further, researchers have established the association between gratitude and predictors of academic retention and success such as social integration, academic integration, degree commitment, and general college persistence (Mofidi et al., 2014).

Consistent with Armenta et al. (2017; 2020), gratitude's positive role in teaching and learning contexts can be attributed to the fact that gratitude increases positive thinking, perceived social support, and desire to pay back parents and other significant persons (Valdez et al., 2022). To put another way, gratitude increases basic psychological needs satisfaction (Jin & Wang, 2019; Kardas & Yalcin, 2021; Lee et al., 2015; Reyes et al., 2021; Tsang et al., 2014). Specifically, gratitude enhances relatedness needs satisfaction by playing a crucial role in forming and maintaining important interpersonal relationships (Algoe, 2012). Gratitude also makes it easier for individuals to freely engage in necessary daily tasks, thus increasing autonomy needs satisfaction (Tsang et al., 2014). Similarly, gratitude promotes greater use of coping strategies such as positive reframing, acceptance, humour, and emotional social support seeking in the face of life challenges, thus enhancing competence needs satisfaction (Lau & Cheng, 2017).

2.6.3 Determinants of Gratitude

Perceived intentionality of the benefactor and the value of the benefit have been established as determinants of gratitude (Shoshani et al., 2021). Positive time perspectives

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are also related to higher levels of gratitude (Przepiorka & Sobol-Kwapinska, 2021). Personality traits such as extroversion, agreeableness, and conscientiousness are found to play a role in gratitude as well (Ajmal et al., 2016). Further, researchers have identified helping behaviours by both faculty and other peers, faculty's sense of care for the students, perceived effort within the faculty and the support staff, and learning environment characterized by positivity, interactivity, approachability, and valuing of students' contributions as drivers of gratitude within higher education contexts (Cownie, 2017). The authors further suggested university administrations to underscore faculty-student interactions in promoting gratitude among students. Consistently, relationship-building strategies like offering scholarships by the universities have been shown to promote gratitude in students (Fazal-e-Hasan et al., 2019).

2.7 Psychological Needs Satisfaction

2.7.1 Psychological Needs Satisfaction and Academic Functioning

In educational contexts, autonomy needs concerns choices and psychological freedom in learning tasks. Competence needs relates to opportunities to grow and express individual competences while relatedness needs concerns sense of connection with fellow peers and educators (Raižienė et al., 2017). Psychological needs satisfaction has been found to increase students' engagement (Buzzai et al., 2021; De Francisco et al., 2018; Fang et al., 2019; Guo, 2018; Gutiérrez et al., 2018; Saeki & Quirk, 2015). Students with greater psychological needs satisfaction report greater academic, emotional, and social school adjustment (Raižienė et al., 2017), positive affect in school, and school satisfaction (Tian et al., 2014). Researchers have further found psychological needs satisfaction to play a role in motivational outcomes such as practice time, and in global self-esteem (Evans & Liu, 2019). Psychological needs satisfaction is also related to students' self-efficacy

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(Macakova & Wood, 2020) and the use of self-regulated learning in problem-solving situations (Zhang & Whitebread, 2019).

Psychological needs satisfaction predicts academic achievement, that is, the greater the fulfilment of psychological needs, the superior the academic achievement (Macakova & Wood, 2020; Wang et al., 2019). In addition, psychological needs satisfaction predicts individuals' intrinsic values (Ahn & Reeve, 2021). Psychological needs satisfaction is found to be positively associated with autonomous motivation and negatively associated with amotivation (Chen, 2014; Liu & Chung, 2016; Ma et al., 2017; Matsumoto & Takenaka, 2021; Orsini et al., 2018; Trenshaw et al., 2016; Utvær & Haugan, 2016; Zhou et al., 2019). Recent systematic reviews and meta-analyses further established the strong positive correlation between psychological needs satisfaction and autonomous motivation, and a moderate negative correlation between the former and amotivation (Tang et al., 2019; Vasconcellos et al., 2020).

2.7.2 Psychological Needs Satisfaction and Psychological Wellbeing

Additionally, individuals with greater levels of psychological needs satisfaction report higher levels of personal and social responsibility, and lower levels of victimization and aggression (Kuzucu & Şimşek, 2013; Menéndez Santurio et al., 2021). Ultimately, psychological needs satisfaction is positively associated with aspects of subjective wellbeing including life satisfaction and positive affect (Akbag & Ümmet, 2017; Feng & Zhang, 2021; Guo, 2018; Li & Feng, 2018; Tay & Diener, 2011; Tian et al., 2016). Further, a positive association between psychological needs satisfaction and grit tendency has been recorded (Akbag & Ümmet, 2017). Psychological needs satisfaction has been found to be one of the strongest predictors of happiness as well (Demir & Davidson, 2013).

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Further, psychological needs satisfaction has been found to be associated with mental wellbeing and mental toughness (Bean et al., 2019; Li et al., 2019). Psychological needs satisfaction has been linked to work engagement (Wang et al., 2020) and job satisfaction as well (Wininger & Birkholz, 2013). More recently, psychological needs satisfaction has been found to lower perceived stress, and promote greater psychological functioning and subjective wellbeing during the COVID-19 pandemic (Avsec et al., 2021; Ginoux et al., 2021). A systematic review and meta-analysis have further established the positive association between psychological needs satisfaction and indicators of wellbeing such as meaning in life, life satisfaction, and positive affect, and the negative association between psychological needs satisfaction and negative indicators of wellbeing such as depression and apathy (Tang et al., 2019).

2.7.3 Determinants of Psychological Needs Satisfaction

Niemiec and Ryan (2009) proposed several strategies that can be employed in educational practice to enhance students' psychological needs satisfaction. Firstly, autonomy needs satisfaction can be ensured by providing choices and meaningful rationales for learning tasks, acknowledging students' feelings about learning topics, and lessening pressure and control. Providing appropriately challenging tasks and subsequent effectance-relevant evaluative feedback while avoiding norm-based feedback can enhance students' competence needs satisfaction. Lastly, relatedness needs satisfaction can be promoted by treating students with respect, care, and warmth. Instructor support has been found to be associated with students' satisfaction of autonomy, competence, and relatedness needs (Burt et al., 2013). Consistently, teachers' interpersonal style plays a role in psychological needs satisfaction (Tessier et al., 2010). Environmental factors like long-term development focus, holistic quality preparation, and communication positively predict psychological needs satisfaction (Li et al., 2019). Social interactions and parental

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scaffolding relate to psychological needs satisfaction as well (Fang et al., 2019; Zhang & Whitebread, 2019).

In addition, autonomy support has been found to enhance students' autonomous academic motivation, by satisfying students' psychological needs for autonomy, competence, and relatedness (Zhou et al., 2019). Autonomy support refers to a set of behaviours aimed to cultivate students' inner motivational resources by offering personally meaningful choices and associated rationales for task engagement, trying to understand students' perspectives and welcoming their input in decision making processes, and providing opportunities for students' self-initiated behaviours (Cheon et al., 2019). This support is typically offered by social agents in the environment, particularly educators. Consequently, teachers' autonomy support has been found to be significantly related to psychological needs satisfaction (Liu & Chung, 2016). Teachers' controlling behaviour, which naturally limits autonomy support, causes frustration of students' psychological needs (Behzadnia et al., 2018).

2.8 Online Learning

Online learning refers to teaching delivered via a digital device with the goal of supporting students' learning (Clark & Mayer, 2016). In essence, online learning involves delivery of most – more than 80% – or all of course content online, typically with no face-to-face sessions (Goralski & Falk, 2017). The materials shared in online learning sessions may consist of verbal or written words as well as graphics such as diagrams, photos, and animations. The mentioned digital device can be a computer, tablet, or smartphone. Online learning has helped teaching to shift from books and in-person lectures only to computer-based media including narrated animations, instructional videos, and educational simulations and games (Clark & Mayer, 2016; Mayer, 2019).

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Online learning can be implemented in synchronous or asynchronous manner. Synchronous learning involves live videoconferencing or chat rooms in which students and instructors are present at the same time for the teaching and learning tasks. Asynchronous learning on the other hand involves no live session that places both students and instructors in the same learning environment at the same time. It relies on offline methods such as discussion boards and emails instead (Hrastinski, 2008). Synchronous teaching and learning sessions facilitate greater social attachment between students and instructors due to the presence of both visual (e.g., facial expressions) and oral communication. Such rich communication and the resulting social connections make students more motivated (Goralski & Falk, 2017; Kock, 2005). In contrast, asynchronous teaching and learning sessions provide greater flexibility for both students and faculty members. That is, teaching and learning tasks can be completed at any time at one's own pace, from anywhere in the world (Goralski & Falk, 2017). As asynchronous sessions allow more time to think before completing a learning task, the students' quality of work is found to be typically better in asynchronous courses compared to synchronous courses (Hrastinski, 2008). Asynchronous courses however require students to be self-motivated and be comfortable with potential sense of isolation.

In his special issue article discussing 30 years of research on online learning, Mayer (2019) outlined three primary instructional design goals for online learning. These are: (i) reducing extraneous processing, (ii) managing essential processing, and (iii) fostering generative processing. Reducing extraneous processing involves removing any distracters that may consume students' cognitive energy but not serve the learning objectives. This can be achieved by eliminating unnecessary materials (coherence principle), highlighting important materials (signaling principle), avoiding onscreen texts to narrated graphics (redundancy principle), placing onscreen text near the relevant graphics (spatial

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contiguity principle, and presenting related speech and graphics at the same time (temporal contiguity principle; Mayer & Fiorella, 2014). Managing essential processing involves scaffolding the lessons to help the students process the subject matter competently. Breaking the lessons into student-paced parts (segmenting principle), sharing key terms with definitions prior to the lessons (pretraining principle), and delivering words verbally (modality principle) are three major ways to facilitate essential processing (Mayer & Pilegard, 2014). Finally, fostering generative processing involves incorporating elements that motivate the students to make sense of the materials in the lessons. Teachers can foster generative processing by utilising conversational language (personalization principle), human-like gestures for on-screen teachers (embodiment principle), and welcoming human voice (voice principle; Mayer, 2014).

Online learning is becoming increasingly popular due to the flexibility and convenience it offers. Online learning allows students to study from the comfort of their home and pursue tertiary education despite any family obligations and health concerns (Abdull Mutalib et al., 2022; Landrum et al., 2021; Rex, 2021). Essentially, online learning reaches more time and place bound students (Korde et al., 2021). Online learning is generally a financially cheaper mode of education, both for students and university administrations. Specifically, the latter benefit by cutting the costs on infrastructure as well as targeting a worldwide market. Online learning also offers a protective barrier for more reserved students to speak up in classes (Goralski & Falk, 2017). Researchers suggest that well-designed online courses can be as efficacious as traditional classroom courses (Vuttanon et al., 2022). Further, recent systematic review has established that online learning improves students' engagement, academic performance, and skills development (Abdull Mutalib et al., 2022).

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In contrast, unstable internet connection, non-conducive (e.g., noisy) environment for learning, inadequate finances, as well decreased social connection between members of the university campus – peers, faculty members, and the general university community – are identified as top barriers to online learning. Students also report increased exhaustion during online learning (Abdull Mutalib et al., 2022; Gonzalez-Ramirez et al., 2021; Korde et al., 2021; Landrum et al., 2021). Landrum et al. (2021) elaborated that convergence of students' expectations about time and space of online learning, self-motivation, and role of peers and faculty, with the students' goals for taking the course ultimately determines students' satisfaction.

Further, students online learning attitude are found to be generally positive and increase at the completion of the course. Self-regulatory factors including intrinsic orientation, performance orientation, self-management, and metacognitive awareness are found to result in greater perceived online social interactions, which in turn promote continuous intention to learn online (Zhu et al., 2020). Accordingly, researchers suggest incorporating elements that strengthen social connections and foster students' self-regulated learning while designing online learning courses. Additionally, computer and internet self-efficacy and online communication self-efficacy are found to be significant predictors of students' perception of enhanced net benefits from online learning. These predictive relationships are mediated by students' attitude towards online learning (Punjani & Mahadevan, 2022). Students intention to learn online is found to be affected by the quality of online course content, system, and service provided to the students as well (Dağhan & Akkoyunlu, 2016).

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In addition, students' online learning perceptions and readiness for online learning are found to predict learning outcomes (Sarfraz et al., 2022). Online learning perceptions include five dimensions namely accessibility, interactivity, adaptability, knowledge acquisition, and ease of loading (Wei & Chou, 2020). Accessibility refers to availability of learning resources. Interactivity is defined as sociability between peers and instructors. Adaptability refers to students' capacity to control the learning process while knowledge acquisition refers to students' ability to attain new knowledge. Lastly, ease of loading is defined as lower burden and stress in the learning environment. The relationship between students' online learning perceptions and readiness for online learning is also mediated by student readiness for online learning and moderated by teachers' online teaching readiness. To elaborate on the latter, students' learning outcomes are superior when both students' online learning perceptions and teachers' online teaching readiness are high (Sarfraz et al., 2022).

2.9 Private Higher Education

Private higher education has been growing for the past few decades and holds about a third of world's total higher education enrolment today. Enrolment in private higher education institutions is more popular in the developing regions such as Asia and Latin America although the numbers remain notable in the developed regions (Levy, 2018; Tamrat & Fetene, 2020). Consequently, private higher education institutions outnumber public higher education institutions across the globe today. This growth is generally attributed to the fact that there is an increased student demand for higher education, which cannot be satisfied with limited government funding for public higher education institutions (Buckner, 2017). The purpose of higher education has also expanded beyond labour training and state building today. Broad access and research excellence are deemed essential for national competitiveness in the global markets, and this newer need has

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promoted the expansion of private higher education (Buckner, 2017). Similarly, in Malaysia, private higher education institutions comprise more than 70% of higher education sector, as of January 2021. This large number of private higher education institutions is seen as an attempt to produce skilled human capital that can promote economic growth and global competitiveness (Chan et al., 2022).

Private higher education institutions address the increasing social demand for higher education without thinning public budgets. They also make higher education more accessible for minority groups including women and distance learners (Sohail & Saeed, 2003; Tamrat & Fetene, 2020; Wilkinson & Yussof, 2005). Anis and Islam (2019) identified eight challenges for delivering quality education in Malaysian private higher education institutions namely, “academics,” “facilities,” “students,” “programmes and curriculum,” “competition,” “accreditation,” “finance,” and “research.” The researchers also acknowledged finance as the most critical challenge.

The government-funded public universities in Malaysia consider students’ merit in admitting students into their various academic programs. Due to the limit of students the public institutions can take in each year, public universities tend to have more rigorous entry requirements. For instance, UNITAR International University (a private university in Malaysia) requires a minimum CGPA of 2.00 in the Malaysian Higher School Certificate (Sijil Tinggi Persekolahan Malaysia; STPM) to enrol in their Bachelor of Guidance and Counseling program (UNITAR International University, 2021). In contrast, University Putra Malaysia (a public university in Malaysia) requires a minimum CGPA of 2.50 in the Malaysian Higher School Certificate to enrol in the same program (University Putra Malaysia, 2021). Thus, academically superior students are generally admitted into public universities while the less academically superior students pursue

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their tertiary education in private universities. These students in private universities are likely to have lower levels of academic motivation, given the extensive body of research on the association between academic achievement and academic motivation (Gangolu, 2019; Meriac, 2015; Wu, 2019; Zimmerman, 2000). This is also further supported by the empirical finding that private university students have lower levels of academic motivation than their public university counterparts (Chong & Ahmed, 2012).

2.10 Review of Past Studies

2.10.1 Association Between Presence and Academic Motivation

A correlational study involving about 700 online university students in North America found an association between teaching presence and student motivation (Baker, 2010). Similarly, Cole et al. (2017) investigated the role of teaching presence in motivation towards online courses using a North American undergraduate sample of 190 students. They found teaching presence to predict student motivation towards online courses. However, the direction of the predictive relationship did not occur in the hypothesized direction. That is, the researchers hypothesized a positive association between teaching presence and student motivation while the results revealed a negative association. Among other reasons, sample characteristics, particularly, student age are identified as a potential reason for the inconsistency by the researchers, thus warranting further research using a more representative sample.

Further, a mixed-study investigating 60 students on the association between students' perceptions of social presence and their motivation for participation in online discussions found a significant positive association between the two variables (Weaver & Albion, 2005). Similarly, Zilka et al. (2018) conducted a mixed-method study involving over 480 students in Israel to study social and teaching presences. The researchers utilized both

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closed-ended and open-ended questions and found a link between social and teaching presences and motivation of students in virtual and blended courses. An experimental study examining over 380 students in 12 online classes in North America also shed light on the link between social presence and motivation (Robb & Sutton, 2014). That is, students assigned to the experimental group with greater social presence reported higher levels of motivation to learn than the students assigned to the control group. A recent qualitative study examining 110 North American student reflections from three courses that transitioned online due to the COVID-19 pandemic lockdown found that students' motivation increases as social presence increases (Mitchell et al., 2021). While the study offered timely insights on the topic, it would be worthwhile to investigate it further employing quantitative methodology.

More locally, Tan (2021) explored the impact of the COVID-19 pandemic on the motivation of university students learning in higher education institutions in Malaysia. Quantitative data gathered from over 280 university students revealed that cognitive, social, and teaching presences are positively associated with learning motivation. However, most studies discussed above studied academic motivation in general without considering the different types of academic motivation. Researchers have also noted that the literature on the conditions that maintain the different types of academic motivation is still relatively scarce (Levpušček & Podlesek, 2019). Studying the different types of academic motivation namely autonomous academic motivation, controlled academic motivation, and academic amotivation would provide a more nuanced understanding of the link between presence and academic motivation. In addition, the majority of studies on presence, especially those grounded in the Community of Inquiry Framework (which will be adopted in the current study), have been concentrated in North American contexts

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(Castellanos-Reyes, 2020). Thus, further studies examining the association between presence and academic motivation in the Malaysian context are warranted.

2.10.2 Association Between Gratitude and Academic Motivation

Howells (2004) conducted case studies on the role of gratitude in higher education and reported that gratitude enhances motivation. Similarly, King and Datu (2018) conducted a series of studies to investigate the link between gratitude and academic motivation. First, using a cross-sectional study, they examined over 460 university students from a public university in the Philippines. Data gathered via self-reports revealed that gratitude is positively associated with autonomous academic motivation. They further conducted a longitudinal study with over 400 Filipino public high school students and found that gratitude is concurrently and prospectively associated with autonomous academic motivation. While insightful, it is crucial to note that the samples were taken from public educational institutions only, necessitating further studies among students from private institutions. In addition, Mofidi et al. (2014) administered questionnaires to over 50 university students and found an association between gratitude and student persistence. Although related, the researchers did not explicitly examine academic motivation. It is also crucial to investigate other types of academic motivation, specifically academic amotivation, which was well-studied in Nawa and Yamagishi (2021) and Valdez et al. (2022).

Nawa and Yamagishi (2021) conducted an experimental study utilizing over 80 students from Japan and found the participants in the experimental group, who engaged in a gratitude journal task, to report enhanced academic motivation than their control group counterparts. The researchers further reported that the enhancement was driven by decreases in the levels of academic amotivation. Valdez et al. (2022) employed a mixed-

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method study to examine the effect of Facebook-based gratitude intervention on academic motivation among 110 Filipino high school students. The quantitative results revealed that participants in the gratitude intervention experimental group have higher levels of autonomous and controlled academic motivation than participants in the control group. Experimental studies discussed above however primarily examine state gratitude and it is important to examine trait or dispositional gratitude as well. Also, a fair number of the studies discussed above utilized high school students as the sample, confirming the observation that the research on gratitude within higher education is still relatively scarce (Cownie, 2017).

2.10.3 Association Between Presence and Psychological Needs Satisfaction

A correlational study involving about 280 university students from China found that teaching presence is positively related to psychological needs satisfaction (Zhao & Ma, 2018). The researchers further elaborated that course design and organization, and direct instruction aspects play a role in all three psychological needs satisfaction. Evaluation and feedback influence autonomy and competence needs satisfaction while discourse promotion and guidance impact relatedness needs satisfaction. Extending on these findings, a more recent study by Turk et al. (2022) gathered data from about 460 students enrolled in online courses at North American universities via a cross-sectional survey, and provided important insights on the association between presence and psychological needs satisfaction. Specifically, the researchers found that teaching and social presences to be significant positive predictors of satisfaction of psychological needs for autonomy, competence, and relatedness. While these studies attest to the link between presence and psychological needs satisfaction, further research encompassing all three presences namely cognitive, social, and teaching are warranted as studies directly examining the

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association between cognitive presence and psychological needs satisfaction remain sparse.

2.10.4 Association Between Gratitude and Psychological Needs Satisfaction

A correlational survey study involving about 470 students from three public universities in Turkey found that gratitude enhances satisfaction of psychological needs for autonomy, competence, and relatedness (Kardas & Yalcin, 2021). The authors further claimed that the enhancement is facilitated by students' perceived social support. Self-report data gathered from over 240 students of a North American private university also revealed a positive association between gratitude and psychological needs satisfaction (Tsang et al., 2014). Relatedly, Lee et al. (2015) conducted a longitudinal survey study with a sample of 235 undergraduates from Singapore. They found that gratitude predicted autonomy and relatedness needs satisfaction over time, but not competence needs satisfaction. However, as gratitude has been shown to predict competence needs satisfaction in other empirical studies such as Kardas and Yalcin (2021) and Tsang et al. (2014), it is essential to explore this line of inquiry further.

In addition, questionnaire responses from over 680 Chinese high school students revealed that gratitude is positively related to psychological needs satisfaction (Jin & Wang, 2019). Likewise, Reyes et al. (2021) reported that gratitude increases satisfaction and reduces frustration of psychological needs, based on a longitudinal survey study involving over 600 South American (Chilean) adults, aged 21 to 72 years old. While both Jin and Wang (2019) and Reyes et al. (2021) discovered significant findings, the former sample consisted of high school students only and the latter consisted of general adult population. As the link between gratitude and psychological needs satisfaction may manifest differently in a university students population compared to high school students or

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general adult population, further exploration of the link among university students is warranted.

2.10.5 Association Between Psychological Needs Satisfaction and Academic Motivation

Ma et al.'s (2016) study involving over 2000 Chinese participants found evidence for the positive association between psychological needs satisfaction and motivation. Liu and Chung's (2016) study involving a similar sample of over 460 Chinese university students found that psychological needs satisfaction, specifically, autonomy and competence but not relatedness needs satisfaction, is linked to students' intrinsic motivation. In contrast, qualitative analysis of interview responses from 17 university students from North America by Trenshaw et al. (2016) revealed that relatedness needs satisfaction plays a more important role in students' intrinsic motivation. The difference in findings between Liu and Chung (2016) and Trenshaw et al. (2016), particularly in relation to relatedness needs satisfaction, allude to a potential cultural difference in the way psychological needs satisfaction operates.

Karimi and Sotoodeh (2020) investigated the association between psychological needs satisfaction and academic motivation, specifically, intrinsic motivation among 365 public university students in western Iran. The researchers found that psychological needs satisfaction had a direct and positive effect on intrinsic motivation. Similarly, a study involving over 370 Massive Open Online Courses students found that psychological needs satisfaction has significant positive effects on intrinsic motivation (Sun et al., 2019). Most studies discussed above however did not account for other types of autonomous academic motivation, that is, identified and integrated regulations of external motivation.

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Further, a correlational study involving over 120 Slovenian university students investigated the links between, among other variables, psychological needs satisfaction and academic motivation (Levpušček & Podlesek, 2019). It was reported that amotivation is negatively related to psychological needs satisfaction, particularly, autonomy and competence needs. A cross-sectional correlational study with a sample of over 920 students from South America also revealed a positive association between psychological needs satisfaction and autonomous motivation (Orsini et al., 2018). Recent systematic reviews and meta-analyses further established the strong positive correlation between psychological needs satisfaction and autonomous motivation, and a moderate negative correlation between the former and amotivation (Tang et al., 2019; Vasconcellos et al., 2020). While the abovementioned findings are insightful, scholars like Wu et al. (2014) and Zhou et al. (2019) have argued that such findings from Western cultures may not apply to Eastern cultures as the former is individualistic and emphasizes the self while the latter is more collectivistic and stresses social obligations. Research has also suggested that the association between relatedness needs satisfaction and academic motivation may be stronger for marginalized groups than for majority groups (Urdan & Bruchmann, 2018), thus warranting further research in the Malaysian context.

In summary, a review of past studies reveals that although the association between presence and academic motivation has been suggested, studies examining the explicit link between presence and different types of academic motivation are still relatively scarce. Relatedly, the majority of studies on presence, especially those grounded in the Community of Inquiry Framework, have been concentrated in North American contexts, warranting further research in the Malaysian context. In addition, although the association between gratitude and academic motivation has been proposed in existing literature, a fair amount of the relevant studies have conceptualized gratitude as an emotion only. Studies

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examining gratitude as a life orientation towards appreciating the positive in the world generally, beyond a grateful emotion felt in reaction to others' help, remain limited. The research on gratitude within higher education is still relatively scarce as a fair number of the studies on gratitude have utilized high school students as sample. Moreover, even though the association between presence and academic motivation has been suggested in existing literature, the studies investigating the explanatory mechanisms of this relationship remain limited. The same is true for the association between gratitude and academic motivation. While existing literature alludes to the possibility of psychological needs satisfaction, no study has examined the mediating role of psychological needs satisfaction on the association between presence and academic motivation, or the association between gratitude and academic motivation. Further, despite the existence of a considerable amount of research on psychological needs satisfaction, they are limited in their capacity to generalize to collectivistic cultures as most researchers have utilized Western individualistic samples. Refer to Appendix A for a graphical representation of the summary.

2.11 Conceptual Framework of the Study

Figure 2.2 depicts the conceptual framework of the study. It is proposed that presence, specifically, cognitive presence, social presence, and teaching presence, is associated with academic motivation, specifically, autonomous academic motivation, controlled academic motivation, and academic amotivation. Similarly, gratitude is associated with academic motivation. Further, psychological needs satisfaction mediates the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation.

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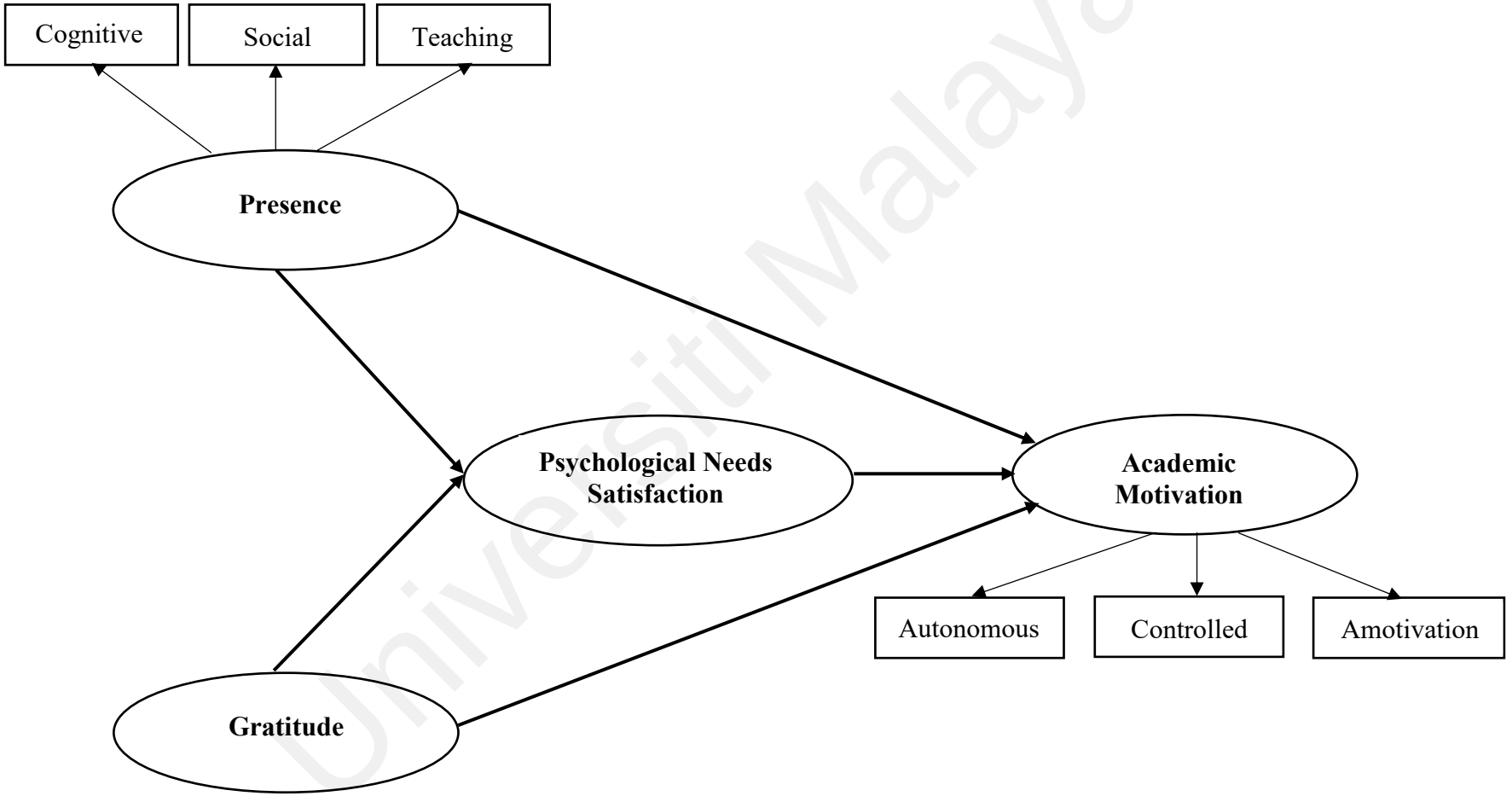
Figure 2.2

Conceptual Framework of the Study



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2.12 Summary

This chapter reviewed the related theories and models namely Deci and Ryan's Self-Determination Theory, Garrison et al.'s Community of Inquiry Framework, Fredrickson's Broaden-and-Build Theory, and Deci and Ryan's Basic Psychological Needs Theory. A theoretical framework of the study was presented. Presence and gratitude have been found to promote academic motivation. While the association between presence and academic motivation has been suggested in existing literature, the studies investigating the explanatory mechanisms of this relationship remain limited. The same is true for the association between gratitude and academic motivation. Though existing literature alludes to the possibility of psychological needs satisfaction, no study has examined the mediating role of psychological needs satisfaction on the association between presence and academic motivation, or the association between gratitude and academic motivation. A conceptual framework linking the variables of the study: presence, gratitude, psychological needs satisfaction, and academic motivation was also presented.

In Chapter 3, the research design employed in the current study and the location of the study will be introduced. This will be followed by a discussion on the population and sample of the study as well as the sampling method employed. Then, the study instruments will be introduced, and their reliability and validity will be discussed. The pilot testing of the instruments will also be reported. This will be followed by an outline of the data collection techniques and the procedure of the study, and a mention of ethical concerns. A discussion on the data analysis will follow right after. The chapter will end with a summary of Chapter 3.

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CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter discusses the methodology employed to examine the mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation among undergraduates during online learning at private universities in Malaysia. Firstly, the research design and the location of the study are introduced. This is followed by a discussion on the population and sample of the study as well as the sampling method employed. Then, the study instruments are introduced, and their reliability and validity are discussed. Expert validation and pilot testing of the instruments are also reported. This is followed by an outline of the procedure of the study and a mention of ethical concerns. A discussion on data analysis follows right after. The chapter ends with a summary of Chapter 3.

3.2 Research Design

A correlational research design was employed in this study. There are two predictor variables, one criterion variable, and one mediating variable. Presence is the first predictor variable of the study with three components, which are cognitive presence, social presence, and teaching presence. Presence was measured using the Community of Inquiry Survey (Arbaugh et al., 2008). Gratitude is the second predictor variable in the model and was measured using the Gratitude Questionnaire-Six-Item Form (McCullough et al., 2002). Academic motivation is the criterion variable of the study with three components namely autonomous academic motivation, controlled academic motivation, and academic amotivation. Participants' academic motivation was assessed using the Academic Motivation Scale (Vallerand et al., 1992). Finally, psychological needs satisfaction is the

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mediator with three components: autonomy needs satisfaction, competence needs satisfaction, and relatedness needs satisfaction. Psychological needs satisfaction was measured the Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2014). The study data were collected using a quantitative research method, specifically cross-sectional online survey. An online survey is a highly desirable data collection technique for its relative strengths such as speed and timeliness, ease of data entry and analysis, question diversity, low administration cost, ease of obtaining large sample, control of answer order, and required completion of answers (Evans & Mathur, 2018).

3.3 Location of the Study

This study was conducted in Malaysia, specifically at major private universities (the full list is provided in 3.4.2 Sampling Method section). However, as data were collected using Google Forms web application, participants could have participated from any parts of Malaysia, in the comfort of their own home or other spaces.

3.4 Population and Sample

The target population for the study is all undergraduates learning online at private universities in Malaysia. These students are pursuing their tertiary education in over 35 private universities across the country such as HELP University, INTI International University, Open University Malaysia, Sunway University, Taylor's University, UNITAR International University, and USCI University. As of 31 December 2021, over 297,000 undergraduates are enrolled in private universities in Malaysia (Ministry of Higher Education Malaysia, 2022). The accessible population for the study is undergraduates learning online at private universities in Malaysia, which offered online learning during the period of data collection.

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3.4.1 Sample Size Determination

A priori power analysis G*Power software using a small effect size of 0.05, an alpha level of .05, and a power of 0.80 suggested a sample size of 222 for this study (Faul et al., 2009). Hair et al's (2021) recommended a minimum sample size of 103 for a mediation study with three predictors, an alpha level of .05, and a power of 0.80. Hair et al (2021) further stated that Partial Least Squares Structural Equation Modeling (PLS-SEM; with a bootstrapping of 5,000 samples), which was utilized in the current study, achieves high levels of statistical power even with small sample sizes. To account for potential incomplete or invalid responses, a total of 388 participants were recruited for this study. The final data analysis involved 250 participants only as responses from 138 of the participants were deemed invalid as they did not fulfil the participation criteria of being an undergraduate and/or failed to answer one or more of the three attention check questions correctly.

3.4.2 Sampling Method

The participants for this study were recruited via convenience sampling. Convenience sampling refers to the method of selecting members of the sample for the ease of access and recruitment, and is the most common sampling method within the social sciences including psychology (Zhao, 2020). Researcher shared the online survey link to potential undergraduate participants in all major private universities registered in Malaysian Qualifications Register (MQR), via the university academic or administrative staff. The private universities included AIMST University, Asia e University, City University, Curtin University – Malaysia, HELP University, Heriot-Watt University Malaysia, Infrastructure University Kuala Lumpur, International Medical University, International University of Malaya-Wales, INTI International University, Limkokwing University of Creative Technology, MAHSA University, Management and Science University,

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Monash University Malaysia, Multimedia University, Nilai University, Open University Malaysia, Perdana University, Quest International University Perak, Raffles University, SEGi University, Sunway University, Taylor's University, UCSI University, UNITAR International University, Universiti Islam Malaysia, Universiti Kuala Lumpur, Universiti Selangor, Universiti Teknologi PETRONAS, Universiti Tenaga Nasional, Universiti Tun Abdul Razak, Universiti Tunku Abdul Rahman, University of Cyberjaya, University of Nottingham Malaysia, University of Reading Malaysia, and Wawasan Open University.

Specifically, the researcher contacted the university academic or administrative staff via email, requesting them to forward the online survey link to their respective students. The researcher also shared the online survey link on social media platforms including Facebook and LinkedIn to reach potential participants. Although there are concerns with generalizability due to the non-probabilistic nature of convenience sampling, ensuring the representativeness of the sample would still yield a valid sample in resource-limited contexts (Zhao, 2020). This was achieved by recruiting participants from a range of private universities in the current study. The final sample of the current study involved participants from all 13 private universities that offered online learning during the period of data collection, which was from September 2022 until December 2022. The list includes City University, HELP University, Infrastructure University Kuala Lumpur, Monash University Malaysia, Multimedia University, Open University Malaysia, Sunway University, UCSI University, UNITAR International University, Universiti Kuala Lumpur, Universiti Selangor, Universiti Tun Abdul Razak, and Wawasan Open University.

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3.5 Instruments of the Study

Academic motivation was measured using the Academic Motivation Scale (AMS; Vallerand et al., 1992). The AMS is a 28-item self-report measure that aims to capture the reasons as to why a student goes to university. The scale consists of seven subscales including intrinsic motivation to know (four items; e.g., "Because I experience pleasure and satisfaction while learning new things"), intrinsic motivation toward accomplishment (four items; e.g., "For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments"), intrinsic motivation to experience stimulation (four items; e.g., "For the pleasure that I experience when I feel completely absorbed by what certain authors have written"), extrinsic identified regulation (four items; e.g., "Because eventually it will enable me to enter the job market in a field that I like"), extrinsic introjected regulation (four items; e.g., "Because I want to show myself that I can succeed in my studies"), extrinsic external regulation (four items; e.g., "In order to have a better salary later on"), and amotivation (four items; e.g., "Honestly, I don't know; I really feel that I am wasting my time in university"). The terms "college" and "school" in original scale are reworded to "university" in the current study as the latter term would be more familiar to study participants. Participants are to indicate to what extent each statement corresponds to one of their reasons to go to university, on a 7-point Likert-type scale, with 1 = does not correspond at all and 7 = corresponds exactly. The scores for autonomous academic motivation are calculated by adding the scores of intrinsic motivation to know, intrinsic motivation toward accomplishment, intrinsic motivation to experience stimulation, and extrinsic identified regulation items and then dividing the sum by 16. The scores for controlled academic motivation are calculated by adding the scores of extrinsic external regulation and extrinsic introjected regulation items and then dividing the sum by eight. Finally, the scores for amotivation is calculated by adding all four

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amotivation items and then dividing the sum by four. Higher mean scores, out of seven, would imply greater levels of the particular type of academic motivation.

Presence was measured using the Community of Inquiry Survey (COI Survey; Arbaugh et al., 2008). The COI Survey is a 34-item self-report instrument consisting of 12 items measuring cognitive presence, nine items measuring social presence, and 13 items measuring teaching presence. Cognitive presence subscale captures four categories of cognitive presence indicators including triggering event (three items; e.g., "Course activities piqued my curiosity"), exploration (three items; e.g., "I utilized a variety of information sources to explore problems posed in this course"), integration (three items; e.g., "Learning activities helped me construct explanations/solutions"), and resolution (three items; e.g., "I can apply the knowledge created in this course to my work or other non-class related activities"). Social presence subscale captures three categories of social presence indicators including affective expression (three items; e.g., "Getting to know other course participants gave me a sense of belonging in the course"), open communication (three items; e.g., "I felt comfortable interacting with other course participants"), and group cohesion (three items; e.g., "Online discussions help me to develop a sense of collaboration"). Lastly, teaching presence captures three categories of teaching presence indicators including design and organization (four items; e.g., "The instructor provided clear instructions on how to participate in course learning activities"), facilitation (six items; e.g., "The instructor helped to keep course participants engaged and participating in productive dialogue"), and direct instruction (three items; e.g., "The instructor provided feedback in a timely fashion). Participants are to indicate to what extent they agree with each item on a 5-point Likert scale, with 1 = strongly disagree and 5 = strongly agree. The scores for cognitive presence are calculated by adding the scores of triggering event, exploration, integration, and resolution items and then dividing the

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sum by 12. The scores for social presence are calculated by adding the scores of affective expression, open communication, and group cohesion items and then dividing the sum by nine. Finally, the scores for teaching presence are calculated by adding the scores of design and organization, facilitation, and direct instruction items and then dividing the sum by 13. Higher mean scores, out of five, would imply greater levels of the particular presence.

Gratitude was measured using the Gratitude Questionnaire-Six-Item Form (GQ-6; McCullough et al., 2002). The GQ-6 is a six-item self-report measure that aims to capture individual differences in the disposition to experience gratitude in daily life. These items reflect different facets of gratitude including gratitude intensity (e.g., "I have so much in life to be thankful for"), gratitude frequency (e.g., "Long amounts of time can go by before I feel grateful to something or someone (reverse-scored)"), gratitude span or the number of life circumstances a person feels grateful for (e.g., "As I get older I find myself more able to appreciate the people, events, and situations that have been part of my life history"), and gratitude density or the number of people a person feels grateful for a single positive outcome (e.g., "I am grateful to a wide variety of people"). It is important to note that these facets are not mutually exclusive, but co-occur. Participants are to indicate how much they agree with each item on a 7-point Likert-type scale, with 1 = strongly disagree and 7 = strongly agree. The scores on the GQ-6 are calculated by adding the scores for all six items, after reverse scoring items 3 and 6, and then dividing the sum by six. Higher mean scores, out of seven, would imply higher levels of gratitude.

Psychological needs satisfaction was measured using the Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS; Chen et al., 2014). The BPNSFS is a 24-item self-report measure that assesses the satisfaction and frustration of the psychological

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needs for autonomy, competence, and relatedness. The scale consists of six subscales namely, autonomy satisfaction (four items), competence satisfaction (four items), relatedness satisfaction (four items), autonomy frustration (four items), competence frustration (four items), and relatedness frustration (four items). In the current study, the items are adapted for an online learning context, primarily by adding the phrase "in this online course" to all items, similar to studies such as Wang et al. (2019) and Müller et al. (2021). Example items include: "I feel a sense of choice and freedom in the things I undertake in this online course" (autonomy satisfaction), "I feel confident that I can do things well in this online course" (competence satisfaction), "I experience a warm feeling with the people I spend time with in this online course" (relatedness satisfaction), "I feel forced to do many things in this online course I wouldn't choose to do" (autonomy frustration), "I have serious doubts about whether I can do things well in this online course" (competence frustration), and "I feel the relationships I have in this online course are just superficial" (relatedness frustration). Participants are to indicate to what extent each statement is true for them on a 5-point Likert-type scale, with 1 = not true at all and 5 = completely true. The scores for autonomy needs satisfaction, competence needs satisfaction, and relatedness needs satisfaction are calculated by adding the scores of need satisfaction items and reverse scored need frustration items of each need and then dividing the sum by eight. Higher mean scores, out of five, would imply higher satisfaction of the particular psychological need.

3.5.1 Validity and Reliability of Instruments

Academic Motivation Scale (AMS) has demonstrated robust internal consistency reliability evidenced by subscales' Cronbach's alphas ranging from .83 to .86, except for extrinsic identified regulation subscale with alpha value of .62 (Vallerand et al., 1992). Later studies have recorded that all seven subscales have good internal consistency

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reliability, with Cronbach's alphas ranging from .76 to .90 (Clark et al., 2014). The scale also has satisfactory temporal stability, over a one-month period, with mean test-retest correlation of .79 (Vallerand et al., 1992). A more recent study has recorded that the scores remain stable within an academic year (Levpušček & Podlesek, 2019). In addition, a series of exploratory and confirmatory factor analyses found evidence for a seven-factor model, consistent with Deci and Ryan's (2000) Self-Determination Theory, thus establishing factor validity and construct validity of the AMS (Fairchild et al., 2005; Utvær & Haugan, 2016; Vallerand et al., 1992). Further, the correlations between the AMS scores and other relevant motivational constructs such as intrinsic interest, work avoidance, and task orientation have yielded support for the concurrent validity of the scale (Vallerand et al., 1993). Examination of the scores on the AMS subscales in regards to hypothesized relationships with other motivational criteria including work and family orientation, attitudes toward learning, work preference, and motive to avoid failure scores, has yielded evidence for convergent validity and discriminant validity as well (Fairchild et al., 2005). Accordingly, the AMS is one of the most extensively used measures of academic motivation across the globe with validation in culturally diverse nations including the United States, Turkey, China, Philippines, Jordan, Indonesia, and Singapore (Algharaibeh, 2021).

The Community of Inquiry Survey (COI Survey) has demonstrated high internal consistency reliability. Specifically, the Cronbach's alphas of .95, .91, and .94 have been recorded for cognitive presence, social presence, and teaching presence respectively (Arbaugh et al., 2008; Swan et al., 2008). In addition, a series of exploratory and confirmatory factor analyses have indicated a three-factor structure corresponding to teaching, cognitive, and social presences, which align perfectly with the theoretical assumptions of Garrison et al.'s (2000) Community of Inquiry Framework (Arbaugh et

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al., 2008; Caskurlu, 2018; Díaz et al., 2010; Kozan & Richardson, 2014; Swan et al., 2008). These results establish the factor validity and construct validity of the COI Survey. Further, recent studies have established the COI Survey's convergent validity and discriminant validity (Heilporn & Lakhal, 2020; Yang & Mohd, 2020). Consequently, a systematic review of journal articles involving the COI Survey, published between 2008 and 2017, concluded that the survey is a reliable and valid measure of cognitive presence, social presence, and teaching presence outlined in the Community of Inquiry Framework (Stenbom, 2018).

The Gratitude Questionnaire-Six-Item Form (GQ-6) has demonstrated robust internal consistency reliability evidenced by Cronbach's alphas ranging from .76 to .84 (McCullough et al., 2002). A recent three-wave longitudinal study over six-month period utilized the GQ-6 and found that its' internal consistency reliability, measured with both Cronbach's alpha (a) and McDonald's omega (w), was acceptable at T1 (a = .78, w = .77), T2 (a = .78, w = .78), and T3 (a = .75, w = .76; Reyes et al., 2021). In addition, via a series of exploratory and confirmatory factor analyses, the developers have established that the GQ-6 is a robust one-factor scale (McCullough et al., 2002). The scores on the GQ-6 are significantly correlated with scores on alternative measures of gratitude such as the Gratitude, Resentment, and Appreciation Test (r = .60; Thomas & Watkins, 2003) and the Gratitude Adjective Checklist (r = .65; McCullough et al., 2002). Participants' self-rated scores on the GQ-6 are also correlated with peers' ratings of participants' levels of gratitude at r = .33, suggesting acceptable convergence of self-ratings and informant ratings, given the private nature of gratitude. Further, the scores on the GQ-6 are found to be associated with, but not equivalent to, scores on measures assessing happiness, vitality, satisfaction with life, optimism, hope, and Big Five personality dimensions. Similarly, as theoretically expected, scores on the GQ-6 are negatively associated with

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scores on envy and materialistic attitude measures. Collectively, these findings establish convergent validity and discriminant validity of the scale. Moreover, although correlations between scores on the GQ-6, and scores on measures of social desirability such as self-deceptive tendencies and impression management have been recorded (*r* ranging from .19 to .34), the correlations between scores on the GQ-6 and scores on affective and prosocial measures remain modest even after controlling for the socially desirable response tendencies. Further, the GQ-6 has been utilized to assess gratitude among diverse populations including in the United States, China, Philippines, and Taiwan (Renshaw & Olinger-Steeves, 2016), as well as Malaysia (Zainoodin et al., 2021). Accordingly, the GQ-6 is one of the most commonly used measures of gratitude today (Renshaw & Olinger-Steeves, 2016).

The Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS) has demonstrated robust internal consistency reliability evidenced by Cronbach's alphas ranging from .64 and .89, from administration in culturally diverse countries including the United States, China, Peru, and Belgium (Chen et al., 2014). Exploratory and confirmatory factor analyses found evidence for a six-factor model, establishing the factor validity of the BPNSFS. Further, congruent with Deci and Ryan's (2000) Basic Psychological Needs Theory, scores on the need satisfaction subscales are found to predict psychological wellbeing such as self-esteem while scores on the need frustration subscales are found to predict psychological illbeing such as depression. The effects of need satisfaction and need frustration were not moderated by individual differences in the desire for need satisfaction. Collectively, these findings establish convergent validity and discriminant validity of the scale (Chen et al., 2014). The BPNSFS has been utilized in various research studying need dynamics at both general and domain specific (e.g., training, work) levels among Western and non-Western, children and adult participants

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(Van der Kaap-Deeder et al., 2020). Consequently, the BPNSFS is one of the most widely used measures of psychological needs satisfaction today (Vansteenkiste et al., 2020).

3.5.2 Validation of Research Instruments

The instruments of the current study have been reviewed and evaluated by a panel of three educational psychologists (refer to Appendix B). These psychologists have a collective average of 17 years of experience in the field of education. The panel confirmed that the research instruments are adequate to investigate the proposed research.

3.5.3 Pilot Testing of Instruments

The current study's online survey, which consists of the Community of Inquiry Survey, the Gratitude Questionnaire-Six-Item Form, the Academic Motivation Scale, and the Basic Psychological Need Satisfaction and Frustration Scale, was administered among 31 undergraduates who were learning online at private universities in Malaysia, including HELP University, Sunway University, International University of Malaya-Wales, and Raffles University. 30 has been suggested as a reasonable sample size for pilot studies (Johanson & Brooks, 2010). Reliability analysis revealed Cronbach's alphas of .91, .86, and .88 for cognitive presence, social presence, and teaching presence subscales of the Community of Inquiry Survey respectively. The Cronbach's alpha for the Gratitude Questionnaire-Six-Item Form was .75. Additionally, intrinsic motivation to know, intrinsic motivation toward accomplishment, intrinsic motivation to experience stimulation, extrinsic identified regulation, extrinsic introjected regulation, extrinsic external regulation, and amotivation subscales of the Academic Motivation Scale had Cronbach's alphas of .64, .88, .89, .57, .84, .76, and .90 respectively. Further, reliability analysis revealed Cronbach's alphas of .82, .78, .84, .79, .82, and .83 for autonomy satisfaction, competence satisfaction, relatedness satisfaction, autonomy frustration,

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competence frustration, and relatedness frustration subscales of Basic Psychological Need Satisfaction and Frustration Scale respectively. Collectively, the reliability statistics suggest that all four measures have robust internal consistency reliability, as values .60 - .70 are considered to indicate acceptable while values .80 or greater are considered to indicate a good level of reliability (Hulin et al., 2001). An exemption was the extrinsic identified regulation subscale of the Academic Motivation Scale, with a Cronbach's alpha of .57. This lower value is in line with reliability statistics reported in past research, whereby the subscale consistently recorded the lowest Cronbach's alpha (Vallerand et al., 1992). However, the Cronbach's alpha is expected to increase to at least an acceptable value of .60 when a much larger sample is employed in the full study later. As such, all four measures are suitable to be employed on the sample of the current study, which is undergraduates learning online at private universities in Malaysia.

3.6 Procedure of the Study

The current study's online survey was shared using Google Forms web application. Participants were first presented with an information letter and informed consent form. Upon reading the letter, participants were requested to indicate that they were participating in the study voluntarily. The letter contained important details of the study including the study aim, procedure, risks and benefits, and participants' rights (refer to Appendix C for the information letter and informed consent form as it was presented to the participants). Participants who gave their consent were requested to choose and state one academic course that they were doing fully online, that is, attending lectures or tutorials and completing assessments online, in the current academic semester to reflect on or think about for the next two questionnaires (refer to Appendix D for the question as it was presented to the participants). Participants were then requested to fill in a series of questionnaires measuring the variables of the study namely the Community of Inquiry

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Survey, Basic Psychological Need Satisfaction and Frustration Scale, Gratitude Questionnaire - Six Item Form, and Academic Motivation Scale (refer to Appendices E-H for the questionnaires as they were presented to the participants). Three attention check questions were inserted in between the items for Community of Inquiry Survey ("Please select "3 = neutral"."), Basic Psychological Need Satisfaction and Frustration Scale ("Please select "5 Completely True"."), and Academic Motivation Scale ("Please select "2"."). Attention check questions have been suggested as one of the key ways to identify inattentive respondents and improve the quality of data (Pei at al., 2020).

Finally, participants were required to fill in the demographic information form, which contains items on age, gender, ethnicity, nationality, socioeconomic status, name of university, major, and year of study (refer to Appendix I for demographic information form as it was presented to the participants). Socioeconomic status was measured using the single-item MacArthur Scale of Subjective Social Status – Adult Version (Adler et al., 2000), which assesses participants' perceived rank relative to others in their social group (home country, in the current study). The scale has been found to be a reliable and valid measure of socioeconomic status (Operario et al., 2004). Information on socioeconomic status and other abovementioned demographic factors are collected to determine if the study sample is representative of the target population for generalisation purposes as well as to be used in potential supplementary data analysis such as moderating relationships (Hammer, 2011).

Upon completion of the survey, participants were thanked for their time and given a confirmation that their responses were recorded (refer to Appendix J for the message as it was presented to the participants). It would have taken approximately 20 minutes for

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participants to complete the survey. The data collection period lasted four months, specifically between September 2022 and December 2022.

3.7 Ethical Concerns

An information letter that outlines the aim and procedure of the study, participants' rights to decline to participate or withdraw from the study at any point, potential risks and incentives for participation, and contact details of persons to communicate regarding any questions about participants' rights or the research, were given to potential participants at the beginning of the online survey. Only potential participants who gave their informed consent were requested to answer the series of questionnaires of the study. Apart from possible minor fatigue, no major physical or psychological harm, discomfort, or danger was reasonably expected from participants' partaking in this study. The questionnaires used were generally non-invasive and not cognitively taxing as well. Contact details of a couple of mental health services were also provided should participants decide that they need mental health help following the study.

In addition, steps were taken to ensure the confidentiality of research data. Participants' responses were completely anonymous and there is no way to identify individual participants from their survey responses. The researcher also ensured that no one other than the researcher and their supervisor have access to the data. Further, efforts were taken to ensure that any inducements offered for participation such as money were not excessive to the point of coercing participation. Moreover, appropriate permission has been obtained to use all four copyrighted psychological measures in the current study (refer to Appendices K-N for the evidence of permission to use the measures). Above all, the current research project was sent for an institutional review and approval by Universiti Malaya Research Ethics Committee and Sunway University Research Ethics Committee

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before the commencement of the study. The approval of the latter committee was needed as Sunway University required ethical clearance from its own ethics committee prior to collecting data from its students.

3.8 Data Analysis

Presence is the first predictor variable of the study with three components, which are cognitive presence, social presence, and teaching presence. Presence was measured using an interval scale of measurement. The scores for cognitive presence were calculated by adding the scores of triggering event, exploration, integration, and resolution items of the Community of Inquiry Survey and then dividing the sum by 12. The scores for social presence were calculated by adding the scores of affective expression, open communication, and group cohesion items and then dividing the sum by nine. Finally, the scores for teaching presence were calculated by adding the scores of design and organization, facilitation, and direct instruction items and then dividing the sum by 13. Higher mean scores, out of five, would imply greater levels of the particular presence. Gratitude is the second predictor variable in the model and was measured using an interval scale of measurement. Gratitude score was calculated by adding the scores for all six items of the Gratitude Questionnaire-Six-Item Form, after reverse scoring items 3 and 6, and then dividing the sum by six. Higher mean scores, out of seven, would imply higher levels of gratitude.

Academic motivation is the criterion variable of the study with three components namely autonomous academic motivation, controlled academic motivation, and academic amotivation. Academic motivation was measured using an interval scale of measurement. The scores for autonomous academic motivation were calculated by adding the scores of intrinsic motivation to know, intrinsic motivation toward accomplishment, intrinsic

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motivation to experience stimulation, and extrinsic identified regulation items of the Academic Motivation Scale and then dividing the sum by 16. The scores for controlled academic motivation were calculated by adding the scores of extrinsic external regulation and extrinsic introjected regulation items and then dividing the sum by eight. Finally, the scores for amotivation were calculated by adding all four amotivation items and then dividing the sum by four. Higher mean scores, out of seven, would imply greater levels of the particular type of academic motivation.

Psychological needs satisfaction is the mediator with three components: autonomy needs satisfaction, competence needs satisfaction, and relatedness needs satisfaction. Psychological needs satisfaction was measured using an interval scale of measurement. The scores for autonomy needs satisfaction, competence needs satisfaction, and relatedness needs satisfaction were calculated by adding the scores of need satisfaction items of the Basic Psychological Need Satisfaction and Frustration Scale, and reverse scored need frustration items of each need and then dividing the sum by eight. Higher mean scores, out of five, would imply higher satisfaction of the particular psychological need.

Upon computing the scores of all four variables, the assumption of linearity was checked via graphical inspection of the scatterplots depicting the relationship between (i) presence and academic motivation, (ii) gratitude and academic motivation, (iii) presence and psychological needs satisfaction, (iv) gratitude and psychological needs satisfaction, and (v) psychological needs satisfaction and academic motivation. This was followed by the calculation of means, standard deviations, and internal consistencies of presence, gratitude, academic motivation, and psychological needs satisfaction. Following this, Pearson's *r* (Hauke & Kossowski, 2011) with bootstrapping via IBM SPSS Statistics

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(Version 27.0) was used to test hypotheses 1-6, that is, hypotheses on the relationship between presence and academic motivation, and gratitude and academic motivation. In addition, Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4 statistical software was utilized to test the proposed conceptual model (Hair et al., 2011). PLS-SEM has been suggested to be more suitable when the proposed model is predictive and exploratory in nature (Hair et al., 2019). PLS-SEM was also used to test hypotheses 7-12, that is, hypotheses on the mediating effect of psychological needs satisfaction on the relationship between presence and academic motivation, and the relationship between gratitude and academic motivation.

3.9 Summary

This chapter has discussed the methodology that was employed to examine the mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation among undergraduates during online learning at private universities in Malaysia. A correlational research design was employed in this study. The study data were collected using a quantitative research method, specifically a cross-sectional online survey. Two hundred and fifty students who are pursuing their tertiary education in private universities across the country were recruited via convenience sampling for this study. The predictor variables of the study – presence and gratitude – were measured using the Community of Inquiry Survey and the Gratitude Questionnaire-Six-Item Form respectively. Academic motivation, the criterion variable of the study, was assessed using the Academic Motivation Scale. Lastly, psychological needs satisfaction, the mediator in the study model, was measured using the Basic Psychological Need Satisfaction and Frustration Scale. All four measures have been shown to be reliable and valid. The chapter also reported the expert validation and pilot testing of the instruments. The chapter further outlined the procedure of the study

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and made a mention of ethical concerns. Finally, the chapter proposed the data analysis plan. In the next chapter, Chapter 4 – Findings, results of the study will be reported.

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CHAPTER 4

FINDINGS

4.1 Introduction

This chapter presents the findings of the current study, aimed to examine the mediating effect of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation among undergraduates during online learning at private universities in Malaysia. The statistical analyses were performed following the data analysis procedure described in Chapter 3. Firstly, the assessment of the assumption of linearity is reported. This is followed by the reporting of internal consistencies, means, and standard deviations of presence, gratitude, academic motivation, and psychological needs satisfaction. Then, the bivariate correlations between presence, gratitude, academic motivation, and psychological needs satisfaction are presented. Thereafter, results that answer the primary research questions stated below are reported.

i. Is there a significant relationship between cognitive, social, and teaching presences and autonomous academic motivation?
ii. Is there a significant relationship between gratitude and autonomous academic motivation?
iii. Is there a significant relationship between cognitive, social, and teaching presences and controlled academic motivation?
iv. Is there a significant relationship between gratitude and controlled academic motivation?
v. Is there a significant relationship between cognitive, social, and teaching presences and academic amotivation?

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vi. Is there a significant relationship between gratitude and academic amotivation?

vii. Does psychological needs satisfaction significantly mediate the relationship between cognitive, social, and teaching presences and autonomous academic motivation?

viii. Does psychological needs satisfaction significantly mediate the relationship between gratitude and autonomous academic motivation?

ix. Does psychological needs satisfaction significantly mediate the relationship between cognitive, social, and teaching presences and controlled academic motivation?

x. Does psychological needs satisfaction significantly mediate the relationship between gratitude and controlled academic motivation?

xi. Does psychological needs satisfaction significantly mediate the relationship between cognitive, social, and teaching presences and academic amotivation?

xii. Does psychological needs satisfaction significantly mediate the relationship between gratitude and academic amotivation?

Specifically, the results of Pearson's *r* with bootstrapping used to test hypotheses 1-6, that is, hypotheses on the relationship between presence and academic motivation, and gratitude and academic motivation are reported. Following that, the results of Partial Least Squares Structural Equation Modeling (PLS-SEM) used to test hypotheses 7-12, that is, hypotheses on the mediating effect of psychological needs satisfaction on the relationship between presence and academic motivation, and the relationship between gratitude and academic motivation are reported.

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4.2 Participants' Demographic Profile

A total of 388 participants were recruited for the study. Responses from 138 of the participants were deemed invalid as they did not fulfil the participation criteria of being an undergraduate and/or failed to answer one or more of the three attention check questions correctly. As such, only data from 250 participants were included in the analysis. The final sample of the current study consisted of 174 (69.6%) women and 76 (30.4%) men participants with a mean age of 30.52 years old (*SD* = 9.07). 42.4% of participants identified as Malay, 21.6% as Indian, 20.0% as Chinese, another 13.6% as Bumiputera Sabah/Sarawak, and the remaining 2.4% identified as members of other ethnic groups. 99.6% of the participants were Malaysian students, with only one international student. 13.6% of the participants self-reported having low socioeconomic status, 69.6% in the middle, and 16.8% having high socioeconomic status. 34.8% of the participants were majoring in business, 16.0% in education, 13.6% in psychology, 10.4% in sciences (e.g., chemistry, biology), 6.8% in health sciences (e.g., medicine, nursing), 6.0% in human resources, 4.0% in liberal arts, 2.8% in information technology, 2.4% in computer science, and the remaining 3.2% in other majors. 29.2% of participants were in the first year of study, 30.8% in the second year of study, and 40.0% in the third year of study and above. Table 4.1 presents the frequency distribution of participants' demographic characteristics.

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Table 4.1

Frequency Distribution of Participants' Demographic Characteristics

Characteristic	Frequency	Percentage (%)
Gender		
Woman	174	69.6
Man	76	30.4
Age		
18-25	93	37.2
26-30	54	21.6
31-40	69	27.6
41-50	23	9.2
51-70	9	3.6
Missing Value	2	0.8
Ethnicity		
Malay	106	42.4
Chinese	50	20.0
Indian	54	21.6
Bumiputera Sabah/Sarawak	34	13.6
Others	6	2.4
Nationality		
Malaysian	249	99.6
Non-Malaysian	1	0.4
Socioeconomic Status		
Low (Rungs 1-3)	34	13.6
Middle (Rungs 4-7)	174	69.6
High (Rungs 8-10)	42	16.8
Academic Major		
Business	87	34.8
Education	40	16.0
Psychology	34	13.6
Sciences (e.g., chemistry, biology)	26	10.4
Health sciences (e.g., medicine, nursing)	17	6.8
Human Resources	15	6.0
Liberal Arts	10	4.0
Information Technology	7	2.8
Computer Science	6	2.4
Others	8	3.2
Year of Study		
Year 1	73	29.2
Year 2	77	30.8
Year 3 and above	100	40.0

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4.3 Testing of Assumption of Linearity

The assumption of linearity was checked via graphical inspection of the scatterplots depicting the relationship between (i) presence and academic motivation, (ii) gratitude and academic motivation, (iii) presence and psychological needs satisfaction, (iv) gratitude and psychological needs satisfaction, and (v) psychological needs satisfaction and academic motivation (refer to Appendix O). The inspection suggested straight-line relationships between the variables. Thus, the assumption of linearity for the current data was met.

4.4 Descriptive Statistics

Table 4.2 shows the internal consistencies, means, and standard deviations of presence, gratitude, academic motivation, and psychological needs satisfaction.

Table 4.2

Internal Consistencies, Means, and Standard Deviations of Presence, Gratitude, Academic Motivation, and Psychological Needs Satisfaction

Variable	***α***	***M***	***SD***
Cognitive Presence	.95	4.07	0.74
Social Presence	.92	3.89	0.79
Teaching Presence	.97	4.13	0.81
Gratitude	.73	5.61	0.87
Autonomous Academic Motivation	.87	5.88	0.79
Controlled Academic Motivation	.83	5.74	1.03
Academic Amotivation	.80	2.05	1.25
Psychological Needs Satisfaction	.93	3.91	0.73

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Table 4.3 shows the bivariate correlations between presence, gratitude, academic motivation, and psychological needs satisfaction.

Table 4.3

Correlations Between Presence, Gratitude, Academic Motivation, and Psychological Needs Satisfaction

Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1. Cognitive Presence	-							
2. Social Presence	.80*	-						
3. Teaching Presence	.77*	.72*	-					
4. Gratitude	.25*	.27*	.22*	-				
5. Autonomous Academic Motivation	.32*	.31*	.20*	.32*	-			
6. Controlled Academic Motivation	.16*	.17*	.16*	.05	.58*	-		
7. Academic Amotivation	-.16*	-.19*	-.17*	-.52*	-.25*	-.07	-	
8. Psychological Needs Satisfaction	.49*	.53*	.38*	.38*	.42*	.12	-.46*	-

Note. * = This is statistically significant at $p < .05$.

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4.5 Reporting of Findings – Relationships between Presence, Gratitude, and Academic Motivation

The results answering research questions 1-6, which are on the relationships between presence and academic motivation, and gratitude and academic motivation are reported in this section.

4.5.1 Research Question 1

The first set of research questions was:

a. Is there a significant relationship between cognitive presence and autonomous academic motivation?

b. Is there a significant relationship between social presence and autonomous academic motivation?

c. Is there a significant relationship between teaching presence and autonomous academic motivation?

Pearson's *r* with bootstrapping (with 5000 samples) revealed that there is a significant positive relationship between cognitive presence and autonomous academic motivation, $r(248) = .32$, $p < .001$, 95% CI [.20, .44]. This suggests that as the level of cognitive presence increases, the level of autonomous academic motivation increases. Similarly, there is a significant positive relationship between social presence and autonomous academic motivation, $r(248) = .31$, $p < .001$, 95% CI [.18, .43], suggesting that as the level of social presence increases, the level of autonomous academic motivation increases. Further, there is a significant positive relationship between teaching presence and autonomous academic motivation, $r(248) = .20$, $p = .001$, 95% CI [.08, .33]. This suggests that as the level of teaching presence increases, the level of autonomous academic motivation increases.

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4.5.2 Research Question 2

The second research question was: Is there a significant relationship between gratitude and autonomous academic motivation? Pearson's *r* with bootstrapping revealed that there is a significant positive relationship between gratitude and autonomous academic motivation, $r(248) = .32$, $p < .001$, 95% CI [.18, .45]. This suggests that as the level of gratitude increases, the level of autonomous academic motivation increases.

4.5.3 Research Question 3

The third set of research questions was:

a. Is there a significant relationship between cognitive presence and controlled academic motivation?

b. Is there a significant relationship between social presence and controlled academic motivation?

c. Is there a significant relationship between teaching presence and controlled academic motivation?

Pearson's *r* with bootstrapping revealed that there is a significant positive relationship between cognitive presence and controlled academic motivation, $r(248) = .16$, $p = .012$, 95% CI [.03, .30]. This suggests that as the level of cognitive presence increases, the level of controlled academic motivation increases. Similarly, there is a significant positive relationship between social presence and controlled academic motivation, $r(248) = .17$, $p = .008$, 95% CI [.03, .31], suggesting that as the level of social presence increases, the level of controlled academic motivation increases. Further, there is a significant positive relationship between teaching presence and controlled academic motivation, $r(248) = .16$, $p = .013$, 95% CI [.04, .28]. This suggests that as the level of teaching presence increases, the level of controlled academic motivation increases.

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4.5.4 Research Question 4

The fourth research question was: Is there a significant relationship between gratitude and controlled academic motivation? Pearson's *r* with bootstrapping revealed that there is no significant relationship between gratitude and controlled academic motivation, $r(248) = .05$, $p = .470$, 95% CI [-.09, .18]. This suggests that as the level of gratitude increases, there is no parallel change in the level of controlled academic motivation.

4.5.5 Research Question 5

The fifth set of research questions was:

a. Is there a significant relationship between cognitive presence and academic amotivation?

b. Is there a significant relationship between social presence and academic amotivation?

c. Is there a significant relationship between teaching presence and academic amotivation?

Pearson's *r* with bootstrapping revealed that there is a significant negative relationship between cognitive presence and academic amotivation, $r(248) = -.16$, $p = .010$, 95% CI [-.29, -.04]. This suggests that as the level of cognitive presence increases, the level of academic amotivation decreases. Similarly, there is a significant negative relationship between social presence and academic amotivation, $r(248) = -.19$, $p = .003$, 95% CI [-.31, -.06], suggesting that as the level of social presence increases, the level of academic amotivation decreases. Further, there is a significant negative relationship between teaching presence and academic amotivation, $r(248) = -.17$, $p = .008$, 95% CI [-.30, -.04]. This suggests that as the level of teaching presence increases, the level of academic amotivation decreases.

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4.5.6 Research Question 6

The sixth research question was: Is there a significant relationship between gratitude and academic amotivation? Pearson's *r* with bootstrapping revealed that there is a significant negative relationship between gratitude and academic amotivation, $r(248) = -.52$, $p < .001$, 95% CI [-.61, -.42]. This suggests that as the level of gratitude increases, the level of academic amotivation decreases.

4.6 Structural Equation Modelling (SEM) – Measurement Model

Partial Least Squares Structural Equation Modeling (PLS-SEM; with a bootstrapping of 5,000 samples) with SmartPLS 4 statistical software was used to examine the measurement model and the structural model of the current study.

4.6.1 Common Method Bias

Firstly, to address the potential issue of common method bias arising from single data source, full collinearity was tested following Kock's (2015) suggestion. That is, all the variables were regressed against a common variable and the resulting VIF values were assessed. Table 4.4 shows the results of the full collinearity testing. As the VIF values were all less than 3.3, single source bias was not a serious issue with the current study data.

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Table 4.4

Full Collinearity Testing

Variable	VIF
Cognitive Presence	2.456
Social Presence	1.287
Teaching Presence	2.450
Gratitude	1.110
Autonomous Academic Motivation	1.522
Controlled Academic Motivation	1.382
Academic Amotivation	1.100
Psychological Needs Satisfaction	1.255

4.6.2 Measurement Model

Thereafter, the measurement model was tested to assess the reliability and validity of the instruments used in the current study, following Hair et al.'s (2019) and Hair et al.'s (2021) guidelines.

4.6.2.1 Convergent Validity and Construct Reliability

Table 4.5 shows the final indicator loadings, average variance extracted (AVE), and the composite reliability (CR). While loadings of 0.708 are desired, Hair et al. (2021) acknowledge that loadings lesser than 0.708 is not uncommon in social sciences and suggest that loadings between 0.40 and 0.70 should be considered for removal from the scale only when the removal increases AVE or CR above their respective threshold values, without negatively affecting the content validity. They suggest that loadings

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below 0.40 should always be removed from the scale, however. Consequently, several items were removed following Hair et al. (2021) suggestions, as the removal increased the AVE values (refer to Appendix P for loadings prior to the removal of items). The removed items were item 6 from the scale measuring gratitude, items 1 and 8 from the scale measuring controlled academic motivation, items 2, 3, 4, 6, 10, 13, 17, and 20 from the scale measuring autonomous academic motivation, and items 1, 2, 5, 7, 8, 9, 11, 13, 14, 17, and 20 from the scale measuring psychological needs satisfaction. Most of the indicator loadings after removal of items were acceptable at values above 0.708 while AVE and CR values were higher than their acceptable values of ≥ 0.50 and ≥ 0.70 respectively (Hair et al., 2021).

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Table 4.5

Measurement Model for the First Order Constructs

Constructs	Items	Loadings	AVE	CR
Cognitive Presence	COI23	0.784	0.668	0.951
	COI24	0.798		
	COI25	0.836		
	COI26	0.794		
	COI27	0.800		
	COI28	0.763		
	COI29	0.852		
	COI30	0.867		
	COI31	0.853		
	COI32	0.847		
	COI33	0.790		
Social Presence	COI14	0.801	0.622	0.926
	COI15	0.777		
	COI16	0.805		
	COI17	0.755		
	COI18	0.764		
	COI19	0.859		
	COI20	0.718		
	COI21	0.797		
	COI22	0.812		
Teaching Presence	COI1	0.886	0.723	0.969
	COI2	0.880		
	COI3	0.843		
	COI4	0.779		
	COI5	0.893		
	COI6	0.884		
	COI7	0.827		

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Constructs	Items	Loadings	AVE	CR
Teaching Presence (cont.)	COI8	0.901		
	COI9	0.860		
	COI10	0.818		
	COI11	0.904		
	COI12	0.773		
	COI13	0.789		
Gratitude	GQ1	0.829	0.577	0.816
	GQ2	0.845		
	GQ3R	0.485		
	GQ4	0.757		
	GQ5	0.821		
Autonomous	AMS9	0.654	0.501	0.886
Academic Motivation	AMS11	0.732		
	AMS16	0.742		
	AMS18	0.703		
	AMS23	0.727		
	AMS24	0.542		
	AMS25	0.728		
	AMS27	0.805		
Controlled	AMS7	0.806	0.507	0.873
Academic Motivation	AMS15	0.596		
	AMS22	0.632		
	AMS14	0.698		
	AMS21	0.723		
	AMS28	0.794		
Academic Amotivation	AMS5	0.748	0.621	0.799
	AMS12	0.772		
	AMS19	0.774		
	AMS26	0.855		

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Constructs	Items	Loadings	AVE	CR
Psychological Needs Satisfaction	BPNSFS3	0.737	0.504	0.919
	BPNSFS4	0.674		
	BPNSFS6	0.698		
	BPNSFS10	0.639		
	BPNSFS12	0.622		
	BPNSFS15R	0.657		
	BPNSFS16R	0.725		
	BPNSFS18R	0.744		
	BPNSFS19R	0.764		
	BPNSFS21R	0.800		
	BPNSFS22R	0.720		
	BPNSFS23R	0.714		
	BPNSFS24R	0.715		

4.6.2.2 Discriminant Validity

Following that, discriminant validity was assessed using heterotrait-monotrait ratio (HTMT) criterion suggested by Henseler et al. (2015). Table 4.6 shows the resulting HTMT values. All values except one are lower than the conservative threshold value of 0.85. The exception with the value of 0.860 (cognitive presence x social presence) is still lower than the threshold of 0.90 suggested for constructs that are conceptually similar. These values suggest that the study constructs are distinct. Collectively, the above-described tests suggest that the measurement items of the current study are both reliable and valid.

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Table 4.6

Discriminant Validity (HTMT)

Variable	1	2	3	4	5	6	7	8
1. Cognitive Presence	-							
2. Social Presence	0.860	-						
3. Teaching Presence	0.809	0.765	-					
4. Gratitude	0.358	0.412	0.339	-				
5. Autonomous Academic Motivation	0.317	0.321	0.222	0.349	-			
6. Controlled Academic Motivation	0.216	0.220	0.197	0.227	0.619	-		
7. Academic Amotivation	0.176	0.213	0.185	0.608	0.295	0.158	-	
8. Psychological Needs Satisfaction	0.447	0.493	0.344	0.476	0.463	0.174	0.568	-

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4.7 Structural Equation Modelling (SEM) – Structural Model

4.7.1 Structural Model

Upon assessing the measurement model, the structural model of the current study was assessed. First, the effect of the predictors namely cognitive presence, social presence, teaching presence, and gratitude on the mediator, psychological needs satisfaction was tested. This was followed with the testing of the effect of psychological needs satisfaction on the criterion variables namely autonomous academic motivation, controlled academic motivation, and academic amotivation. Table 4.7 shows the path coefficients of the direct effects. Social presence (β = 0.304, p = .005) positively predicts psychological needs satisfaction. Similarly, gratitude (β = 0.273, p < .001) positively predicts psychological needs satisfaction. However, cognitive presence (β = 0.186, p = .101) does not significantly predict psychological needs satisfaction. Teaching presence (β = -0.118, p = .298) does not significantly predict psychological needs satisfaction as well. Further, psychological needs satisfaction (β = 0.329, p < .001) positively predicts autonomous academic motivation. Psychological needs satisfaction (β = -0.412, p < .001) also negatively predicts academic amotivation. However, psychological needs satisfaction (β = 0.020, p = .817) does not significantly predict controlled academic motivation.

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Table 4.7

Path Coefficients of Direct Effects

Relationship	*β*	*SD*	*t*-value	*p*-value	*BCI LL*	*BCI UL*
CP → PNS	0.186	0.113	1.638	.101	-0.036	0.408
SP → PNS	0.304	0.108	2.812	.005	0.092	0.518
TP → PNS	-0.118	0.113	1.041	.298	-0.258	0.140
G → PNS	0.273	0.059	4.633	< .001	0.152	0.380
PNS → AAM	0.329	0.084	3.931	< .001	0.154	0.480
PNS → CAM	0.020	0.088	0.231	.817	-0.154	0.188
PNS → AA	-0.412	0.074	5.554	< .001	-0.547	-0.257

Note. CP = Cognitive Presence; SP = Social Presence; TP = Teaching Presence; G = Gratitude; PNS = Psychological Needs Satisfaction; AAM = Autonomous Academic Motivation; CAM = Controlled Academic Motivation; AA = Academic Amotivation.
Note. *B* = standardized Beta coefficient; SD = standard deviation; *BCI* = bias-corrected confidence interval; *LL* = lower limit; *UL* = upper limit.

4.7.1.1 Coefficient of Determination (R^2)

The coefficient of determination (R^2) of the effect of the predictors, cognitive presence, social presence, teaching presence, and gratitude on psychological needs satisfaction was 0.295, which shows that the four predictors explained 29.5% of the variance in psychological needs satisfaction. The resulting R^2 values of the effect of psychological needs satisfaction on autonomous academic motivation, controlled academic motivation, and academic amotivation were 0.222, 0.066 (not significant), and 0.350 respectively. The values suggest that psychological needs satisfaction explains the variance of 22.2% and 35.0% in autonomous academic motivation and academic amotivation respectively. Table 4.8 shows the coefficient of determination (R^2) of the direct effects.

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Table 4.8

Coefficient of Determination of Direct Effects

Relationship	R^2
Basic Needs Satisfaction	0.295
Autonomous Academic Motivation	0.222
Controlled Academic Motivation	0.066
Academic Amotivation	0.350

4.7.1.2 Effect Sizes (f^2)

Table 4.9 shows the effect sizes of the direct effects (f^2).

Table 4.9

Effect Sizes of Direct Effects

Relationship	f^2
Cognitive Presence → Psychological Needs Satisfaction	0.013
Social Presence → Psychological Needs Satisfaction	0.042
Teaching Presence → Psychological Needs Satisfaction	0.007
Gratitude → Psychological Needs Satisfaction	0.092
Psychological Needs Satisfaction → Autonomous Academic Motivation	0.098
Psychological Needs Satisfaction → Controlled Academic Motivation	0.000
Psychological Needs Satisfaction → Academic Amotivation	0.184

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4.7.2 Reporting of Findings – Mediation Model

The results answering research questions 7-12, which are on the mediating effect of psychological needs satisfaction on the relationships between presence and academic motivation, and gratitude and academic motivation are reported in this section. To test the mediation model, the indirect effects were assessed and the results are shown in Table 4.10.

Table 4.10

Hypothesis Testing Indirect Effects

Relationship	*β*	*SD*	*t*-value	*p*-value	*BCI LL*	*BCI UL*	f^2
CP → PNS → AAM	0.061	0.041	1.477	.140	-0.005	0.160	0.004
SP → PNS → AAM	0.100	0.043	2.305	.021	0.032	0.206	0.010
TP → PNS → AAM	-0.039	0.039	1.005	.315	-0.129	0.028	0.002
CP → PNS → CAM	0.004	0.019	0.195	.846	-0.029	0.056	0.000
SP → PNS → CAM	0.006	0.028	0.220	.826	-0.045	0.068	0.000
TP → PNS → CAM	-0.002	0.014	0.169	.866	-0.047	0.017	0.000
CP → PNS → AA	-0.076	0.050	1.545	.122	-0.183	0.013	0.006
SP → PNS → AA	-0.125	0.050	2.488	.013	-0.237	-0.039	0.016
TP → PNS → AA	0.049	0.048	1.012	.311	-0.041	0.150	0.002
G → PNS → AAM	0.090	0.030	2.977	.003	0.040	0.157	0.008
G → PNS → CAM	0.006	0.025	0.219	.827	-0.046	0.055-	0.000
G → PNS → AA	-0.113	0.035	3.181	.001	-0.187	-0.052	0.013

Note. CP = Cognitive Presence; SP = Social Presence; TP = Teaching Presence; G = Gratitude; PNS = Psychological Needs Satisfaction; AAM = Autonomous Academic Motivation; CAM = Controlled Academic Motivation; AA = Academic Amotivation.
Note. *B* = standardized Beta coefficient; SD = standard deviation; *BCI* = bias-corrected confidence interval; *LL* = lower limit; *UL* = upper limit, f^2 = effect size.

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4.7.2.1 Research Question 7

The seventh set of research questions was:

a. Does psychological needs satisfaction significantly mediate the relationship between cognitive presence and autonomous academic motivation?

b. Does psychological needs satisfaction significantly mediate the relationship between social presence and autonomous academic motivation?

c. Does psychological needs satisfaction significantly mediate the relationship between teaching presence and autonomous academic motivation?

The results revealed that the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and autonomous academic motivation was not significant, $\beta = 0.061$, $p = .140$. The mediating effect of psychological needs satisfaction on the relationship between social presence and autonomous academic motivation was significant, $\beta = 0.100$, $p = .021$. Finally, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and autonomous academic motivation was not significant, $\beta = -0.039$, $p = .315$. The results suggest that psychological needs satisfaction significantly mediates the relationship between social presence and autonomous academic motivation, but does not significantly mediate the relationship between cognitive presence and autonomous academic motivation as well as the relationship between teaching presence and autonomous academic motivation. Thus, hypothesis 7b is supported while hypotheses 7a and 7c are not supported.

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4.7.2.2 Research Question 8

The eighth research question was: Does psychological needs satisfaction significantly mediate the relationship between gratitude and autonomous academic motivation? The results revealed that the mediating effect of psychological needs satisfaction on the relationship between gratitude and autonomous academic motivation was significant, β = 0.090, p = .003. The results suggest that psychological needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation. Thus, hypothesis 8 is supported.

4.7.2.3 Research Question 9

The ninth set of research questions was:

a. Does psychological needs satisfaction significantly mediate the relationship between cognitive presence and controlled academic motivation?

b. Does psychological needs satisfaction significantly mediate the relationship between social presence and controlled academic motivation?

c. Does psychological needs satisfaction significantly mediate the relationship between teaching presence and controlled academic motivation?

The results revealed that the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and controlled academic motivation was not significant, β = 0.004, p = .846. The mediating effect of psychological needs satisfaction on the relationship between social presence and controlled academic motivation was not significant, β = 0.006, p = .826. Finally, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and controlled academic motivation was not significant, β = -0.002, p = .866. The results suggest that psychological needs satisfaction does not significantly mediate the relationship between

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cognitive presence and controlled academic motivation, the relationship between social presence and controlled academic motivation as well as the relationship between teaching presence and controlled academic motivation. Thus, hypotheses 9a, 9b, and 9c are not supported.

4.7.2.4 Research Question 10

The tenth research question was: Does psychological needs satisfaction significantly mediate the relationship between gratitude and controlled academic motivation? The results revealed that the mediating effect of psychological needs satisfaction on the relationship between gratitude and controlled academic motivation was not significant, β = 0.006, p = .827. The results suggest that psychological needs satisfaction does not significantly mediate the relationship between gratitude and controlled academic motivation. Thus, hypothesis 10 is not supported.

4.7.2.5 Research Question 11

The eleventh set of research questions was:

a. Does psychological needs satisfaction significantly mediate the relationship between cognitive presence and academic amotivation?

b. Does psychological needs satisfaction significantly mediate the relationship between social presence and academic amotivation?

c. Does psychological needs satisfaction significantly mediate the relationship between teaching presence and academic amotivation?

The results revealed that the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and academic amotivation was not significant, β = -0.076, p = .122. The mediating effect of psychological needs satisfaction on the

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relationship between social presence and academic amotivation was significant, β = -0.125, p = .013. Finally, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and academic amotivation was not significant, β = 0.049, p = .311. The results suggest that psychological needs satisfaction significantly mediates the relationship between social presence and academic amotivation, but does not significantly mediate the relationship between cognitive presence and academic amotivation as well as the relationship between teaching presence and academic amotivation. Thus, hypotheses 11b is supported while hypotheses 11a and 11c are not supported.

4.7.2.6 Research Question 12

The twelfth research question was: Does psychological needs satisfaction significantly mediate the relationship between gratitude and academic amotivation? The results revealed that the mediating effect of psychological needs satisfaction on the relationship between gratitude and academic amotivation was significant, β = -0.113, p = .001. The results suggest that psychological needs satisfaction significantly mediates the relationship between gratitude and academic amotivation. Thus, hypothesis 12 is supported.

A summary of all hypothesis tests of the current study is presented in Table 4.11. An alternative testing of hypotheses was performed using PROCESS macro for SPSS (Model 4; Preacher & Hayes, 2004, 2008) with bootstrapping (with 5000 samples) for comparison and the results are presented in Appendix Q.

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Table 4.11

Summary of Hypothesis Tests

Hypothesis	Result
H1a: There is a significant relationship between cognitive presence and autonomous academic motivation.	Supported
H1b: There is a significant relationship between social presence and autonomous academic motivation.	Supported
H1c: There is a significant relationship between teaching presence and autonomous academic motivation.	Supported
H2: There is a significant relationship between gratitude and autonomous academic motivation.	Supported
H3a: There is a significant relationship between cognitive presence and controlled academic motivation.	Supported
H3b: There is a significant relationship between social presence and controlled academic motivation.	Supported
H3c: There is a significant relationship between teaching presence and controlled academic motivation.	Supported
H4: There is a significant relationship between gratitude and controlled academic motivation.	Not supported
H5a: There is a significant relationship between cognitive presence and academic amotivation.	Supported
H5b: There is a significant relationship between social presence and academic amotivation.	Supported
H5c: There is a significant relationship between teaching presence and academic amotivation.	Supported
H6: There is a significant relationship between gratitude and academic amotivation.	Supported

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Hypothesis	Result
H7a: Psychological needs satisfaction significantly mediates the relationship between cognitive presence and autonomous academic motivation.	Not supported
H7b: Psychological needs satisfaction significantly mediates the relationship between social presence and autonomous academic motivation.	Supported
H7c: Psychological needs satisfaction significantly mediates the relationship between teaching presence and autonomous academic motivation.	Not supported
H8: Psychological needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation.	Supported
H9a: Psychological needs satisfaction significantly mediates the relationship between cognitive presence and controlled academic motivation.	Not supported
H9b: Psychological needs satisfaction significantly mediates the relationship between social presence and controlled academic motivation.	Not supported
H9c: Psychological needs satisfaction significantly mediates the relationship between teaching presence and controlled academic motivation.	Not supported
H10: Psychological needs satisfaction significantly mediates the relationship between gratitude and controlled academic motivation.	Not supported

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Hypothesis	Result
H11a: Psychological needs satisfaction significantly mediates the relationship between cognitive presence and academic amotivation.	Not supported
H11b: Psychological needs satisfaction significantly mediates the relationship between social presence and academic amotivation.	Supported
H11c: Psychological needs satisfaction significantly mediates the relationship between teaching presence and academic amotivation.	Not supported
H12: Psychological needs satisfaction significantly mediates the relationship between gratitude and academic amotivation.	Supported

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4.8 Second-Order Model Evaluation

Additional analyses were performed to evaluate the second order model, with presence as the second order construct.

4.8.1 Measurement Model

Firstly, the reliability and validity of the second order construct namely presence, were assessed. Table 4.12 shows the resulting indicator loadings, AVE, and CR. The second order measurement was found to be reliable and valid, evidenced by most loadings above 0.708, AVE values above 0.50, and CR values above 0.70.

Table 4.12

Measurement Model for the Second Order Construct

Constructs	Items	Loadings	AVE	CR
Presence	COI1	0.848	0.574	0.978
	COI2	0.836		
	COI3	0.775		
	COI4	0.713		
	COI5	0.805		
	COI6	0.797		
	COI7	0.756		
	COI8	0.849		
	COI9	0.804		
	COI10	0.772		
	COI11	0.851		
	COI12	0.691		
	COI13	0.726		
	COI14	0.751		
	COI15	0.724		
	COI16	0.710		

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Constructs	Items	Loadings	AVE	CR
Presence (cont.)	COI17	0.646		
	COI18	0.725		
	COI19	0.758		
	COI20	0.591		
	COI21	0.691		
	COI22	0.703		
	COI23	0.720		
	COI24	0.738		
	COI25	0.794		
	COI26	0.734		
	COI27	0.735		
	COI28	0.711		
	COI29	0.792		
	COI30	0.830		
	COI31	0.803		
	COI32	0.804		
	COI33	0.756		
	COI34	0.738		

4.8.2 Structural Model

Thereafter, the structural model of the second-order model was assessed. First, the effect of the predictors namely presence and gratitude on the mediator, psychological needs satisfaction was tested. This was followed with the testing of the effect of psychological needs satisfaction on the criterion variables namely autonomous academic motivation, controlled academic motivation, and academic amotivation. Table 4.13 shows the path coefficients of the direct effects. Both presence (β = 0.326, p < .001) and gratitude (β = 0.294, p < .001) positively predict psychological needs satisfaction. Further,

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psychological needs satisfaction (β = 0.340, p < .001) positively predicts autonomous academic motivation. Psychological needs satisfaction (β = -0.393, p < .001) also negatively predicts academic amotivation. However, psychological needs satisfaction (β = 0.025, p = .776) does not significantly predict controlled academic motivation.

Table 4.13

Path Coefficients of Direct Effects

Relationship	*β*	*SD*	*t*-value	*p*-value	*BCI LL*	*BCI UL*
P → PNS	0.326	0.064	5.072	< .001	0.195	0.447
G → PNS	0.294	0.061	4.812	< .001	0.160	0.399
PNS → AAM	0.340	0.079	4.309	< .001	0.169	0.482
PNS → CAM	0.025	0.088	0.284	.776	-0.151	0.192
PNS → AA	-0.393	0.078	5.038	< .001	-0.537	-0.228

Note. P = Presence; G = Gratitude; PNS = Psychological Needs Satisfaction; AAM = Autonomous Academic Motivation; CAM = Controlled Academic Motivation; AA = Academic Amotivation.
Note. *B* = standardized Beta coefficient; SD = standard deviation; *BCI* = bias-corrected confidence interval; *LL* = lower limit; *UL* = upper limit.

4.8.2.1 Coefficient of Determination (R^2)

The coefficient of determination (R^2) of the effect of the predictors, presence and gratitude, on psychological needs satisfaction was 0.259, which shows that the two predictors explained 25.9% of the variance in psychological needs satisfaction. The resulting R^2 values of the effect of psychological needs satisfaction on autonomous academic motivation, controlled academic motivation, and academic amotivation were 0.217, 0.065 (not significant), and 0.343. The values suggest that psychological needs satisfaction explains the variance of 21.7% and 34.3% in autonomous academic

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motivation and academic amotivation respectively. Table 4.14 shows the coefficient of determination (R^2) of the direct effects.

Table 4.14

Coefficient of Determination of Direct Effects

Relationship	R^2
Basic Needs Satisfaction	0.259
Autonomous Academic Motivation	0.217
Controlled Academic Motivation	0.065
Academic Amotivation	0.343

4.8.2.2 Effect Sizes (f^2)

Table 4.15 shows the effect sizes of the direct effects (f^2).

Table 4.15

Effect Sizes of Direct Effects

Relationship	f^2
Presence → Psychological Needs Satisfaction	0.126
Gratitude → Psychological Needs Satisfaction	0.102
Psychological Needs Satisfaction → Autonomous Academic Motivation	0.110
Psychological Needs Satisfaction → Controlled Academic Motivation	0.000
Psychological Needs Satisfaction → Academic Amotivation	0.174

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4.8.3 Testing of Mediation Model

To test the mediation model, the indirect effects were assessed and the results are shown in Table 4.16. The results revealed that the effects of Presence → Psychological Needs Satisfaction → Autonomous Academic Motivation (β = 0.111, p = .001), Presence → Psychological Needs Satisfaction → Academic Amotivation (β = -0.128, p = .001), Gratitude → Psychological Needs Satisfaction → Autonomous Academic Motivation (β = 0.100, p = .001), and Gratitude → Psychological Needs Satisfaction → Academic Amotivation (β = -0.115, p = .003) are significant while the effects of Presence → Psychological Needs Satisfaction → Controlled Academic Motivation (β = 0.008, p = .782) and Gratitude → Psychological Needs Satisfaction → Controlled Academic Motivation (β = 0.007, p = .786) are not significant. The results suggest that psychological needs satisfaction significantly mediate the relationship between (i) presence and autonomous academic motivation, (ii) presence and academic amotivation, (iii) gratitude and autonomous academic motivation, and (iv) gratitude and academic amotivation. Psychological needs satisfaction however does not significantly mediate the relationship between (i) presence and controlled academic motivation and (ii) gratitude and controlled academic motivation. The resulting model is depicted in Figure 4.1.

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Table 4.16

Hypothesis Testing Indirect Effects

Relationship	*β*	*SD*	*t*-value	*p*-value	*BCI LL*	*BCI UL*	f^2
P → PNS → AAM	0.111	0.035	3.199	.001	0.051	0.186	0.012
P → PNS → CAM	0.008	0.029	0.277	.782	-0.052	0.065	0.000
P → PNS → AA	-0.128	0.038	3.356	.001	-0.210	-0.062	0.016
G → PNS → AAM	0.100	0.031	3.190	.001	0.046	0.166	0.010
G → PNS → CAM	0.007	0.027	0.271	.786	-0.048	0.059	0.000
G → PNS → AA	-0.115	0.038	3.018	.003	-0.192	-0.048	0.013

Note. P = Presence; G = Gratitude; PNS = Psychological Needs Satisfaction; AAM = Autonomous Academic Motivation; CAM = Controlled Academic Motivation; AA = Academic Amotivation.
Note. *B* = standardized Beta coefficient; SD = standard deviation; *BCI* = bias-corrected confidence interval; *LL* = lower limit; *UL* = upper limit, f^2 = effect size.

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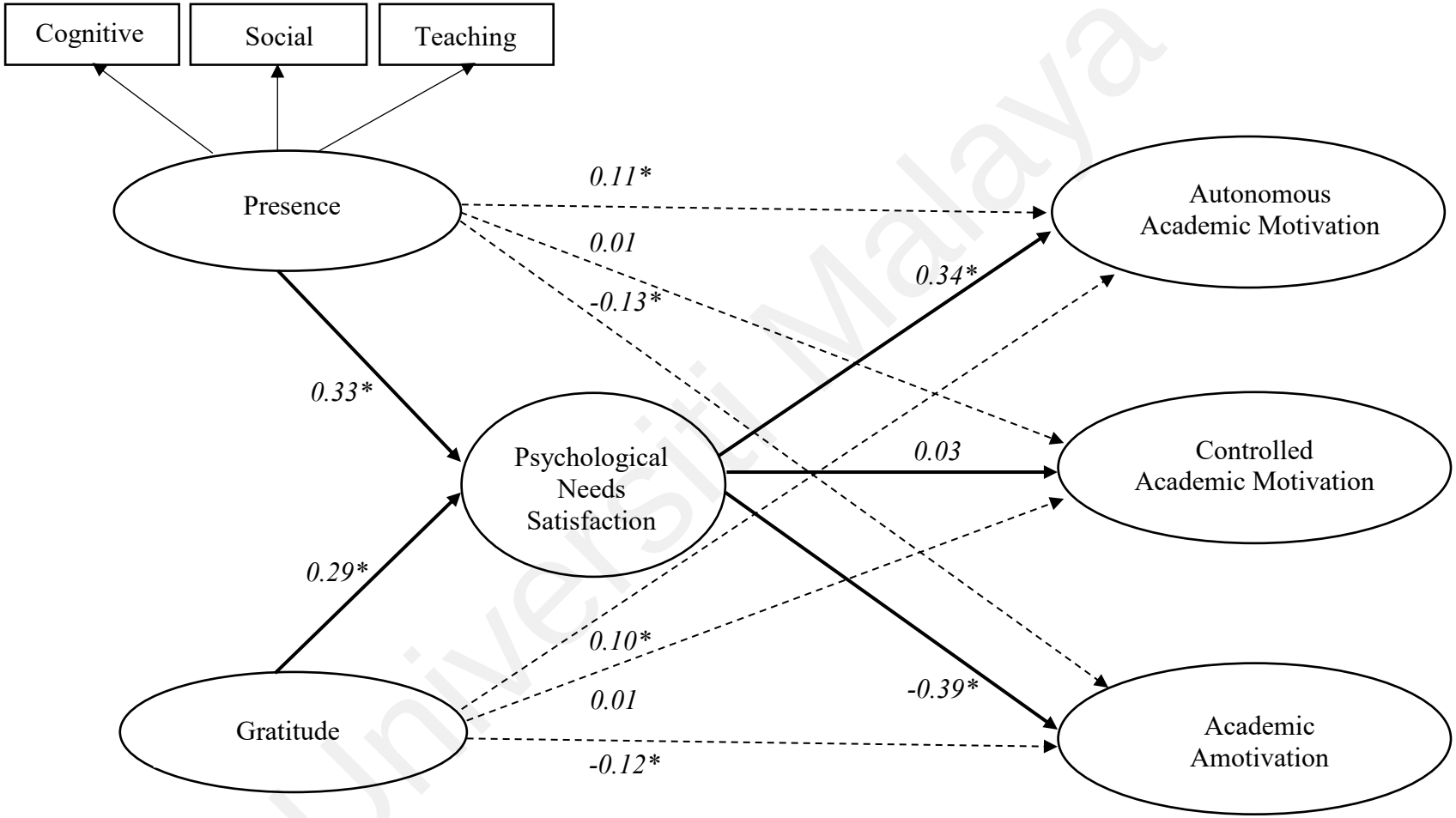
Figure 4.1

Structural Model of the Relations Between Presence, Gratitude, Academic Motivation, and Psychological Needs Satisfaction



Note. All presented path coefficients – *a*, *b*, *c'* – are standardized.
Note. * = significant at the $p < .01$ level.

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4.9 PLSpredict

Further, PLSpredict, a procedure based on the concepts of separate training and holdout samples for model parameters estimation for the evaluation of the model's predictive power was used following Shmueli et al.'s (2019) guidelines. The results of PLSpredict are presented in Table 4.17. As the prediction errors were found to be not highly symmetrical, mean absolute error (MAE) as opposed to root mean squared error (RMSE) was utilized. As PLS-SEM error values were lower than LM error values for all indicators evidenced by negative PLS-LM values, it can be concluded that the presented model has strong predictive power.

Table 4.17

PLSpredict

Construct	Item	PLS-SEM_MAE	LM_MAE	PLS-LM	$Q^2_{predict}$
AAM					0.095
	AMS9	0.815	0.891	-0.076	0.033
	AMS11	1.162	1.289	-0.127	0.085
	AMS16	0.798	0.894	-0.096	0.030
	AMS18	1.256	1.346	-0.090	0.042
	AMS23	0.761	0.850	-0.089	0.046
	AMS24	0.860	1.010	-0.150	-0.004
	AMS25	1.080	1.195	-0.115	0.022
	AMS27	0.918	1.017	-0.099	0.117
CAM					0.020
	AMS7	0.823	0.886	-0.063	0.036
	AMS14	1.122	1.215	-0.093	0.000
	AMS15	0.964	1.087	-0.123	-0.010

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Construct	Item	PLS-SEM_MAE	LM_MAE	PLS-LM	$Q^2_{predict}$
	AMS21	1.575	1.788	-0.213	-0.003
	AMS22	1.242	1.345	-0.103	0.005
	AMS28	0.858	0.958	-0.100	0.034
AA					0.206
	AMS5	0.955	1.083	-0.128	0.123
	AMS12	1.522	1.602	-0.080	0.184
	AMS19	1.042	1.111	-0.069	0.119
	AMS26	0.811	0.990	-0.179	0.083
PNS					0.231
	BPNSFS3	0.681	0.727	-0.046	0.136
	BPNSFS4	0.733	0.783	-0.050	0.115
	BPNSFS6	0.650	0.702	-0.052	0.133
	BPNSFS10	0.658	0.714	-0.056	0.147
	BPNSFS12	0.687	0.701	-0.014	0.154
	BPNSFS15R	1.180	1.285	-0.105	0.062
	BPNSFS16R	0.974	1.058	-0.084	0.128
	BPNSFS18R	1.004	1.143	-0.139	0.072
	BPNSFS19R	1.064	1.177	-0.113	0.116
	BPNSFS21R	1.071	1.139	-0.068	0.121
	BPNSFS22R	1.046	1.115	-0.069	0.110
	BPNSFS23R	0.960	1.074	-0.114	0.142
	BPNSFS24R	0.945	1.021	-0.076	0.055

Note. AAM = Autonomous Academic Motivation; CAM = Controlled Academic Motivation; AA = Academic Amotivation; PNS = Psychological Needs Satisfaction.
Note. $Q^2_{predict}$ = predictive power.

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4.10 Supplementary Analyses

In addition to the results reported above, supplementary analyses were performed to investigate the role of sociodemographic factors including age, gender, ethnicity, socioeconomic status, academic major, and year of study on the mediating effect of psychological needs satisfaction on the relationships between presence and academic motivation and gratitude and academic motivation. Specifically, mediation analyses with the stated sociodemographic factors as covariates were conducted. Further, supplementary analyses were performed to investigate the mediating effects of subcomponents of psychological needs satisfaction namely autonomy needs satisfaction, competence needs satisfaction, and relatedness needs satisfaction on the relationships between presence and academic motivation and gratitude and academic motivation. The supplementary analyses are also hoped to provide further insights into the pattern of findings reported in the earlier sections, particularly those that are not congruent with the proposed hypotheses. The results of the supplementary analyses are reported below.

4.10.1 Mediation Analyses with Sociodemographic Factors as Covariates

4.10.1.1 Age

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as mediator in the relationship between cognitive presence and autonomous academic motivation, social presence and autonomous academic motivation, teaching presence and autonomous academic motivation, and gratitude and autonomous academic motivation, with age as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and age as the predictors of autonomous academic motivation was

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significant, $F(3, 244) = 19.84$, $p < .001$, $R^2 = .20$. Cognitive presence was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.18$, $t(244) = 2.51$, $p = .013$. Age was not a significant predictor of autonomous academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = -0.01$, $t(244) = -1.27$, $p = .205$. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of autonomous academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'} = 0.16$), and the model with cognitive presence, psychological needs satisfaction, and age ($b_{c'} = 0.18$). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and autonomous academic motivation was not critically influenced by age.

In addition, the mediation model with social presence, psychological needs satisfaction, and age as the predictors of autonomous academic motivation was significant, $F(3, 244) = 18.77$, $p < .001$, $R^2 = .19$. Social presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.13$, $t(244) = 1.91$, $p = .057$. Age was not a significant predictor of autonomous academic motivation while controlling for social presence and psychological needs satisfaction, $b = -0.01$, $t(244) = -1.10$, $p = .271$. There was also minimal change in unstandardized Beta coefficient value for social presence as a predictor of autonomous academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'} = 0.12$), and the model with social presence, psychological needs satisfaction, and age ($b_{c'} = 0.13$). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and autonomous academic motivation was not critically influenced by age.

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Further, the mediation model with teaching presence, psychological needs satisfaction, and age as the predictors of autonomous academic motivation was significant, $F(3, 244) = 17.62$, $p < .001$, $R^2 = .18$. Teaching presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.06$, $t(244) = 0.91$, $p = .366$. Age was not a significant predictor of autonomous academic motivation while controlling for teaching presence and psychological needs satisfaction, $b = -0.01$, $t(244) = -0.92$, $p = .359$. There was also minimal change in unstandardized Beta coefficient value for teaching presence as a predictor of autonomous academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'} = 0.05$), and the model with teaching presence, psychological needs satisfaction, and age ($b_{c'} = 0.06$). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and autonomous academic motivation was not critically influenced by age.

The mediation model with gratitude, psychological needs satisfaction, and age as the predictors of autonomous academic motivation was significant, $F(3, 244) = 21.64$, $p < .001$, $R^2 = .21$. Gratitude was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.19$, $t(244) = 3.28$, $p = .001$. Age was not a significant predictor of autonomous academic motivation while controlling for gratitude and psychological needs satisfaction, $b = -0.01$, $t(244) = -1.48$, $p = .141$. There was also minimal change in unstandardized Beta coefficient value for gratitude as a predictor of autonomous academic motivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = 0.17$), and the model with gratitude, psychological needs satisfaction, and age ($b_{c'} = 0.19$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and autonomous academic motivation was not critically influenced by age.

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PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and controlled academic motivation, social presence and controlled academic motivation, teaching presence and controlled academic motivation, and gratitude and controlled academic motivation, with age as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and age as the predictors of controlled academic motivation was significant, $F(3, 244) = 6.30$, $p < .001$, $R^2 = .08$. Cognitive presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.24$, $t(244) = 2.39$, $p = .018$. Age was a significant predictor of controlled academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = -0.03$, $t(244) = -3.50$, $p = .001$. There was also a slight change in unstandardized Beta coefficient value for cognitive presence as a predictor of controlled academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'} = 0.19$), and the model with cognitive presence, psychological needs satisfaction, and age ($b_{c'} = 0.24$). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and controlled academic motivation was somewhat influenced by age.

In addition, the mediation model with social presence, psychological needs satisfaction, and age as the predictors of controlled academic motivation was significant, $F(3, 244) = 6.24$, $p < .001$, $R^2 = .07$. Social presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.23$, $t(244) = 2.36$, $p = .019$. Age was a significant predictor of controlled academic motivation while controlling for social presence and psychological needs satisfaction, $b = -0.02$, $t(244) = -3.43$, $p = .001$. There was also a slight change in unstandardized Beta coefficient value for social

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presence as a predictor of controlled academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'}$ = 0.20), and the model with social presence, psychological needs satisfaction, and age ($b_{c'}$ = 0.23). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and controlled academic motivation was somewhat influenced by age.

Further, the mediation model with teaching presence, psychological needs satisfaction, and age as the predictors of controlled academic motivation was significant, $F(3, 244) = 5.81$, $p = .001$, $R^2 = .07$. Teaching presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.18$, $t(244) = 2.08$, $p = .039$. Age was a significant predictor of controlled academic motivation while controlling for teaching presence and psychological needs satisfaction, $b = -0.02$, $t(244) = -3.30$, $p = .001$. There was also a slight change in unstandardized Beta coefficient value for teaching presence as a predictor of controlled academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'}$ = 0.17), and the model with teaching presence, psychological needs satisfaction, and age ($b_{c'}$ = 0.18). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and controlled academic motivation was somewhat influenced by age.

The mediation model with gratitude, psychological needs satisfaction, and age as the predictors of controlled academic motivation was significant, $F(3, 244) = 4.47$, $p < .004$, $R^2 = .05$. Gratitude was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.06$, $t(244) = 0.71$, $p = .477$. Age was a significant predictor of controlled academic motivation while controlling for gratitude and psychological needs satisfaction, $b = -0.02$, $t(244) = -3.18$, $p = .002$. There was

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also a non-trivial change in unstandardized Beta coefficient value for gratitude as a predictor of controlled academic motivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = 0.004$), and the model with gratitude, psychological needs satisfaction, and age ($b_{c'} = 0.06$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and controlled academic motivation was somewhat influenced by age. Further examination of the data revealed that age is negatively related to controlled academic motivation ($r = -.16$, $p = .010$). That is, as one ages, their level of controlled academic motivation decreases. Data also showed that age is positively correlated with cognitive presence ($r = .25$ $p < .001$), social presence ($r = .23$, $p < .001$), teaching presence ($r = .16$, $p = .009$), and gratitude ($r = .26$, $p < .001$). These figures suggest that cognitive presence, social presence, teaching presence, and gratitude increase with age.

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and academic amotivation, social presence and academic amotivation, teaching presence and academic amotivation, and gratitude and academic amotivation, with age as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and age as the predictors of academic amotivation was significant, $F(3, 244) = 23.24$, $p < .001$, $R^2 = .22$. Cognitive presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.15$, $t(244) = 1.40$, $p = .164$. Age was not a significant predictor of academic amotivation while controlling for cognitive presence and psychological needs satisfaction, $b = -0.01$, $t(244) = -1.03$, $p = .303$. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of academic amotivation between the model with cognitive presence and psychological needs

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satisfaction ($b_{c'}$ = 0.14), and the model with cognitive presence, psychological needs satisfaction, and age ($b_{c'}$ = 0.15). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and academic amotivation was not critically influenced by age.

In addition, the mediation model with social presence, psychological needs satisfaction, and age as the predictors of academic amotivation was significant, $F(3, 244) = 23.09$, $p < .001$, $R^2 = .22$. Social presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.14$, $t(244) = 1.26$, $p = .207$. Age was not a significant predictor of academic amotivation while controlling for social presence and psychological needs satisfaction, $b = -0.01$, $t(244) = -0.97$, $p = .333$. There was also no change in unstandardized Beta coefficient value for social presence as a predictor of academic amotivation between the model with social presence and psychological needs satisfaction ($b_{c'} = 0.14$), and the model with social presence, psychological needs satisfaction, and age ($b_{c'} = 0.14$). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and academic amotivation was not critically influenced by age.

Further, the mediation model with teaching presence, psychological needs satisfaction, and age as the predictors of academic amotivation was significant, $F(3, 244) = 22.42$, $p < .001$, $R^2 = .22$. Teaching presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and age, $b_{c'} = 0.01$, $t(244) = 0.15$, $p = .882$. Age was not a significant predictor of academic amotivation while controlling for teaching presence and psychological needs satisfaction, $b = -0.01$, $t(244) = -0.81$, $p = .419$. There was also minimal change in unstandardized Beta coefficient value for teaching presence as a

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predictor of academic amotivation between the model with teaching presence and psychological needs satisfaction ($b_{c'}$ = 0.02), and the model with teaching presence, psychological needs satisfaction, and age ($b_{c'}$ = 0.01). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and academic amotivation was not critically influenced by age.

The mediation model with gratitude, psychological needs satisfaction, and age as the predictors of academic amotivation was significant, $F(3, 244) = 44.49$, $p < .001$, $R^2 = .35$. Gratitude was a significant predictor of academic amotivation while controlling for psychological needs satisfaction and age, $b_{c'} = -0.59$, $t(244) = -7.21$, $p < .001$. Age was not a significant predictor of academic amotivation while controlling for gratitude and psychological needs satisfaction, $b = 0.004$, $t(244) = 0.53$, $p = .596$. There was also minimal change in unstandardized Beta coefficient value for gratitude as a predictor of academic amotivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = -0.58$), and the model with gratitude, psychological needs satisfaction, and age ($b_{c'} = -0.59$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and academic amotivation was not critically influenced by age.

4.10.1.2 Gender

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and autonomous academic motivation, social presence and autonomous academic motivation, teaching presence and autonomous academic motivation, and gratitude and autonomous academic motivation, with gender as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological

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needs satisfaction, and gender as the predictors of autonomous academic motivation was significant, $F(3, 246) = 19.81$, $p < .001$, $R^2 = .19$. Cognitive presence was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.17$, $t(246) = 2.39$, $p = .017$. Gender was not a significant predictor of autonomous academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = 0.09$, $t(246) = 0.86$, $p = .391$. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of autonomous academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'} = 0.16$), and the model with cognitive presence, psychological needs satisfaction, and gender ($b_{c'} = 0.17$). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and autonomous academic motivation was not critically influenced by gender.

In addition, the mediation model with social presence, psychological needs satisfaction, and gender as the predictors of autonomous academic motivation was significant, $F(3, 246) = 18.84$, $p < .001$, $R^2 = .19$. Social presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.12$, $t(246) = 1.82$, $p = .069$. Gender was not a significant predictor of autonomous academic motivation while controlling for social presence and psychological needs satisfaction, $b = 0.08$, $t(246) = 0.79$, $p = .433$. There was also no change in unstandardized Beta coefficient value for social presence as a predictor of autonomous academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'} = 0.12$), and the model with social presence, psychological needs satisfaction, and gender ($b_{c'} = 0.12$). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and autonomous academic motivation was not critically influenced by gender.

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Further, the mediation model with teaching presence, psychological needs satisfaction, and gender as the predictors of autonomous academic motivation was significant, $F(3, 246) = 17.84$, $p < .001$, $R^2 = .18$. Teaching presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.06$, $t(246) = 0.93$, $p = .353$. Gender was not a significant predictor of autonomous academic motivation while controlling for teaching presence and psychological needs satisfaction, $b = 0.07$, $t(246) = 0.74$, $p = .460$. There was also minimal change in unstandardized Beta coefficient value for teaching presence as a predictor of autonomous academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'} = 0.05$), and the model with teaching presence, psychological needs satisfaction, and gender ($b_{c'} = 0.06$). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and autonomous academic motivation was not critically influenced by gender.

The mediation model with gratitude, psychological needs satisfaction, and gender as the predictors of autonomous academic motivation was significant, $F(3, 246) = 21.19$, $p < .001$, $R^2 = .21$. Gratitude was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.17$, $t(246) = 3.03$, $p = .003$. Gender was not a significant predictor of autonomous academic motivation while controlling for gratitude and psychological needs satisfaction, $b = 0.04$, $t(246) = 0.40$, $p = .693$. There was also no change in unstandardized Beta coefficient value for gratitude as a predictor of autonomous academic motivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = 0.17$), and the model with gratitude, psychological needs satisfaction, and gender ($b_{c'} = 0.17$). Thus, the mediating effect of psychological needs

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satisfaction on the relationship between gratitude and autonomous academic motivation was not critically influenced by gender.

PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and controlled academic motivation, social presence and controlled academic motivation, teaching presence and controlled academic motivation, and gratitude and controlled academic motivation, with gender as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and gender as the predictors of controlled academic motivation was not significant, $F(3, 246) = 2.33$, $p = .075$, $R^2 = .03$. Cognitive presence was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.18$, $t(246) = 1.81$, $p = .071$. Gender was not a significant predictor of controlled academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = -0.06$, $t(246) = -0.41$, $p = .682$. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of controlled academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'} = 0.19$), and the model with cognitive presence, psychological needs satisfaction, and gender ($b_{c'} = 0.18$). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and controlled academic motivation was not critically influenced by gender.

In addition, the mediation model with social presence, psychological needs satisfaction, and gender as the predictors of controlled academic motivation was not significant, $F(3, 246) = 2.51$, $p = .059$, $R^2 = .03$. Social presence was not a significant predictor of controlled academic

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motivation while controlling for psychological needs satisfaction and gender, $b_{c'}$ = 0.19, $t(246)$ = 1.95, p = .052. Gender was not a significant predictor of controlled academic motivation while controlling for social presence and psychological needs satisfaction, b = -0.06, $t(246)$ = -0.41, p = .680. There was also minimal change in unstandardized Beta coefficient value for social presence as a predictor of controlled academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'}$ = 0.20), and the model with social presence, psychological needs satisfaction, and gender ($b_{c'}$ = 0.19). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and controlled academic motivation was not critically influenced by gender.

Further, the mediation model with teaching presence, psychological needs satisfaction, and gender as the predictors of controlled academic motivation was not significant, $F(3, 246)$ = 2.40, p = .068, R^2 = .03. Teaching presence was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and gender, $b_{c'}$ = 0.16, $t(246)$ = 1.87, p = .063. Gender was not a significant predictor of controlled academic motivation while controlling for teaching presence and psychological needs satisfaction, b = -0.05, $t(246)$ = -0.33, p = .741. There was also minimal change in unstandardized Beta coefficient value for teaching presence as a predictor of controlled academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'}$ = 0.17), and the model with teaching presence, psychological needs satisfaction, and gender ($b_{c'}$ = 0.16). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and controlled academic motivation was not critically influenced by gender.

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The mediation model with gratitude, psychological needs satisfaction, and gender as the predictors of controlled academic motivation was not significant, $F(3, 246) = 1.22$, $p = .303$, $R^2 = .01$. Gratitude was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.007$, $t(246) = 0.09$, $p = .928$. Gender was not a significant predictor of controlled academic motivation while controlling for gratitude and psychological needs satisfaction, $b = -0.09$, $t(246) = -0.60$, $p = .552$. There was also minimal change in unstandardized Beta coefficient value for gratitude as a predictor of controlled academic motivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = 0.004$), and the model with gratitude, psychological needs satisfaction, and gender ($b_{c'} = 0.01$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and controlled academic motivation was not critically influenced by gender.

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and academic amotivation, social presence and academic amotivation, teaching presence and academic amotivation, and gratitude and academic amotivation, with gender as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and gender as the predictors of academic amotivation was significant, $F(3, 246) = 23.34$, $p < .001$, $R^2 = .22$. Cognitive presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.14$, $t(246) = 1.26$, $p = .209$. Gender was not a significant predictor of academic amotivation while controlling for cognitive presence and psychological needs satisfaction, $b = -0.90$, $t(246) = -0.58$, $p = .562$. There was also no change in unstandardized Beta coefficient value for cognitive presence as a predictor of

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academic amotivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'}$ = 0.14), and the model with cognitive presence, psychological needs satisfaction, and gender ($b_{c'}$ = 0.14). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and academic amotivation was not critically influenced by gender.

In addition, the mediation model with social presence, psychological needs satisfaction, and gender as the predictors of academic amotivation was significant, $F(3, 246) = 23.31$, $p < .001$, $R^2 = .22$. Social presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.13$, $t(246) = 1.23$, $p = .220$. Gender was not a significant predictor of academic amotivation while controlling for social presence and psychological needs satisfaction, $b = -0.09$, $t(246) = -0.59$, $p = .553$. There was also minimal change in unstandardized Beta coefficient value for social presence as a predictor of academic amotivation between the model with social presence and psychological needs satisfaction ($b_{c'}$ = 0.14), and the model with social presence, psychological needs satisfaction, and gender ($b_{c'}$ = 0.13). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and academic amotivation was not critically influenced by gender.

Further, the mediation model with teaching presence, psychological needs satisfaction, and gender as the predictors of academic amotivation was significant, $F(3, 246) = 22.67$, $p < .001$, $R^2 = .22$. Teaching presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.01$, $t(246) = 0.10$, $p = .924$. Gender was not a significant predictor of academic amotivation while controlling for teaching presence and psychological needs satisfaction, $b = -0.11$, $t(246) = -0.69$, $p = .492$.

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There was also minimal change in unstandardized Beta coefficient value for teaching presence as a predictor of academic amotivation between the model with teaching presence and psychological needs satisfaction ($b_{c'}$ = 0.02), and the model with teaching presence, psychological needs satisfaction, and gender ($b_{c'}$ = 0.01). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and academic amotivation was not critically influenced by gender.

The mediation model with gratitude, psychological needs satisfaction, and gender as the predictors of academic amotivation was significant, $F(3, 246) = 45.25$, $p < .001$, $R^2 = .36$. Gratitude was a significant predictor of academic amotivation while controlling for psychological needs satisfaction and gender, $b_{c'} = -0.58$, $t(246) = -7.29$, $p < .001$. Gender was not a significant predictor of academic amotivation while controlling for gratitude and psychological needs satisfaction, $b = -0.03$, $t(246) = -0.22$, $p = .823$. There was also no change in unstandardized Beta coefficient value for gratitude as a predictor of academic amotivation between the model with gratitude and psychological needs satisfaction ($b_{c'}$ = -0.58), and the model with gratitude, psychological needs satisfaction, and gender ($b_{c'}$ = -0.58). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and academic amotivation was not critically influenced by gender.

4.10.1.3 Ethnicity

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and autonomous academic motivation, social presence and autonomous academic motivation, teaching presence and autonomous academic motivation, and gratitude and autonomous academic motivation, with ethnicity as

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a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and ethnicity as the predictors of autonomous academic motivation was significant, $F(3, 246) = 19.67$, $p < .001$, $R^2 = .19$. Cognitive presence was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and ethnicity, $b_{c'} = 0.17$, $t(246) = 2.38$, $p = .018$. Ethnicity was not a significant predictor of autonomous academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = 0.02$, $t(246) = 0.63$, $p = .531$. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of autonomous academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'} = 0.16$), and the model with cognitive presence, psychological needs satisfaction, and ethnicity ($b_{c'} = 0.17$). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and autonomous academic motivation was not critically influenced by ethnicity.

In addition, the mediation model with social presence, psychological needs satisfaction, and ethnicity as the predictors of autonomous academic motivation was significant, $F(3, 246) = 18.65$, $p < .001$, $R^2 = .19$. Social presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and ethnicity, $b_{c'} = 0.12$, $t(246) = 1.77$, $p = .078$. Ethnicity was not a significant predictor of autonomous academic motivation while controlling for social presence and psychological needs satisfaction, $b = 0.02$, $t(246) = 0.39$, $p = .694$. There was also no change in unstandardized Beta coefficient value for social presence as a predictor of autonomous academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'} = 0.12$), and the model with social presence, psychological needs satisfaction, and ethnicity ($b_{c'} = 0.12$). Thus, the mediating effect of psychological needs satisfaction on the relationship between

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social presence and autonomous academic motivation was not critically influenced by ethnicity.

Further, the mediation model with teaching presence, psychological needs satisfaction, and ethnicity as the predictors of autonomous academic motivation was significant, $F(3, 246) = 17.68$, $p < .001$, $R^2 = .18$. Teaching presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and ethnicity, $b_{c'} = 0.05$, $t(246) = 0.86$, $p = .393$. Ethnicity was not a significant predictor of autonomous academic motivation while controlling for teaching presence and psychological needs satisfaction, $b = 0.01$, $t(246) = 0.38$, $p = .706$. There was also no change in unstandardized Beta coefficient value for teaching presence as a predictor of autonomous academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'} = 0.05$), and the model with teaching presence, psychological needs satisfaction, and ethnicity ($b_{c'} = 0.05$). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and autonomous academic motivation was not critically influenced by ethnicity.

The mediation model with gratitude, psychological needs satisfaction, and ethnicity as the predictors of autonomous academic motivation was significant, $F(3, 246) = 21.15$, $p < .001$, $R^2 = .21$. Gratitude was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.17$, $t(246) = 3.06$, $p = .003$. Ethnicity was not a significant predictor of autonomous academic motivation while controlling for gratitude and psychological needs satisfaction, $b = 0.01$, $t(246) = 0.24$, $p = .808$. There was also no change in unstandardized Beta coefficient value for gratitude as a predictor of autonomous academic motivation between the model with gratitude and

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psychological needs satisfaction ($b_{c'}$ = 0.17), and the model with gratitude, psychological needs satisfaction, and ethnicity ($b_{c'}$ = 0.17). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and autonomous academic motivation was not critically influenced by ethnicity.

PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and controlled academic motivation, social presence and controlled academic motivation, teaching presence and controlled academic motivation, and gratitude and controlled academic motivation, with ethnicity as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and ethnicity as the predictors of controlled academic motivation was significant, $F(3, 246) = 2.79$, $p = .041$, $R^2 = .03$. Cognitive presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and ethnicity, $b_{c'} = 0.20$, $t(246) = 2.01$, $p = .046$. Ethnicity was not a significant predictor of controlled academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = 0.07$, $t(246) = 1.22$, $p = .223$. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of controlled academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'}$ = 0.19), and the model with cognitive presence, psychological needs satisfaction, and ethnicity ($b_{c'}$ = 0.20). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and controlled academic motivation was not critically influenced by ethnicity.

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In addition, the mediation model with social presence, psychological needs satisfaction, and ethnicity as the predictors of controlled academic motivation was significant, $F(3, 246) = 2.83$, $p = .039$, $R^2 = .03$. Social presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and ethnicity, $b_{c'} = 0.20$, $t(246) = 2.04$, $p = .043$. Ethnicity was not a significant predictor of controlled academic motivation while controlling for social presence and psychological needs satisfaction, $b = 0.06$, $t(246) = 1.05$, $p = .295$. There was also no change in unstandardized Beta coefficient value for social presence as a predictor of controlled academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'} = 0.20$), and the model with social presence, psychological needs satisfaction, and ethnicity ($b_{c'} = 0.20$). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and controlled academic motivation was not critically influenced by ethnicity.

Further, the mediation model with teaching presence, psychological needs satisfaction, and ethnicity as the predictors of controlled academic motivation was significant, $F(3, 246) = 2.77$, $p = .042$, $R^2 = .03$. Teaching presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and gender, $b_{c'} = 0.17$, $t(246) = 1.20$, $p = .047$. Ethnicity was not a significant predictor of controlled academic motivation while controlling for teaching presence and psychological needs satisfaction, $b = 0.06$, $t(246) = 1.09$, $p = .278$. There was also no change in unstandardized Beta coefficient value for teaching presence as a predictor of controlled academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'} = 0.17$), and the model with teaching presence, psychological needs satisfaction, and ethnicity ($b_{c'} = 0.17$). Thus, the mediating effect of psychological needs satisfaction on the relationship between

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teaching presence and controlled academic motivation was not critically influenced by ethnicity.

The mediation model with gratitude, psychological needs satisfaction, and ethnicity as the predictors of controlled academic motivation was not significant, $F(3, 246) = 1.42$, $p = .238$, $R^2 = .02$. Gratitude was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and ethnicity, $b_{c'} = 0.001$, $t(246) = 0.02$, $p = .987$. Ethnicity was not a significant predictor of controlled academic motivation while controlling for gratitude and psychological needs satisfaction, $b = 0.05$, $t(246) = 0.97$, $p = .333$. There was also minimal change in unstandardized Beta coefficient value for gratitude as a predictor of controlled academic motivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = 0.004$), and the model with gratitude, psychological needs satisfaction, and ethnicity ($b_{c'} = 0.001$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and controlled academic motivation was not critically influenced by ethnicity.

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and academic amotivation, social presence and academic amotivation, teaching presence and academic amotivation, and gratitude and academic amotivation, with ethnicity as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and ethnicity as the predictors of academic amotivation was significant, $F(3, 246) = 24.05$, $p < .001$, $R^2 = .23$. Cognitive presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and ethnicity, $b_{c'} = 0.13$, $t(246) = 1.14$, $p = .255$. Ethnicity

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was not a significant predictor of academic amotivation while controlling for cognitive presence and psychological needs satisfaction, b = -0.09, t(246) = -1.41, p = .160. There was also a minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of academic amotivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'}$ = 0.14), and the model with cognitive presence, psychological needs satisfaction, and ethnicity ($b_{c'}$ = 0.13). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and academic amotivation was not critically influenced by ethnicity.

In addition, the mediation model with social presence, psychological needs satisfaction, and ethnicity as the predictors of academic amotivation was significant, F(3, 246) = 24.15, p < .001, R^2 = .23. Social presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and ethnicity, $b_{c'}$ = 0.13, t(246) = 1.24, p = .216. Ethnicity was not a significant predictor of academic amotivation while controlling for social presence and psychological needs satisfaction, b = -0.09, t(246) = -1.52, p = .130. There was also minimal change in unstandardized Beta coefficient value for social presence as a predictor of academic amotivation between the model with social presence and psychological needs satisfaction ($b_{c'}$ = 0.14), and the model with social presence, psychological needs satisfaction, and ethnicity ($b_{c'}$ = 0.13). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and academic amotivation was not critically influenced by ethnicity.

Further, the mediation model with teaching presence, psychological needs satisfaction, and ethnicity as the predictors of academic amotivation was significant, F(3, 246) = 23.49, p < .001, R^2 = .22. Teaching presence was not a significant predictor of academic amotivation

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while controlling for psychological needs satisfaction and ethnicity, $b_{c'} = 0.01$, $t(246) = 0.11$, $p = .916$. Ethnicity was not a significant predictor of academic amotivation while controlling for teaching presence and psychological needs satisfaction, $b = -0.09$, $t(246) = -1.55$, $p = .122$. There was also minimal change in unstandardized Beta coefficient value for teaching presence as a predictor of academic amotivation between the model with teaching presence and psychological needs satisfaction ($b_{c'} = 0.02$), and the model with teaching presence, psychological needs satisfaction, and ethnicity ($b_{c'} = 0.01$). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and academic amotivation was not critically influenced by ethnicity.

The mediation model with gratitude, psychological needs satisfaction, and ethnicity as the predictors of academic amotivation was significant, $F(3, 246) = 46.38$, $p < .001$, $R^2 = .36$. Gratitude was a significant predictor of academic amotivation while controlling for psychological needs satisfaction and ethnicity, $b_{c'} = -0.58$, $t(246) = -7.31$, $p < .001$. Ethnicity was not a significant predictor of academic amotivation while controlling for gratitude and psychological needs satisfaction, $b = -0.08$, $t(246) = -1.50$, $p = .136$. There was also no change in unstandardized Beta coefficient value for gratitude as a predictor of academic amotivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = -0.58$), and the model with gratitude, psychological needs satisfaction, and ethnicity ($b_{c'} = -0.58$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and academic amotivation was not critically influenced by ethnicity.

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4.10.1.4 Socioeconomic Status

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and autonomous academic motivation, social presence and autonomous academic motivation, teaching presence and autonomous academic motivation, and gratitude and autonomous academic motivation, with socioeconomic status as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and socioeconomic status as the predictors of autonomous academic motivation was significant, $F(3, 246) = 20.94$, $p < .001$, $R^2 = .20$. Cognitive presence was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'} = 0.15$, $t(246) = 2.19$, $p = .030$. Socioeconomic status was not a significant predictor of autonomous academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = -0.04$, $t(246) = -1.86$, $p = .064$. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of autonomous academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'} = 0.16$), and the model with cognitive presence, psychological needs satisfaction, and socioeconomic status ($b_{c'} = 0.15$). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and autonomous academic motivation was not critically influenced by socioeconomic status.

In addition, the mediation model with social presence, psychological needs satisfaction, and socioeconomic status as the predictors of autonomous academic motivation was significant, $F(3, 246) = 20.27$, $p < .001$, $R^2 = .20$. Social presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and

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socioeconomic status, $b_{c'}$ = 0.12, $t(246)$ = 1.77, p = .077. Socioeconomic status was a significant predictor of autonomous academic motivation while controlling for social presence and psychological needs satisfaction, b = -0.05, $t(246)$ = -2.03, p = .044. There was also no change in unstandardized Beta coefficient value for social presence as a predictor of autonomous academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'}$ = 0.12), and the model with social presence, psychological needs satisfaction, and socioeconomic status ($b_{c'}$ = 0.12). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and autonomous academic motivation was not critically influenced by socioeconomic status.

Further, the mediation model with teaching presence, psychological needs satisfaction, and socioeconomic status as the predictors of autonomous academic motivation was significant, $F(3, 246) = 19.28$, $p < .001$, $R^2 = .19$. Teaching presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'}$ = 0.05, $t(246)$ = 0.86, p = .390. Socioeconomic status was a significant predictor of autonomous academic motivation while controlling for teaching presence and psychological needs satisfaction, b = -0.05, $t(246)$ = -2.03, p = .044. There was also no change in unstandardized Beta coefficient value for teaching presence as a predictor of autonomous academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'}$ = 0.05), and the model with teaching presence, psychological needs satisfaction, and socioeconomic status ($b_{c'}$ = 0.05). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and autonomous academic motivation was not critically influenced by socioeconomic status.

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The mediation model with gratitude, psychological needs satisfaction, and socioeconomic status as the predictors of autonomous academic motivation was significant, $F(3, 246) = 23.65$, $p < .001$, $R^2 = .22$. Gratitude was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'} = 0.19$, $t(246) = 3.38$, $p = .001$. Socioeconomic status was a significant predictor of autonomous academic motivation while controlling for gratitude and psychological needs satisfaction, $b = -0.06$, $t(246) = -2.45$, $p = .015$. There was also a slight change in unstandardized Beta coefficient value for gratitude as a predictor of autonomous academic motivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = 0.17$), and the model with gratitude, psychological needs satisfaction, and socioeconomic status ($b_{c'} = 0.19$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and autonomous academic motivation was somewhat influenced by socioeconomic status. Further examination of the data revealed that socioeconomic status is not significantly related to autonomous academic motivation ($r = -.08$, $p = .230$). Data also showed that socioeconomic status is positively correlated with gratitude ($r = .15$ $p = .020$). That is, the higher the socioeconomic status, the greater the level of gratitude.

PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and controlled academic motivation, social presence and controlled academic motivation, teaching presence and controlled academic motivation, and gratitude and controlled academic motivation, with socioeconomic status as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and socioeconomic status as the predictors of controlled academic motivation

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was significant, $F(3, 246) = 2.70$, $p = .046$, $R^2 = .03$. Cognitive presence was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'} = 0.18$, $t(246) = 1.78$, $p = .076$. Socioeconomic status was not a significant predictor of controlled academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = -0.04$, $t(246) = -1.11$, $p = .267$. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of controlled academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'} = 0.19$), and the model with cognitive presence, psychological needs satisfaction, and socioeconomic status ($b_{c'} = 0.18$). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and controlled academic motivation was not critically influenced by socioeconomic status.

In addition, the mediation model with social presence, psychological needs satisfaction, and socioeconomic status as the predictors of controlled academic motivation was significant, $F(3, 246) = 2.99$, $p = .032$, $R^2 = .04$. Social presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'} = 0.20$, $t(246) = 2.01$, $p = .046$. Socioeconomic status was not a significant predictor of controlled academic motivation while controlling for social presence and psychological needs satisfaction, $b = -0.04$, $t(246) = -1.25$, $p = .211$. There was also no change in unstandardized Beta coefficient value for social presence as a predictor of controlled academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'} = 0.20$), and the model with social presence, psychological needs satisfaction, and socioeconomic status ($b_{c'} = 0.20$). Thus, the mediating effect of

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psychological needs satisfaction on the relationship between social presence and controlled academic motivation was not critically influenced by socioeconomic status.

Further, the mediation model with teaching presence, psychological needs satisfaction, and socioeconomic status as the predictors of controlled academic motivation was significant, $F(3, 246) = 2.92$, $p = .035$, $R^2 = .03$. Teaching presence was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'} = 0.17$, $t(246) = 1.95$, $p = .052$. Socioeconomic status was not a significant predictor of controlled academic motivation while controlling for teaching presence and psychological needs satisfaction, $b = -0.04$, $t(246) = -1.27$, $p = .205$. There was also no change in unstandardized Beta coefficient value for teaching presence as a predictor of controlled academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'} = 0.17$), and the model with teaching presence, psychological needs satisfaction, and socioeconomic status ($b_{c'} = 0.17$). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and controlled academic motivation was not critically influenced by socioeconomic status.

The mediation model with gratitude, psychological needs satisfaction, and socioeconomic status as the predictors of controlled academic motivation was not significant, $F(3, 246) = 1.64$, $p = .182$, $R^2 = .02$. Gratitude was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'} = 0.02$, $t(246) = 0.20$, $p = .844$. Socioeconomic status was not a significant predictor of controlled academic motivation while controlling for gratitude and psychological needs satisfaction, $b = -0.04$, $t(246) = -1.26$, $p = .209$. There was also minimal change in unstandardized Beta coefficient value for gratitude as a predictor of controlled academic

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motivation between the model with gratitude and psychological needs satisfaction ($b_{c'}$ = 0.004), and the model with gratitude, psychological needs satisfaction, and socioeconomic status ($b_{c'}$ = 0.02). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and controlled academic motivation was not critically influenced by socioeconomic status.

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and academic amotivation, social presence and academic amotivation, teaching presence and academic amotivation, and gratitude and academic amotivation, with socioeconomic status as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and socioeconomic status as the predictors of academic amotivation was significant, $F(3, 246) = 24.88$, $p < .001$, $R^2 = .23$. Cognitive presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'} = 0.13$, $t(246) = 1.18$, $p = .240$. Socioeconomic status was a significant predictor of academic amotivation while controlling for cognitive presence and psychological needs satisfaction, $b = -0.07$, $t(246) = -1.99$, $p = .048$. There was also a slight change in unstandardized Beta coefficient value for cognitive presence as a predictor of academic amotivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'}$ = 0.14), and the model with cognitive presence, psychological needs satisfaction, and socioeconomic status ($b_{c'}$ = 0.13). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and academic amotivation was somewhat influenced by socioeconomic status. Further examination of the data revealed that

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socioeconomic status is negatively related to academic amotivation (r = -.16, p = .012). That is, as socioeconomic status increases, the level of academic amotivation decreases.

In addition, the mediation model with social presence, psychological needs satisfaction, and socioeconomic status as the predictors of academic amotivation was significant, $F(3, 246)$ = 25.01, $p < .001$, R^2 = .23. Social presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'}$ = 0.14, $t(246)$ = 1.30, p = .195. Socioeconomic status was a significant predictor of academic amotivation while controlling for social presence and psychological needs satisfaction, b = -0.07, $t(246)$ = -2.08, p = .038. There was also a minimal change in unstandardized Beta coefficient value for social presence as a predictor of academic amotivation between the model with social presence and psychological needs satisfaction ($b_{c'}$ = 0.14), and the model with social presence, psychological needs satisfaction, and socioeconomic status ($b_{c'}$ = 0.14). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and academic amotivation was not critically influenced by socioeconomic status.

Further, the mediation model with teaching presence, psychological needs satisfaction, and socioeconomic status as the predictors of academic amotivation was significant, $F(3, 246)$ = 24.30, $p < .001$, R^2 = .23. Teaching presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'}$ = 0.02, $t(246)$ = 0.21, p = .832. Socioeconomic status was a significant predictor of academic amotivation while controlling for teaching presence and psychological needs satisfaction, b = -0.07, $t(246)$ = -2.08, p = .039. There was also minimal change in unstandardized Beta coefficient value for teaching presence as a predictor of academic

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amotivation between the model with teaching presence and psychological needs satisfaction ($b_{c'}$ = 0.02), and the model with teaching presence, psychological needs satisfaction, and socioeconomic status ($b_{c'}$ = 0.02). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and academic amotivation was not critically influenced by socioeconomic status.

The mediation model with gratitude, psychological needs satisfaction, and socioeconomic status as the predictors of academic amotivation was significant, $F(3, 246) = 46.24$, $p < .001$, $R^2 = .36$. Gratitude was a significant predictor of academic amotivation while controlling for psychological needs satisfaction and socioeconomic status, $b_{c'} = -0.57$, $t(246) = -7.13$, $p < .001$. Socioeconomic status was not a significant predictor of academic amotivation while controlling for gratitude and psychological needs satisfaction, $b = -0.05$, $t(246) = -1.40$, $p = .162$. There was also minimal change in unstandardized Beta coefficient value for gratitude as a predictor of academic amotivation between the model with gratitude and psychological needs satisfaction ($b_{c'}$ = -0.58), and the model with gratitude, psychological needs satisfaction, and socioeconomic status ($b_{c'}$ = -0.57). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and academic amotivation was not critically influenced by socioeconomic status.

4.10.1.5 Academic Major

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and autonomous academic motivation, social presence and autonomous academic motivation, teaching presence and autonomous academic motivation, and gratitude and autonomous academic motivation, with academic

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major as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and academic major as the predictors of autonomous academic motivation was significant, $F(3, 246) = 21.18$, $p < .001$, $R^2 = .21$. Cognitive presence was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = 0.17$, $t(246) = 2.46$, $p = .015$. Academic major was a significant predictor of autonomous academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = -0.04$, $t(246) = -2.01$, $p = .045$. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of autonomous academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'} = 0.16$), and the model with cognitive presence, psychological needs satisfaction, and academic major ($b_{c'} = 0.17$). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and autonomous academic motivation was not critically influenced by academic majors.

In addition, the mediation model with social presence, psychological needs satisfaction, and academic major as the predictors of autonomous academic motivation was significant, $F(3, 246) = 20.10$, $p < .001$, $R^2 = .20$. Social presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = 0.13$, $t(246) = 1.85$, $p = .065$. Academic major was not a significant predictor of autonomous academic motivation while controlling for social presence and psychological needs satisfaction, $b = -0.03$, $t(246) = -1.93$, $p = .055$. There was also minimal change in unstandardized Beta coefficient value for social presence as a predictor of autonomous academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'} = 0.12$), and the model with social presence, psychological needs

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satisfaction, and academic major ($b_{c'}$ = 0.13). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and autonomous academic motivation was not critically influenced by academic majors.

Further, the mediation model with teaching presence, psychological needs satisfaction, and academic major as the predictors of autonomous academic motivation was significant, $F(3, 246) = 19.04$, $p < .001$, $R^2 = .19$. Teaching presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = 0.06$, $t(246) = 0.92$, $p = .361$. Academic major was not a significant predictor of autonomous academic motivation while controlling for teaching presence and psychological needs satisfaction, $b = -0.03$, $t(246) = -1.88$, $p = .062$. There was also minimal change in unstandardized Beta coefficient value for teaching presence as a predictor of autonomous academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'}$ = 0.05), and the model with teaching presence, psychological needs satisfaction, and academic major ($b_{c'} = 0.06$). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and autonomous academic motivation was not critically influenced by academic majors.

The mediation model with gratitude, psychological needs satisfaction, and academic major as the predictors of autonomous academic motivation was significant, $F(3, 246) = 22.40$, $p < .001$, $R^2 = .21$. Gratitude was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = 0.17$, $t(246) = 3.01$, $p = .003$. Academic major was not a significant predictor of autonomous academic motivation while controlling for gratitude and psychological needs satisfaction, $b = -0.03$, $t(246) = -1.74$, $p = .083$. There was also no change in unstandardized Beta coefficient value

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for gratitude as a predictor of autonomous academic motivation between the model with gratitude and psychological needs satisfaction ($b_{c'}$ = 0.17), and the model with gratitude, psychological needs satisfaction, and academic major ($b_{c'}$ = 0.17). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and autonomous academic motivation was not critically influenced by academic major.

PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and controlled academic motivation, social presence and controlled academic motivation, teaching presence and controlled academic motivation, and gratitude and controlled academic motivation, with academic major as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and academic major as the predictors of controlled academic motivation was significant, $F(3, 246) = 6.05$, $p = .001$, $R^2 = .07$. Cognitive presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = 0.21$, $t(246) = 2.11$, $p = .036$. Academic major was a significant predictor of controlled academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = -0.08$, $t(246) = -3.32$, $p = .001$. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of controlled academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'}$ = 0.19), and the model with cognitive presence, psychological needs satisfaction, and academic major ($b_{c'}$ = 0.21). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and controlled academic motivation was not critically influenced by academic majors.

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In addition, the mediation model with social presence, psychological needs satisfaction, and academic major as the predictors of controlled academic motivation was significant, $F(3, 246) = 6.15$, $p = .001$, $R^2 = .07$. Social presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = 0.21$, $t(246) = 2.18$, $p = .030$. Academic major was a significant predictor of controlled academic motivation while controlling for social presence and psychological needs satisfaction, $b = -0.08$, $t(246) = -3.28$, $p = .001$. There was also minimal change in unstandardized Beta coefficient value for social presence as a predictor of controlled academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'} = 0.20$), and the model with social presence, psychological needs satisfaction, and academic major ($b_{c'} = 0.21$). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and controlled academic motivation was not critically influenced by academic majors.

Further, the mediation model with teaching presence, psychological needs satisfaction, and academic major as the predictors of controlled academic motivation was significant, $F(3, 246) = 6.03$, $p = .001$, $R^2 = .07$. Teaching presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = 0.18$, $t(246) = 2.10$, $p = .037$. Academic major was a significant predictor of controlled academic motivation while controlling for teaching presence and psychological needs satisfaction, $b = -0.08$, $t(246) = -3.27$, $p = .001$. There was also minimal change in unstandardized Beta coefficient value for teaching presence as a predictor of controlled academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'} = 0.17$), and the model with teaching presence, psychological needs satisfaction, and academic major ($b_{c'} = 0.18$). Thus, the mediating effect of psychological

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needs satisfaction on the relationship between teaching presence and controlled academic motivation was not critically influenced by academic majors.

The mediation model with gratitude, psychological needs satisfaction, and academic major as the predictors of controlled academic motivation was significant, $F(3, 246) = 4.48$, $p = .004$, $R^2 = .05$. Gratitude was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = -0.01$, $t(246) = -0.09$, $p = .929$. Academic major was a significant predictor of controlled academic motivation while controlling for gratitude and psychological needs satisfaction, $b = -0.08$, $t(246) = -3.16$, $p = .002$. There was also minimal change in unstandardized Beta coefficient value for gratitude as a predictor of controlled academic motivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = 0.004$), and the model with gratitude, psychological needs satisfaction, and academic major ($b_{c'} = -0.01$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and controlled academic motivation was not critically influenced by academic majors.

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and academic amotivation, social presence and academic amotivation, teaching presence and academic amotivation, and gratitude and academic amotivation, with academic major as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and academic major as the predictors of academic amotivation was significant, $F(3, 246) = 23.41$, $p < .001$, $R^2 = .22$. Cognitive presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = 0.15$, $t(246) = 1.37$,

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p = .173. Academic major was not a significant predictor of academic amotivation while controlling for cognitive presence and psychological needs satisfaction, b = -0.02, t(246) = -0.70, p = .482. There was also minimal change in unstandardized Beta coefficient value for cognitive presence as a predictor of academic amotivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'}$ = 0.14), and the model with cognitive presence, psychological needs satisfaction, and academic major ($b_{c'}$ = 0.15). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and academic amotivation was not critically influenced by academic majors.

In addition, the mediation model with social presence, psychological needs satisfaction, and academic major as the predictors of academic amotivation was significant, $F(3, 246) = 23.35$, $p < .001$, $R^2 = .22$. Social presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = 0.14$, $t(246) = 1.32$, $p = .189$. Academic major was not a significant predictor of academic amotivation while controlling for social presence and psychological needs satisfaction, b = -0.02, t(246) = -0.67, p = .502. There was also no change in unstandardized Beta coefficient value for social presence as a predictor of academic amotivation between the model with social presence and psychological needs satisfaction ($b_{c'}$ = 0.14), and the model with social presence, psychological needs satisfaction, and academic major ($b_{c'}$ = 0.14). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and academic amotivation was not critically influenced by academic majors.

Further, the mediation model with teaching presence, psychological needs satisfaction, and academic major as the predictors of academic amotivation was significant, $F(3, 246) = 22.63$, $p < .001$, $R^2 = .22$. Teaching presence was not a significant predictor of academic amotivation

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while controlling for psychological needs satisfaction and academic major, $b_{c'} = 0.02$, $t(246) = 0.22$, $p = .829$. Academic major was not a significant predictor of academic amotivation while controlling for teaching presence and psychological needs satisfaction, $b = -0.02$, $t(246) = -0.62$, $p = .533$. There was also no change in unstandardized Beta coefficient value for teaching presence as a predictor of academic amotivation between the model with teaching presence and psychological needs satisfaction ($b_{c'} = 0.02$), and the model with teaching presence, psychological needs satisfaction, and academic major ($b_{c'} = 0.02$). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and academic amotivation was not critically influenced by academic majors.

The mediation model with gratitude, psychological needs satisfaction, and academic major as the predictors of academic amotivation was significant, $F(3, 246) = 45.74$, $p < .001$, $R^2 = .36$. Gratitude was a significant predictor of academic amotivation while controlling for psychological needs satisfaction and academic major, $b_{c'} = -0.59$, $t(246) = -7.37$, $p < .001$. Academic major was not a significant predictor of academic amotivation while controlling for gratitude and psychological needs satisfaction, $b = -0.03$, $t(246) = -1.00$, $p = .320$. There was also minimal change in unstandardized Beta coefficient value for gratitude as a predictor of academic amotivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = -0.58$), and the model with gratitude, psychological needs satisfaction, and academic major ($b_{c'} = -0.59$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and academic amotivation was not critically influenced by academic majors.

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4.10.1.6 Year of Study

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and autonomous academic motivation, social presence and autonomous academic motivation, teaching presence and autonomous academic motivation, and gratitude and autonomous academic motivation, with year of study as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and year of study as the predictors of autonomous academic motivation was significant, $F(3, 246) = 19.59$, $p < .001$, $R^2 = .19$. Cognitive presence was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = 0.16$, $t(246) = 2.30$, $p = .023$. Year of study was not a significant predictor of autonomous academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = 0.03$, $t(246) = 0.46$, $p = .644$. There was also no change in unstandardized Beta coefficient value for cognitive presence as a predictor of autonomous academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'} = 0.16$), and the model with cognitive presence, psychological needs satisfaction, and year of study ($b_{c'} = 0.16$). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and autonomous academic motivation was not critically influenced by year of study.

In addition, the mediation model with social presence, psychological needs satisfaction, and year of study as the predictors of autonomous academic motivation was significant, $F(3, 246) = 18.73$, $p < .001$, $R^2 = .19$. Social presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = 0.12$, $t(246) = 1.77$, $p = .078$. Year of study was not a significant predictor of autonomous

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academic motivation while controlling for social presence and psychological needs satisfaction, $b = 0.03$, $t(246) = 0.59$, $p = .555$. There was also no change in unstandardized Beta coefficient value for social presence as a predictor of autonomous academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'} = 0.12$), and the model with social presence, psychological needs satisfaction, and year of study ($b_{c'} = 0.12$). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and autonomous academic motivation was not critically influenced by year of study.

Further, the mediation model with teaching presence, psychological needs satisfaction, and year of study as the predictors of autonomous academic motivation was significant, $F(3, 246) = 17.77$, $p < .001$, $R^2 = .18$. Teaching presence was not a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = 0.05$, $t(246) = 0.88$, $p = .382$. Year of study was not a significant predictor of autonomous academic motivation while controlling for teaching presence and psychological needs satisfaction, $b = 0.03$, $t(246) = 0.62$, $p = .538$. There was also no change in unstandardized Beta coefficient value for teaching presence as a predictor of autonomous academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'} = 0.05$), and the model with teaching presence, psychological needs satisfaction, and year of study ($b_{c'} = 0.05$). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and autonomous academic motivation was not critically influenced by year of study.

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The mediation model with gratitude, psychological needs satisfaction, and year of study as the predictors of autonomous academic motivation was significant, $F(3, 246) = 21.50$, $p < .001$, $R^2 = .21$. Gratitude was a significant predictor of autonomous academic motivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = 0.18$, $t(246) = 3.16$, $p = .002$. Year of study was not a significant predictor of autonomous academic motivation while controlling for gratitude and psychological needs satisfaction, $b = 0.05$, $t(246) = 0.95$, $p = .344$. There was also minimal change in unstandardized Beta coefficient value for gratitude as a predictor of autonomous academic motivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = 0.17$), and the model with gratitude, psychological needs satisfaction, and year of study ($b_{c'} = 0.18$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and autonomous academic motivation was not critically influenced by year of study.

PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and controlled academic motivation, social presence and controlled academic motivation, teaching presence and controlled academic motivation, and gratitude and controlled academic motivation, with year of study as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and year of study as the predictors of controlled academic motivation was not significant, $F(3, 246) = 2.30$, $p = .078$, $R^2 = .03$. Cognitive presence was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = 0.19$, $t(246) = 1.85$, $p = .066$. Year of study was not a significant predictor of controlled academic motivation while controlling for cognitive presence and psychological needs satisfaction, $b = 0.02$, $t(246) = 0.29$, $p = .773$. There was

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also no change in unstandardized Beta coefficient value for cognitive presence as a predictor of controlled academic motivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'}$ = 0.19), and the model with cognitive presence, psychological needs satisfaction, and year of study ($b_{c'}$ = 0.19). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and controlled academic motivation was not critically influenced by year of study.

In addition, the mediation model with social presence, psychological needs satisfaction, and year of study as the predictors of controlled academic motivation was not significant, $F(3, 246) = 2.51$, $p = .060$, $R^2 = .03$. Social presence was a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = 0.20$, $t(246) = 2.01$, $p = .046$. Year of study was not a significant predictor of controlled academic motivation while controlling for social presence and psychological needs satisfaction, $b = 0.03$, $t(246) = 0.40$, $p = .687$. There was also no change in unstandardized Beta coefficient value for social presence as a predictor of controlled academic motivation between the model with social presence and psychological needs satisfaction ($b_{c'} = 0.20$), and the model with social presence, psychological needs satisfaction, and year of study ($b_{c'}$ = 0.20). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and controlled academic motivation was not critically influenced by year of study.

Further, the mediation model with teaching presence, psychological needs satisfaction, and year of study as the predictors of controlled academic motivation was not significant, $F(3, 246) = 2.45$, $p = .064$, $R^2 = .03$. Teaching presence was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and

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year of study, $b_{c'} = 0.17$, $t(246) = 1.96$, $p = .051$. Year of study was not a significant predictor of controlled academic motivation while controlling for teaching presence and psychological needs satisfaction, $b = 0.04$, $t(246) = 0.50$, $p = .617$. There was also no change in unstandardized Beta coefficient value for teaching presence as a predictor of controlled academic motivation between the model with teaching presence and psychological needs satisfaction ($b_{c'} = 0.17$), and the model with teaching presence, psychological needs satisfaction, and year of study ($b_{c'} = 0.17$). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and controlled academic motivation was not critically influenced by year of study.

The mediation model with gratitude, psychological needs satisfaction, and year of study as the predictors of controlled academic motivation was not significant, $F(3, 246) = 1.15$, $p = .330$, $R^2 = .01$. Gratitude was not a significant predictor of controlled academic motivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = 0.01$, $t(246) = 0.09$, $p = .928$. Year of study was not a significant predictor of controlled academic motivation while controlling for gratitude and psychological needs satisfaction, $b = 0.03$, $t(246) = 0.38$, $p = .707$. There was also minimal change in unstandardized Beta coefficient value for gratitude as a predictor of controlled academic motivation between the model with gratitude and psychological needs satisfaction ($b_{c'} = 0.004$), and the model with gratitude, psychological needs satisfaction, and year of study ($b_{c'} = 0.01$). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and controlled academic motivation was not critically influenced by year of study.

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Additionally, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for psychological needs satisfaction as a mediator in the relationship between cognitive presence and academic amotivation, social presence and academic amotivation, teaching presence and academic amotivation, and gratitude and academic amotivation, with year of study as a covariate (refer to Appendix R). The mediation model with cognitive presence, psychological needs satisfaction, and year of study as the predictors of academic amotivation was significant, $F(3, 246) = 23.51$, $p < .001$, $R^2 = .22$. Cognitive presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = 0.14$, $t(246) = 1.29$, $p = .200$. Year of study was not a significant predictor of academic amotivation while controlling for cognitive presence and psychological needs satisfaction, $b = 0.07$, $t(246) = 0.85$, $p = .396$. There was also no change in unstandardized Beta coefficient value for cognitive presence as a predictor of academic amotivation between the model with cognitive presence and psychological needs satisfaction ($b_{c'} = 0.14$), and the model with cognitive presence, psychological needs satisfaction, and year of study ($b_{c'} = 0.14$). Thus, the mediating effect of psychological needs satisfaction on the relationship between cognitive presence and academic amotivation was not critically influenced by year of study.

The mediation model with social presence, psychological needs satisfaction, and year of study as the predictors of academic amotivation was significant, $F(3, 246) = 23.53$, $p < .001$, $R^2 = .22$. Social presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = 0.14$, $t(246) = 1.31$, $p = .193$. Year of study was not a significant predictor of academic amotivation while controlling for social presence and psychological needs satisfaction, $b = 0.08$, $t(246) = 0.93$, $p = .353$. There was also no change in unstandardized Beta coefficient value for social

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presence as a predictor of academic amotivation between the model with social presence and psychological needs satisfaction ($b_{c'}$ = 0.14), and the model with social presence, psychological needs satisfaction, and year of study ($b_{c'}$ = 0.14). Thus, the mediating effect of psychological needs satisfaction on the relationship between social presence and academic amotivation was not critically influenced by year of study.

Further, the mediation model with teaching presence, psychological needs satisfaction, and year of study as the predictors of academic amotivation was significant, $F(3, 246) = 22.83$, $p < .001$, $R^2 = .22$. Teaching presence was not a significant predictor of academic amotivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = 0.02$, $t(246) = 0.25$, $p = .800$. Year of study was not a significant predictor of academic amotivation while controlling for teaching presence and psychological needs satisfaction, $b = 0.08$, $t(246) = 0.92$, $p = .358$. There was also no change in unstandardized Beta coefficient value for teaching presence as a predictor of academic amotivation between the model with teaching presence and psychological needs satisfaction ($b_{c'}$ = 0.02), and the model with teaching presence, psychological needs satisfaction, and year of study ($b_{c'}$ = 0.02). Thus, the mediating effect of psychological needs satisfaction on the relationship between teaching presence and academic amotivation was not critically influenced by year of study.

The mediation model with gratitude, psychological needs satisfaction, and year of study as the predictors of academic amotivation was significant, $F(3, 246) = 45.23$, $p < .001$, $R^2 = .36$. Gratitude was a significant predictor of academic amotivation while controlling for psychological needs satisfaction and year of study, $b_{c'} = -0.58$, $t(246) = -7.26$, $p < .001$. Year of study was not a significant predictor of academic amotivation while controlling for gratitude and psychological needs satisfaction, $b = 0.01$, $t(246) = -0.11$, $p = .910$. There was

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also no change in unstandardized Beta coefficient value for gratitude as a predictor of academic amotivation between the model with gratitude and psychological needs satisfaction ($b_{c'}$ = -0.58), and the model with gratitude, psychological needs satisfaction, and year of study ($b_{c'}$ = -0.58). Thus, the mediating effect of psychological needs satisfaction on the relationship between gratitude and academic amotivation was not critically influenced by year of study.

4.10.2 Mediation Analyses with Psychological Needs Satisfaction Subcomponents

4.10.2.1 Psychological Needs Satisfaction Subcomponents and Autonomous Academic Motivation

Firstly, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for autonomy needs satisfaction, competence needs satisfaction, and relatedness needs satisfaction as mediators in the relationship between cognitive presence and autonomous academic motivation, social presence and autonomous academic motivation, teaching presence and autonomous academic motivation, and gratitude and autonomous academic motivation (refer to Appendix S). The model with cognitive presence as the predictor of autonomy needs satisfaction was significant, $F(1, 248) = 55.07$, $p < .001$, $R^2 = .18$. Cognitive presence significantly and positively predicted autonomy needs satisfaction, $b = 0.44$, $t(248) = 7.42$, $p < .001$. The overall mediation model with cognitive presence and autonomy needs satisfaction as the predictors of autonomous academic motivation was significant, $F(2, 247) = 29.81$, $p < .001$, $R^2 = .19$. Autonomy needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for cognitive presence, $b_b = 0.35$, $t(248) = 5.30$, $p < .001$. Cognitive presence was still a significant predictor of autonomous academic motivation while controlling for autonomy needs satisfaction, but to a lesser degree, $b_{c'} = 0.19$, $t(248) = 2.80$,

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p = .005. Further, there was a significant indirect effect of cognitive presence on autonomous academic motivation through autonomy needs satisfaction, b = 0.15, BCa CI [0.08, 0.24]. The absence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction significantly mediate the relationship between cognitive presence and autonomous academic motivation.

The model with cognitive presence as the predictor of competence needs satisfaction was significant, $F(1, 248) = 48.28$, $p < .001$, $R^2 = .16$. Cognitive presence significantly and positively predicted competence needs satisfaction, $b = 0.45$, $t(248) = 6.95$, $p < .001$. The overall mediation model with cognitive presence and competence needs satisfaction as the predictors of autonomous academic motivation was significant, $F(2, 247) = 24.52$, $p < .001$, $R^2 = .17$. Competence needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for cognitive presence, $b_b = 0.27$, $t(248) = 4.32$, $p < .001$. Cognitive presence was still a significant predictor of autonomous academic motivation while controlling for competence needs satisfaction, but to a lesser degree, $b_{c'} = 0.22$, $t(248) = 3.30$, $p = .001$. Further, there was a significant indirect effect of cognitive presence on autonomous academic motivation through competence needs satisfaction, $b = 0.12$, BCa CI [0.05, 0.21]. The absence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction significantly mediates the relationship between cognitive presence and autonomous academic motivation.

The model with cognitive presence as the predictor of relatedness needs satisfaction was significant, $F(1, 248) = 83.73$, $p < .001$, $R^2 = .25$. Cognitive presence significantly and positively predicted relatedness needs satisfaction, $b = 0.51$, $t(248) = 9.15$, $p < .001$. The overall mediation model with cognitive presence and relatedness needs satisfaction as the

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predictors of autonomous academic motivation was significant, $F(2, 247) = 23.35$, $p < .001$, $R^2 = .16$. Relatedness needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for cognitive presence, $b_b = 0.29$, $t(248) = 4.07$, $p < .001$. Cognitive presence was still a significant predictor of autonomous academic motivation while controlling for relatedness needs satisfaction, but to a lesser degree, $b_{c'} = 0.19$, $t(248) = 2.70$, $p = .008$. Further, there was a significant indirect effect of cognitive presence on autonomous academic motivation through relatedness needs satisfaction, $b = 0.15$, BCa CI [0.06, 0.26]. The absence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction significantly mediates the relationship between cognitive presence and autonomous academic motivation.

In addition, the model with social presence as the predictor of autonomy needs satisfaction was significant, $F(1, 248) = 68.28$, $p < .001$, $R^2 = .22$. Social presence significantly and positively predicted autonomy needs satisfaction, $b = 0.44$, $t(248) = 8.26$, $p < .001$. The overall mediation model with social presence and autonomy needs satisfaction as the predictors of autonomous academic motivation was significant, $F(2, 247) = 28.29$, $p < .001$, $R^2 = .19$. Autonomy needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for social presence, $b_b = 0.36$, $t(248) = 5.26$, $p < .001$. Social presence was still a significant predictor of autonomous academic motivation while controlling for autonomy needs satisfaction, but to a lesser degree, $b_{c'} = 0.15$, $t(248) = 2.31$, $p = .022$. Further, there was a significant indirect effect of social presence on autonomous academic motivation through autonomy needs satisfaction, $b = 0.16$, BCa CI [0.09, 0.24]. The absence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction significantly mediates the relationship between social presence and autonomous academic motivation.

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The model with social presence as the predictor of competence needs satisfaction was significant, $F(1, 248) = 50.94$, $p < .001$, $R^2 = .17$. Social presence significantly and positively predicted competence needs satisfaction, $b = 0.43$, $t(248) = 7.14$, $p < .001$. The overall mediation model with social presence and competence needs satisfaction as the predictors of autonomous academic motivation was significant, $F(2, 247) = 23.50$, $p < .001$, $R^2 = .16$. Competence needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for social presence, $b_b = 0.27$, $t(248) = 4.36$, $p < .001$. Social presence was still a significant predictor of autonomous academic motivation while controlling for competence needs satisfaction, but to a lesser degree, $b_{c'} = 0.19$, $t(248) = 3.01$, $p = .003$. Further, there was a significant indirect effect of social presence on autonomous academic motivation through competence needs satisfaction, $b = 0.12$, BCa CI [0.06, 0.19]. The absence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction significantly mediates the relationship between social presence and autonomous academic motivation.

The model with social presence as the predictor of relatedness needs satisfaction was significant, $F(1, 248) = 123.91$, $p < .001$, $R^2 = .33$. Social presence significantly and positively predicted relatedness needs satisfaction, $b = 0.55$, $t(248) = 11.13$, $p < .001$. The overall mediation model with social presence and relatedness needs satisfaction as the predictors of autonomous academic motivation was significant, $F(2, 247) = 21.51$, $p < .001$, $R^2 = .16$. Relatedness needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for social presence, $b_b = 0.30$, $t(248) = 3.93$, $p < .001$. Social presence was still a significant predictor of autonomous academic motivation while controlling for relatedness needs satisfaction, but to a lesser degree, $b_{c'} = 0.15$, $t(248) = 2.02$, $p = .044$. Further, there was a significant indirect effect of social presence on autonomous

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academic motivation through relatedness needs satisfaction, $b = 0.16$, BCa CI [0.07, 0.27]. The absence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction significantly mediates the relationship between social presence and autonomous academic motivation.

Further, the model with teaching presence as the predictor of autonomy needs satisfaction was significant, $F(1, 248) = 30.94$, $p < .001$, $R^2 = .11$. Teaching presence significantly and positively predicted autonomy needs satisfaction, $b = 0.31$, $t(248) = 5.56$, $p < .001$. The overall mediation model with teaching presence and autonomy needs satisfaction as the predictors of autonomous academic motivation was significant, $F(2, 247) = 26.00$, $p < .001$, $R^2 = .17$. Autonomy needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for teaching presence, $b_b = 0.40$, $t(248) = 6.28$, $p < .001$. Teaching presence was no longer a significant predictor of autonomous academic motivation while controlling for autonomy needs satisfaction, $b_{c'} = 0.07$, $t(248) = 1.25$, $p = .214$. There was a significant indirect effect of teaching presence on autonomous academic motivation through autonomy needs satisfaction, $b = 0.12$, BCa CI [0.07, 0.20]. The absence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction significantly mediates the relationship between teaching presence and autonomous academic motivation.

The model with teaching presence as the predictor of competence needs satisfaction was significant, $F(1, 248) = 23.25$, $p < .001$, $R^2 = .09$. Teaching presence significantly and positively predicted competence needs satisfaction, $b = 0.29$, $t(248) = 4.82$, $p < .001$. The overall mediation model with teaching presence and competence needs satisfaction as the predictors of autonomous academic motivation was significant, $F(2, 247) = 20.07$, $p < .001$,

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R^2 = .14. Competence needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for teaching presence, b_b = 0.32, t(248) = 5.30, p < .001. Teaching presence was no longer a significant predictor of autonomous academic motivation while controlling for competence needs satisfaction, $b_{c'}$ = 0.11, t(248) = 1.77, p = .079. Further, there was a significant indirect effect of teaching presence on autonomous academic motivation through competence needs satisfaction, b = 0.09, BCa CI [0.04, 0.17]. The absence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction significantly mediates the relationship between teaching presence and autonomous academic motivation.

The model with teaching presence as the predictor of relatedness needs satisfaction was significant, F(1, 248) = 53.17, p < .001, R^2 = .18. Teaching presence significantly and positively predicted relatedness needs satisfaction, b = 0.39, t(248) = 7.29, p < .001. The overall mediation model with teaching presence and relatedness needs satisfaction as the predictors of autonomous academic motivation was significant, F(2, 247) = 19.67, p < .001, R^2 = .14. Relatedness needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for teaching presence, b_b = 0.36, t(248) = 5.23, p < .001. Teaching presence was no longer a significant predictor of autonomous academic motivation while controlling for relatedness needs satisfaction, $b_{c'}$ = 0.06, t(248) = 0.95, p = .344. Further, there was a significant indirect effect of teaching presence on autonomous academic motivation through relatedness needs satisfaction, b = 0.14, BCa CI [0.07, 0.23]. The absence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction significantly mediates the relationship between teaching presence and autonomous academic motivation.

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Additionally, the model with gratitude as the predictor of autonomy needs satisfaction was significant, $F(1, 248) = 30.92$, $p < .001$, $R^2 = .11$. Gratitude significantly and positively predicted autonomy needs satisfaction, $b = 0.29$, $t(248) = 5.56$, $p < .001$. The overall mediation model with gratitude and autonomy needs satisfaction as the predictors of autonomous academic motivation was significant, $F(2, 247) = 32.00$, $p < .001$, $R^2 = .21$. Autonomy needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for gratitude, $b_b = 0.36$, $t(248) = 5.70$, $p < .001$. Gratitude was still a significant predictor of autonomous academic motivation while controlling for autonomy needs satisfaction, but to a lesser degree, $b_{c'} = 0.19$, $t(248) = 3.39$, $p = .001$. Further, there was a significant indirect effect of gratitude on autonomous academic motivation through autonomy needs satisfaction, $b = 0.10$, BCa CI [0.05, 0.17]. The absence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation.

The model with gratitude as the predictor of competence needs satisfaction was significant, $F(1, 248) = 32.69$, $p < .001$, $R^2 = .12$. Gratitude significantly and positively predicted competence needs satisfaction, $b = 0.32$, $t(248) = 5.72$, $p < .001$. The overall mediation model with gratitude and competence needs satisfaction as the predictors of autonomous academic motivation was significant, $F(2, 247) = 25.71$, $p < .001$, $R^2 = .17$. Competence needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for gratitude, $b_b = 0.27$, $t(248) = 4.60$, $p < .001$. Gratitude was still a significant predictor of autonomous academic motivation while controlling for competence needs satisfaction, but to a lesser degree, $b_{c'} = 0.20$, $t(248) = 3.60$, $p < .001$. Further, there was a significant indirect effect of gratitude on autonomous academic motivation through

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competence needs satisfaction, $b = 0.09$, BCa CI [0.04, 0.15]. The absence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation.

The model with gratitude as the predictor of relatedness needs satisfaction was significant, $F(1, 248) = 33.54$, $p < .001$, $R^2 = .12$. Gratitude significantly and positively predicted relatedness needs satisfaction, $b = 0.30$, $t(248) = 5.79$, $p < .001$. The overall mediation model with gratitude and relatedness needs satisfaction as the predictors of autonomous academic motivation was significant, $F(2, 247) = 26.38$, $p < .001$, $R^2 = .18$. Relatedness needs satisfaction was significantly and positively predictive of autonomous academic motivation while controlling for gratitude, $b_b = 0.31$, $t(248) = 4.73$, $p < .001$. Gratitude was still a significant predictor of autonomous academic motivation while controlling for relatedness needs satisfaction, but to a lesser degree, $b_{c'} = 0.20$, $t(248) = 3.54$, $p = .001$. Further, there was a significant indirect effect of gratitude on autonomous academic motivation through relatedness needs satisfaction, $b = 0.09$, BCa CI [0.04, 0.16]. The absence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation.

4.10.2.2 Psychological Needs Satisfaction Subcomponents and Controlled Academic Motivation

In addition, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for autonomy needs satisfaction, competence needs satisfaction, and relatedness needs satisfaction as mediators in the relationship between

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cognitive presence and controlled academic motivation, social presence and controlled academic motivation, teaching presence and autonomous academic motivation, and gratitude and controlled academic motivation (refer to Appendix S). The overall mediation model with cognitive presence and autonomy needs satisfaction as the predictors of controlled academic motivation was significant, $F(2, 247) = 3.31$, $p = .038$, $R^2 = .03$. Autonomy needs satisfaction was not a significant predictor of controlled academic motivation while controlling for cognitive presence, $b_b = 0.05$, $t(248) = 0.49$, $p = .621$. Cognitive presence was a significant predictor of controlled academic motivation while controlling for autonomy needs satisfaction, $b_{c'} = 0.20$, $t(248) = 2.07$, $p = .039$. Further, there was no significant indirect effect of cognitive presence on controlled academic motivation through autonomy needs satisfaction, $b = 0.02$, BCa CI [-0.07, 0.10]. The presence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction does not significantly mediate the relationship between cognitive presence and controlled academic motivation.

The overall mediation model with cognitive presence and competence needs satisfaction as the predictors of controlled academic motivation was significant, $F(2, 247) = 3.20$, $p = .042$, $R^2 = .03$. Competence needs satisfaction was not a significant predictor of controlled academic motivation while controlling for cognitive presence, $b_b = 0.02$, $t(248) = 0.20$, $p = .842$. Cognitive presence was a significant predictor of controlled academic motivation while controlling for competence needs satisfaction, $b_{c'} = 0.21$, $t(248) = 2.23$, $p = .027$. Further, there was no significant indirect effect of cognitive presence on controlled academic motivation through competence needs satisfaction, $b = 0.01$, BCa CI [-0.08, 0.10]. The presence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction does not significantly mediate the relationship between cognitive presence and controlled academic motivation.

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The overall mediation model with cognitive presence and relatedness needs satisfaction as the predictors of controlled academic motivation was significant, $F(2, 247) = 3.91$, $p < .001$, $R^2 = .03$. Relatedness needs satisfaction was not a significant predictor of controlled academic motivation while controlling for cognitive presence, $b_b = 0.12$, $t(248) = 1.19$, $p = .236$. Cognitive presence was not a significant predictor of controlled academic motivation while controlling for relatedness needs satisfaction, $b_{c'} = 0.16$, $t(248) = 1.59$, $p = .113$. Further, there was no significant indirect effect of cognitive presence on controlled academic motivation through relatedness needs satisfaction, $b = 0.06$, BCa CI [-0.06, 0.19]. The presence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction does not significantly mediate the relationship between cognitive presence and controlled academic motivation.

In addition, the overall mediation model with social presence and autonomy needs satisfaction as the predictors of controlled academic motivation was significant, $F(2, 247) = 3.62$, $p = .028$, $R^2 = .03$. Autonomy needs satisfaction was not a significant predictor of controlled academic motivation while controlling for social presence, $b_b = 0.03$, $t(248) = 0.32$, $p = .749$. Social presence was a significant predictor of controlled academic motivation while controlling for autonomy needs satisfaction, $b_{c'} = 0.21$, $t(248) = 2.22$, $p = .028$. Further, there was no significant indirect effect of social presence on controlled academic motivation through autonomy needs satisfaction, $b = 0.01$, BCa CI [-0.08, 0.10]. The presence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction does not significantly mediate the relationship between social presence and controlled academic motivation.

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The overall mediation model with social presence and competence needs satisfaction as the predictors of controlled academic motivation was significant, $F(2, 247) = 3.58$, $p = .030$, $R^2 = .03$. Competence needs satisfaction was not a significant predictor of controlled academic motivation while controlling for social presence, $b_b = 0.01$, $t(248) = 0.11$, $p = .913$. Social presence was a significant predictor of controlled academic motivation while controlling for competence needs satisfaction, but to a lesser degree, $b_{c'} = 0.22$, $t(248) = 2.39$, $p = .018$. Further, there was no significant indirect effect of social presence on controlled academic motivation through competence needs satisfaction, $b = 0.004$, BCa CI [-0.08, 0.08]. The presence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction does not significantly mediate the relationship between social presence and controlled academic motivation.

The overall mediation model with social presence and relatedness needs satisfaction as the predictors of controlled academic motivation was significant, $F(2, 247) = 4.01$, $p = .019$, $R^2 = .03$. Relatedness needs satisfaction was not a significant predictor of controlled academic motivation while controlling for social presence, $b_b = 0.10$, $t(248) = 0.92$, $p = .356$. Social presence was not a significant predictor of controlled academic motivation while controlling for relatedness needs satisfaction, $b_{c'} = 0.17$, $t(248) = 1.65$, $p = .100$. Further, there was no significant indirect effect of social presence on controlled academic motivation through relatedness needs satisfaction, $b = 0.05$, BCa CI [-0.06, 0.18]. The presence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction does not significantly mediate the relationship between social presence and controlled academic motivation.

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Further, the overall mediation model with teaching presence and autonomy needs satisfaction as the predictors of controlled academic motivation was significant, $F(2, 247) = 3.37$, $p = .036$, $R^2 = .03$. Autonomy needs satisfaction was not a significant predictor of controlled academic motivation while controlling for teaching presence, $b_b = 0.07$, $t(248) = 0.74$, $p = .462$. Teaching presence was a significant predictor of controlled academic motivation while controlling for autonomy needs satisfaction, $b_{c'} = 0.18$, $t(248) = 2.10$, $p = .037$. There was no significant indirect effect of teaching presence on controlled academic motivation through autonomy needs satisfaction, $b = 0.02$, BCa CI [-0.04, 0.08]. The presence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction does not significantly mediate the relationship between teaching presence and controlled academic motivation.

The overall mediation model with teaching presence and competence needs satisfaction as the predictors of controlled academic motivation was significant, $F(2, 247) = 3.22$, $p = .042$, $R^2 = .03$. Competence needs satisfaction was not a significant predictor of controlled academic motivation while controlling for teaching presence, $b_b = 0.04$, $t(248) = 0.49$, $p = .622$. Teaching presence was a significant predictor of controlled academic motivation while controlling for competence needs satisfaction, $b_{c'} = 0.19$, $t(248) = 2.23$, $p = .026$. Further, there was no significant indirect effect of teaching presence on controlled academic motivation through competence needs satisfaction, $b = 0.01$, BCa CI [-0.04, 0.07]. The presence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction does not significantly mediate the relationship between teaching presence and controlled academic motivation.

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The overall mediation model with teaching presence and relatedness needs satisfaction as the predictors of controlled academic motivation was significant, $F(2, 247) = 4.07$, $p = .018$, $R^2 = .03$. Relatedness needs satisfaction was not a significant predictor of controlled academic motivation while controlling for teaching presence, $b_b = 0.13$, $t(248) = 1.38$, $p = .169$. Teaching presence was not a significant predictor of controlled academic motivation while controlling for relatedness needs satisfaction, $b_{c'} = 0.15$, $t(248) = 1.69$, $p = .093$. Further, there was no significant indirect effect of teaching presence on controlled academic motivation through relatedness needs satisfaction, $b = 0.05$, BCa CI [-0.04, 0.14]. The presence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction does not significantly mediate the relationship between teaching presence and controlled academic motivation.

Additionally, the overall mediation model with gratitude and autonomy needs satisfaction as the predictors of controlled academic motivation was not significant, $F(2, 247) = 1.17$, $p = .312$, $R^2 = .01$. Autonomy needs satisfaction was not a significant predictor of controlled academic motivation while controlling for gratitude, $b_b = 0.12$, $t(248) = 1.35$, $p = .179$. Gratitude was not a significant predictor of controlled academic motivation while controlling for autonomy needs satisfaction, $b_{c'} = 0.02$, $t(248) = 0.23$, $p = .815$. Further, there was no significant indirect effect of gratitude on controlled academic motivation through autonomy needs satisfaction, $b = 0.04$, BCa CI [-0.02, 0.09]. The presence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction does not significantly mediate the relationship between gratitude and controlled academic motivation.

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The overall mediation model with gratitude and competence needs satisfaction as the predictors of controlled academic motivation was not significant, $F(2, 247) = 0.76$, $p = .467$, $R^2 = .01$. Competence needs satisfaction was not a significant predictor of controlled academic motivation while controlling for gratitude, $b_b = 0.09$, $t(248) = 1.00$, $p = .317$. Gratitude was not a significant predictor of controlled academic motivation while controlling for competence needs satisfaction, $b_{c'} = 0.03$, $t(248) = 0.34$, $p = .736$. Further, there was no significant indirect effect of gratitude on controlled academic motivation through competence needs satisfaction, $b = 0.03$, BCa CI [-0.03, 0.09]. The presence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction does not significantly mediate the relationship between gratitude and controlled academic motivation.

The overall mediation model with gratitude and relatedness needs satisfaction as the predictors of controlled academic motivation was not significant, $F(2, 247) = 2.62$, $p = .075$, $R^2 = .02$. Relatedness needs satisfaction was significantly and positively predictive of controlled academic motivation while controlling for gratitude, $b_b = 0.20$, $t(248) = 2.17$, $p = .031$. Gratitude was not a significant predictor of controlled academic motivation while controlling for relatedness needs satisfaction, $b_{c'} = -0.01$, $t(248) = -0.06$, $p = .949$. Further, there was no significant indirect effect of gratitude on controlled academic motivation through relatedness needs satisfaction, $b = 0.06$, BCa CI [-0.002, 0.13]. The presence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction does not significantly mediate the relationship between gratitude and controlled academic motivation.

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4.10.2.3 Psychological Needs Satisfaction Subcomponents and Academic Amotivation

Further, PROCESS macro for SPSS (Model 4) with bootstrapping (with 5000 samples) was utilized to conduct the mediation analyses for autonomy needs satisfaction, competence needs satisfaction, and relatedness needs satisfaction as mediators in the relationship between cognitive presence and academic amotivation, social presence and academic amotivation, teaching presence and autonomous academic motivation, and gratitude and academic amotivation (refer to Appendix S). The overall mediation model with cognitive presence and autonomy needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 26.56$, $p < .001$, $R^2 = .18$. Autonomy needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for cognitive presence, $b_b = -0.71$, $t(248) = -6.73$, $p < .001$. Cognitive presence was no longer a significant predictor of academic amotivation while controlling for autonomy needs satisfaction, $b_{c'} = 0.04$, $t(248) = 0.33$, $p = .741$. Further, there was a significant indirect effect of cognitive presence on academic amotivation through autonomy needs satisfaction, $b = -0.31$, BCa CI [-0.48, -0.19]. The absence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction significantly mediates the relationship between cognitive presence and academic amotivation.

The overall mediation model with cognitive presence and competence needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 39.69$, $p < .001$, $R^2 = .24$. Competence needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for cognitive presence, $b_b = -0.78$, $t(248) = -8.42$, $p < .001$. Cognitive presence was no longer a significant predictor of academic amotivation while controlling for competence needs satisfaction, $b_{c'} = 0.07$, $t(248) = 0.72$, $p = .471$. Further, there was a significant indirect effect of cognitive presence on academic amotivation through

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competence needs satisfaction, b = -0.35, BCa CI [-0.55, -0.20]. The absence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction significantly mediates the relationship between cognitive presence and academic amotivation.

The overall mediation model with cognitive presence and relatedness needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 16.32$, $p < .001$, $R^2 = .12$. Relatedness needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for cognitive presence, b_b = -0.58, $t(248)$ = -5.03, $p < .001$. Cognitive presence was no longer a significant predictor of academic amotivation while controlling for relatedness needs satisfaction, $b_{c'} = 0.02$, $t(248) = 0.19$, $p = .852$. Further, there was a significant indirect effect of cognitive presence on academic amotivation through relatedness needs satisfaction, b = -0.30, BCa CI [-0.47, -0.16]. The absence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction significantly mediates the relationship between cognitive presence and academic amotivation.

In addition, the overall mediation model with social presence and autonomy needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 26.52$, $p < .001$, $R^2 = .18$. Autonomy needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for social presence, b_b = -0.71, $t(248)$ = -6.53, $p < .001$. Social presence was no longer a significant predictor of academic amotivation while controlling for autonomy needs satisfaction, $b_{c'} = 0.02$, $t(248) = 0.18$, $p = .854$. Further, there was a significant indirect effect of social presence on academic amotivation through autonomy needs satisfaction, b = -0.31, BCa CI [-0.47, -0.19]. The absence of zero in the

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confidence interval for the indirect effect suggested that autonomy needs satisfaction significantly mediate the relationship between social presence and academic amotivation.

The overall mediation model with social presence and competence needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 39.42$, $p < .001$, $R^2 = .24$. Competence needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for social presence, $b_b = -0.77$, $t(248) = -8.22$, $p < .001$. Social presence was no longer a significant predictor of academic amotivation while controlling for competence needs satisfaction, $b_{c'} = 0.03$, $t(248) = 0.34$, $p = .736$. Further, there was a significant indirect effect of social presence on academic amotivation through competence needs satisfaction, $b = -0.33$, BCa CI [-0.49, -0.20]. The absence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction significantly mediates the relationship between social presence and academic amotivation.

The overall mediation model with social presence and relatedness needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 16.33$, $p < .001$, $R^2 = .12$. Relatedness needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for social presence, $b_b = 0\text{-}.59$, $t(248) = -4.80$, $p < .001$. Social presence was no longer a significant predictor academic amotivation while controlling for relatedness needs satisfaction, $b_{c'} = 0.03$, $t(248) = 0.23$, $p = .818$. Further, there was a significant indirect effect of social presence on academic amotivation through relatedness needs satisfaction, $b = -0.32$, BCa CI [-0.51, -0.17]. The absence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction significantly mediates the relationship between social presence and academic amotivation.

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Further, the overall mediation model with teaching presence and autonomy needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 26.65$, $p < .001$, $R^2 = .18$. Autonomy needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for teaching presence, $b_b = -0.68$, $t(248) = -6.70$, $p < .001$. Teaching presence was no longer a significant predictor of academic amotivation while controlling for autonomy needs satisfaction, $b_{c'} = -0.05$, $t(248) = -0.51$, $p = .611$. There was a significant indirect effect of teaching presence on academic amotivation through autonomy needs satisfaction, $b = -0.21$, BCa CI [-0.35, -0.11]. The absence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction significantly mediates the relationship between teaching presence and academic amotivation.

The overall mediation model with teaching presence and competence needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 39.48$, $p < .001$, $R^2 = .24$. Competence needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for teaching presence, $b_b = -0.74$, $t(248) = -8.35$, $p < .001$. Teaching presence was no longer a significant predictor of academic amotivation while controlling for competence needs satisfaction, $b_{c'} = -0.04$, $t(248) = -0.45$, $p = .654$. Further, there was a significant indirect effect of teaching presence on academic amotivation through competence needs satisfaction, $b = -0.22$, BCa CI [-0.37, -0.11]. The absence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction significantly mediates the relationship between teaching presence and academic amotivation.

The overall mediation model with teaching presence and relatedness needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 16.42$, $p < .001$, $R^2 = .12$. Relatedness needs satisfaction was significantly and negatively predictive of academic

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amotivation while controlling for teaching presence, b_b = -0.55, $t(248)$ = -5.00, p < .001. Teaching presence was no longer a significant predictor of academic amotivation while controlling for relatedness needs satisfaction, $b_{c'}$ = -0.05, $t(248)$ = -0.45, p = .656. Further, there was a significant indirect effect of teaching presence on academic amotivation through relatedness needs satisfaction, b = -0.21, BCa CI [-0.37, -0.10]. The absence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction significantly mediates the relationship between teaching presence and academic amotivation.

Additionally, the overall mediation model with gratitude and autonomy needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 63.71$, $p < .001$, $R^2 = .34$. Autonomy needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for gratitude, b_b = -0.46, $t(248)$ = -5.06, p < .001. Gratitude was still a significant predictor of academic amotivation while controlling for autonomy needs satisfaction, but to a lesser degree, $b_{c'}$ = -0.62, $t(248)$ = -7.83, p < .001. Further, there was a significant indirect effect of gratitude on academic amotivation through autonomy needs satisfaction, b = -0.13, BCa CI [-0.23, -0.06]. The absence of zero in the confidence interval for the indirect effect suggested that autonomy needs satisfaction significantly mediates the relationship between gratitude and academic amotivation.

The overall mediation model with gratitude and competence needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 76.73$, $p < .001$, $R^2 = .38$. Competence needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for gratitude, b_b = -0.55, $t(248)$ = -6.68, p < .001. Gratitude was still a significant predictor of academic amotivation while controlling for competence needs satisfaction, but to a lesser degree, $b_{c'}$ = -0.58, $t(248)$ = -7.53, p < .001. Further, there

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was a significant indirect effect of gratitude on academic amotivation through competence needs satisfaction, b = -0.17, BCa CI [-0.29, -0.09]. The absence of zero in the confidence interval for the indirect effect suggested that competence needs satisfaction significantly mediates the relationship between gratitude and academic amotivation.

The overall mediation model with gratitude and relatedness needs satisfaction as the predictors of academic amotivation was significant, $F(2, 247) = 53.31$, $p < .001$, $R^2 = .30$. Relatedness needs satisfaction was significantly and negatively predictive of academic amotivation while controlling for gratitude, b_b = -0.31, $t(248)$ = -3.24, p = .001. Gratitude was still a significant predictor of academic amotivation while controlling for relatedness needs satisfaction, but to a lesser degree, $b_{c'}$ = -0.66, $t(248)$ = -8.09, $p < .001$. Further, there was a significant indirect effect of gratitude on academic amotivation through relatedness needs satisfaction, b = -0.09, BCa CI [-0.17, -0.03]. The absence of zero in the confidence interval for the indirect effect suggested that relatedness needs satisfaction significantly mediates the relationship between gratitude and academic amotivation.

4.11 Summary

The results of the study revealed that there is a significant positive relationship between cognitive, social, and teaching presences and autonomous academic motivation. There is also a significant negative relationship between cognitive, social, and teaching presences and academic amotivation. In addition, there is a significant positive relationship between gratitude and autonomous academic motivation. There is a significant negative relationship between gratitude and academic amotivation. However, it was found that there are no significant relationships between (i) cognitive, social, and teaching presences and controlled academic motivation and (ii) gratitude and controlled academic motivation. Furthermore, the

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results of the study suggested that psychological needs satisfaction significantly mediate the relationship between (i) social presence and autonomous academic motivation, (ii) social presence and academic amotivation, (iii) gratitude and autonomous academic motivation, and (iv) gratitude and academic amotivation. Psychological needs satisfaction, however, does not significantly mediate the relationship between (i) cognitive and teaching presences and autonomous academic motivation, (ii) cognitive, social, and teaching presences and controlled academic motivation, (iii) cognitive and teaching presences and academic amotivation, (iv) gratitude and controlled academic motivation. A discussion of these results is included in the following chapter.

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CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Introduction

The current study aimed to examine the mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation among undergraduates during online learning at private universities in Malaysia, utilizing a correlational research design, with a cross-sectional online survey. This chapter presents a summary and discussion of the results reported in the previous chapter. The implications of the study are also highlighted. This is followed by a discussion of the recommendations from the study and recommendations for future research. The chapter ends with a conclusion.

5.2 Summary of Findings

Pearson's *r* with bootstrapping revealed that there are significant positive relationships between (i) cognitive presence and autonomous academic motivation, (ii) social presence and autonomous academic motivation, and (iii) teaching presence and autonomous academic motivation. There is also a significant positive relationship between gratitude and autonomous academic motivation. Further, it was found that there are significant positive relationships between (i) cognitive presence and controlled academic motivation, (ii) social presence and controlled academic motivation, and (iii) teaching presence and controlled academic motivation. However, there is no significant relationship between gratitude and controlled academic motivation. In addition, Pearson's *r* with bootstrapping discovered that there are significant negative relationships between (i) cognitive presence and academic amotivation, (ii) social presence and academic amotivation, and (iii) teaching presence and

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academic amotivation. There is also a significant negative relationship between gratitude and academic amotivation.

Partial Least Squares Structural Equation Modeling with SmartPLS 4 statistical software suggested that psychological needs satisfaction significantly mediates the relationship between social presence and autonomous academic motivation, but not the relationship between cognitive presence and autonomous academic motivation and the relationship between teaching presence and autonomous academic motivation. Psychological needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation. However, it was found that psychological needs satisfaction does not significantly mediate the relationships between (i) cognitive presence and controlled academic motivation, (ii) social presence and controlled academic motivation, and (iii) teaching presence and controlled academic motivation. Psychological needs satisfaction does not significantly mediate the relationship between gratitude and controlled academic motivation as well. Further, psychological needs satisfaction was found to significantly mediate the relationship between social presence and academic amotivation, but not the relationship between cognitive presence and academic amotivation and the relationship between teaching presence and academic amotivation. Psychological needs satisfaction significantly mediates the relationship between gratitude and academic amotivation.

In addition, supplementary analyses revealed that the mediating effect of psychological needs satisfaction on the relationship between cognitive, social, and teaching presences and controlled academic motivation and the relationship between gratitude and controlled academic motivation was somewhat influenced by age. Age, however, did not critically influence the mediating of psychological needs satisfaction on the relationships between (i)

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cognitive, social, and teaching presences and autonomous academic motivation, (ii) gratitude and autonomous academic motivation, (iii) cognitive, social, and teaching presences and academic amotivation, and (iv) gratitude and academic amotivation. The mediating effect of psychological needs satisfaction on the relationship between gratitude and autonomous academic motivation was somewhat influenced by socioeconomic status. Similarly, mediating effect of psychological needs satisfaction on the relationship between cognitive presence and academic amotivation was somewhat influenced by socioeconomic status. Socioeconomic status, however, did not critically influence the mediating of psychological needs satisfaction on the relationships between (i) cognitive, social, and teaching presences and autonomous academic motivation, (ii) social and teaching presences and academic amotivation, and (iii) gratitude and academic amotivation. Other sociodemographic factors including gender, ethnicity, academic major, and year of study were found to not critically influence the relationships between cognitive, social, and teaching presences and academic motivation as well as the relationship between gratitude and academic motivation.

In addition, supplementary analyses discovered that relatedness needs satisfaction has the strongest mediating effect on the relationship between cognitive, social, and teaching presences and autonomous academic motivation, followed by autonomy needs satisfaction and competence needs satisfaction. Further, competence needs satisfaction has the strongest mediating effect on the relationship between cognitive, social, and teaching presences and academic amotivation as well as the relationship between gratitude and academic amotivation, followed by autonomy needs satisfaction and relatedness needs satisfaction. There is no difference in the mediating effect of autonomy needs satisfaction, competence needs satisfaction, and relatedness needs satisfaction on the relationships between (i)

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gratitude and autonomous academic motivation, (ii) cognitive, social, and teaching presences and controlled academic motivation, and (iii) gratitude and controlled academic motivation.

5.3 Discussion

5.3.1 Relationship Between Presence and Academic Motivation

It was hypothesized that there are significant relationships between presence and autonomous academic motivation, presence and controlled academic motivation, and presence and academic amotivation. As hypothesized, the results of the current study revealed that there are significant relationships between presence and autonomous academic motivation, presence and controlled academic motivation, and presence and academic amotivation. These findings are mostly consistent with past research such as Baker (2010) and Cole et al. (2017), which found a significant relationship between teaching presence and academic motivation. The current study findings are also consistent with past research that have recorded that academic motivation increases as social presence increases (Zilka et al., 2018; Mitchell et al., 2021). More specifically, as presence facilitates meaning making, personal expression, and building understanding, increased level of presence increases level of autonomous academic motivation. To elaborate, cognitive presence aids the process of resolving challenges in learning contexts and thus promotes meaning making. Social presence encourages open expression of personal meanings and emotions in educational contexts, while teaching presence enables building understanding of the learning materials and realization of personally and educationally meaningful learning outcomes via teacher guidance. Collectively, cognitive, social, and teaching presences promote self-determined behaviours in learning contexts, that is, autonomous academic motivation. The reverse is true for academic amotivation. Specifically, as increased level of presence promotes meaning

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making, personal expression, and building understanding, the increased level reduces academic amotivation or the lack of intention to act.

The current study findings however are not consistent with Cole et al. (2017) which found a negative correlation between teaching presence and student motivation, despite hypothesizing a positive correlation. The authors reasoned that among other reasons, sample characteristics, particularly, student age could have been the reason for the unexpected finding. The current study findings suggest that there is indeed a positive correlation between teaching presence and student motivation, when the representative sample is considered. However, it is important to highlight that while the positive correlation holds for teaching presence and autonomous and controlled academic motivation, the direction of relationship reverses for the association between teaching presence and academic amotivation. That is, as the level of teaching presence increases, level of academic amotivation decreases.

Further, an increase in the level of presence corresponds to an increase in the level of controlled academic motivation. However, the strength of the relationship between presences and controlled academic motivation is lower than the strength of the relationship between presences and autonomous academic motivation. Although the *r* values for both relationships fall under the category of small effect (Cohen, 1988), the *r* values for the latter are much closer to the zone of desired effect in the educational context (Hattie, 2009). As controlled academic motivation pertains to behaviours that are non-self-determined or with a sense of pressure to perform an action, it is not as strongly related to presence that deals with personal meaning-making, personal expression of meanings and emotions, and personal understanding of learning materials. In sum, presence promotes a sense of volition and choice and thus higher levels of autonomous academic motivation and controlled academic

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motivation, and lower levels of academic amotivation. Further, although all three forms of presence namely cognitive, social, and teaching presences, are associated with academic motivation, the strength of the relationship is the strongest for the relationship between social presence and academic motivation. As lack of interaction has been cited as a central reason for reduced academic motivation in online learning (Allam et al., 2020; Chung et al., 2020), the opportunity to present themselves as "real" persons with unique characteristics warranted by social presence seemed to have the greatest influence on students, particularly on their academic motivation.

5.3.2 Relationship Between Gratitude and Academic Motivation

It was hypothesized that there are significant relationships between gratitude and autonomous academic motivation, gratitude and controlled academic motivation, and gratitude and academic amotivation. The results of the current study revealed that there are significant relationships between gratitude and autonomous academic motivation, and gratitude and academic amotivation, but not between gratitude and controlled academic motivation. The findings are consistent with past studies including Howells (2004) and King and Datu (2018) that established an association between gratitude and academic motivation, particularly autonomous academic motivation. The findings are also consistent with Nawa and Yamagishi's (2021) study that recorded that gratitude intervention reduces the level of academic amotivation. The current study findings, however, are not consistent with Valdez et al. (2022), which found that gratitude intervention increases both autonomous academic motivation and controlled academic motivation. As gratitude expands students' personal and social resources, higher level of gratitude aids to increase self-determined behaviours that are essential to autonomous academic motivation. Inversely, with the expansion of resources facilitated by gratitude, academic amotivation decreases. As controlled academic motivation

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relates more to behaviours that are performed due to some form of pressure from external sources, it is not altered by resources provided by acts of noticing and appreciating the positive in the world seen in gratitude. Further, Valdez et al.'s (2022) study above focused on state gratitude in contrast to trait gratitude measured in the current study. It is plausible that controlled academic motivation is related to immediate emotional reaction to other individuals' benevolence, but the association does not hold when gratitude is conceptualized and measured as a long-term life orientation.

Additionally, scholars suggest that gratitude elicits schematic biases toward judging assistance from others as more valuable, and these biases may extend to other areas of cognitive processing. Consequently, students may appraise academic opportunities as more valuable and thus be more motivated to partake in them (Ma et al., 2013). Similarly, researchers propose that gratitude creates feelings of elavatedness, connectedness with others, and indebtedness to the benefactors, which inspire students to focus on self-improvement activities (Armenta et al., 2020). The drive towards self-improvement then is witnessed in higher levels of autonomous academic motivation and lower levels of academic amotivation.

5.3.3 Mediating Effect of Psychological Needs Satisfaction on the Relationship Between Presence and Academic Motivation

It was hypothesized that psychological needs satisfaction significantly mediates the relationship between presence and autonomous academic motivation, presence and controlled academic motivation, and the relationship between presence and academic amotivation. The results of the current study revealed that psychological needs satisfaction significantly mediates the relationship between social presence and autonomous academic

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motivation, but not the relationship between cognitive presence and autonomous academic motivation and the relationship between teaching presence and autonomous academic motivation. Similarly, psychological needs satisfaction was found to significantly mediate the relationship between social presence and academic amotivation, but not the relationship between cognitive presence and academic amotivation and the relationship between teaching presence and academic amotivation. Psychological needs satisfaction does not significantly mediate the relationship between presence and controlled academic motivation as well.

The findings are consistent with existing literature to a certain extent. For instance, the findings are in line with Turk et al. (2022) which has established the association social presence and psychological needs satisfaction. The findings, however, are not consistent with studies such as Zhao and Ma (2018), which have recorded a correlation between cognitive and teaching presences and psychological needs satisfaction. The findings are also consistent with recent systematic reviews and meta-analyses that reported positive correlation between psychological needs satisfaction and autonomous motivation, and a negative correlation between the former and amotivation (Tang et al., 2019; Vasconcellos et al., 2020). The current study findings are consistent with past studies that have established psychological needs satisfaction as a mediator of the relationship between support from social agents (i.e., parents, teachers, peers) and student motivation as well (Zhou et al., 2019).

As discussed above, social presence promotes personal expression, which in turn, enhances psychological needs satisfaction. Precisely, personal expression allows students to feel a sense of connection and significance to others. Psychological needs satisfaction then enhances interest and enjoyment of academic tasks, which results in higher intrinsic motivation. Psychological needs satisfaction also boosts internalization (transforming

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regulation into regulation by internal processes), which is the essential element of identified and integrated regulations of external motivation. Collectively, interest, enjoyment, and internalization that result from psychological needs satisfaction facilitate autonomous academic motivation. The reverse is true for the relationship between presence and academic amotivation, through psychological needs satisfaction. As psychological needs satisfaction enhances intrinsic motivation and identified and integrated regulations of external motivation, it reduces the level of academic amotivation. As controlled academic motivation pertains to behaviours that are non-self-determined or with a sense of pressure to perform an action, it is not greatly influenced by psychological needs satisfaction that captures one's sense of independence (autonomy), connection with others (relatedness), and efficacy (competence). Further, meaning making promoted by cognitive presence as well as building understanding facilitated by teaching do not seem to be as crucial for academic motivation.

5.3.4 Mediating Effect of Psychological Needs Satisfaction on the Relationship Between Gratitude and Academic Motivation

It was hypothesized that psychological needs satisfaction significantly mediates the relationships between gratitude and autonomous academic motivation, gratitude and controlled academic motivation, and gratitude and academic amotivation. The results of the current study revealed that psychological needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation and the relationship between gratitude and academic amotivation, but not the relationship between gratitude and controlled academic motivation. These results are mostly consistent with past studies including Jin and Wang (2019), Kardas and Yalcin (2021), and Reyes et al. (2021) that discovered that gratitude is positively related to psychological needs satisfaction. Gratitude expands students' personal and social resources, which in turn, promote greater

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psychological needs satisfaction, specifically by creating a sense of competence and belonging. As discussed above, psychological needs satisfaction enhances interest and enjoyment of academic tasks as well as boosts internalization, which results in an increased level of autonomous academic motivation and a decreased level of academic amotivation. Similar to the association between presence and controlled academic motivation discussed above, as controlled academic motivation pertains to behaviours that are non-self-determined or with a sense of pressure to perform an action, it is not greatly influenced by psychological needs satisfaction that captures one's sense of connection with others (relatedness) and efficacy (competence).

5.3.5 Supplementary Analyses with Sociodemographic Variables as Covariates and Psychological Needs Satisfaction Subcomponents

Supplementary analyses revealed that the mediating effects of psychological needs satisfaction on the relationship between cognitive, social, and teaching presences and controlled academic motivation and the relationship between gratitude and controlled academic motivation were somewhat influenced by age. Age, however, did not critically influence the mediating effects of psychological needs satisfaction on the relationships between (i) cognitive, social, and teaching presences and autonomous academic motivation, (ii) gratitude and autonomous academic motivation, (iii) cognitive, social, and teaching presences and academic amotivation, and (iv) gratitude and academic amotivation. Data further revealed that age is positively correlated with cognitive presence, social presence, teaching presence, and gratitude. Age is also negatively related to controlled academic motivation. These findings are consistent with literature that has established that students' controlled academic motivation decreases as they age, primarily due to an increased need for

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autonomy (Bureau et al., 2022). As such, age needs to be taken into account while investigating the relationship between presence, gratitude, and academic motivation.

The mediating effect of psychological needs satisfaction on the relationship between gratitude and autonomous academic motivation was somewhat influenced by socioeconomic status. Similarly, mediating effect of psychological needs satisfaction on the relationship between cognitive presence and academic amotivation was somewhat influenced by socioeconomic status. Socioeconomic status, however, did not critically influence the mediating effects of psychological needs satisfaction on the relationships between (i) cognitive, social, and teaching presences and autonomous academic motivation, (ii) social and teaching presences and academic amotivation, and (iii) gratitude and academic amotivation. Data also revealed that socioeconomic status is negatively related to academic amotivation. These findings are in line with existing literature that suggests that students from disadvantageous socioeconomic conditions are more likely to have higher levels of academic amotivation (Manganelli et al., 2021). This learning attests to the need to consider socioeconomic status in the investigation of the relationship between presence, gratitude, and academic motivation.

Other sociodemographic factors including gender, ethnicity, academic major, and year of study were found to not critically influence the relationships between cognitive, social, and teaching presences and academic motivation as well as the relationship between gratitude and academic motivation. These findings are consistent with literature that recorded no significant gender differences in regard to academic motivation (Ahmad et al., 2021; Sivrikaya, 2019). The findings however are not in line with past studies that found a link between academic motivation and students' ethnicity (Komarraju et al., 2007), academic

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major (Effendi & Multahada, 2017), and year of study (Brouse et al., 2010). Some of these inconsistencies can be explained by the limitations of the current study's sociodemographic data. For instance, significant proportion of respondents indicated their year of study as final year as opposed to providing a number. As different programs have different years of study, the resulting analysis was limited. Further, there could also be systematic differences in relation to sociodemographic factors between the current study sample and past studies, warranting further investigation of these factors in future studies.

In addition, supplementary analyses discovered that relatedness needs satisfaction has the strongest mediating effect on the relationship between cognitive, social, and teaching presences and autonomous academic motivation, followed by autonomy needs satisfaction and competence needs satisfaction. These findings are consistent with the current study findings reported earlier that the strength of the relationship between presences (cognitive, social, and teaching) and academic motivation is the strongest for the relationship between social presence and academic motivation. As lack of interaction has been cited as a central reason for reduced academic motivation in online learning (Allam et al., 2020; Chung et al., 2020), the opportunity to present themselves as "real" persons with unique characteristics warranted by social presence seemed to have the greatest influence on students, particularly on their academic motivation. Likewise, as relatedness needs satisfaction links to the fulfilment of an individual's need to feel genuinely connected to others, it seems to have the strongest influence on autonomous academic motivation. Collectively, these findings echo the importance of social connections for self-determined academic motivation.

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Further, competence needs satisfaction has the strongest mediating effects on the relationship between cognitive, social, and teaching presences and academic amotivation as well as the relationship between gratitude and academic amotivation, followed by autonomy needs satisfaction and relatedness needs satisfaction. The findings are consistent with existing literature that has recorded a positive association between competence needs satisfaction and academic motivation (Schüler et al., 2010). Thus, these findings suggest that a person's desire to have an impact on their environment and accomplish is strongly linked to their lack of intention to act, which is captured by academic amotivation. It can be postulated that students need to feel a sense of competence for them to want to be successful academically.

5.4 Implications of the Study

The discussed findings of the current study have theoretical, methodological as well as practical implications for the research and practice of students' academic motivation during online learning.

5.4.1 Theoretical Implications

The current research has played a non-trivial role in expanding the knowledge on the relationships between presence, gratitude, academic motivation, and psychological needs satisfaction. Specifically, the current study has provided a more nuanced understanding of the relationship between presence and academic motivation. Although the association between presence and academic motivation has been suggested in past literature, studies examining the explicit link between presence and different types of academic motivation have been relatively scarce. The current study informs that there are significant relationships between presence and autonomous academic motivation and presence and academic amotivation, but not between presence and controlled academic motivation. The current

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study also adds to the existing studies on presence that are grounded in Garrison et al.'s (2000) Community of Inquiry Framework. That is, it provides an understanding of presence in Malaysian contexts as existing studies have been concentrated in North American contexts.

The findings of the current study also add to the literature on the association between gratitude and academic motivation. Particularly, the current study has conceptualized gratitude as more than emotion, which is typical in existing studies. That is, the current study theorized gratitude as a life orientation towards appreciating the positive in the world generally, beyond a grateful emotion felt in reaction to others' help. The study informed that gratitude, conceptualized as a life orientation, is associated with autonomous academic motivation and academic amotivation, but not with controlled academic motivation. Further, the current study expands the research on gratitude within higher education as a fair number of existing studies on gratitude have utilized high school students as samples.

In addition, the current research has helped in addressing the gap in the literature on explanatory mechanisms of the relationship between presence and academic motivation and the relationship between gratitude and academic motivation. Specifically, the study has enlightened that psychological needs satisfaction significantly mediates the relationship between social presence and autonomous academic motivation, but not the relationship between cognitive and teaching presences and autonomous academic motivation. Similarly, psychological needs satisfaction significantly mediates the relationship between social presence and academic amotivation, but not the relationship between cognitive and teaching presences and academic amotivation. Psychological needs satisfaction also significantly mediates the relationship between gratitude and autonomous academic motivation and the relationship between gratitude and academic amotivation. Psychological needs satisfaction,

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however, does not significantly mediate the relationship between presence and controlled academic motivation and the relationship between gratitude and controlled academic motivation. The current study also contributes to the existing literature on psychological needs satisfaction in its capacity to generalize to collectivistic cultures, considering the present dominance of Western individualistic samples.

Taken together, the current study findings provide further empirical support for a number of theories that informed the study. Firstly, the study findings strengthen Garrison et al.'s (2000) Community of Inquiry Framework as a valid model to understand online learning, particularly in relation to academic motivation. The study findings confirm that presence facilitates meaning making, personal expression, and building understanding among students, which then results in greater academic motivation, via psychological needs satisfaction. Precisely, meaning making enables students to realize themselves as free and authentic individuals – autonomous needs satisfaction. Personal expression allows students to feel a sense of connection and significance to others – relatedness needs satisfaction. Lastly, building understanding helps students to experience a sense of efficacy and accomplishment – competence needs satisfaction. Similarly, the study findings confirm Fredrickson's (1998, 2001, 2004a) Broaden-and-Build Theory that posits that gratitude expands one's personal and social resources. Finally, the study findings provide further empirical evidence for Deci and Ryan's (2000, 2017) Self-Determination Theory and Basic Psychological Needs Theory that propose a link between psychological needs satisfaction and motivation, specifically in relation to students' academic motivation during online learning. Precisely, meaning making enables students to realize themselves as free and authentic individuals – autonomous needs satisfaction. Personal expression allows students to feel a sense of connection and significance to others – relatedness needs satisfaction.

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Lastly, building understanding helps students to experience a sense of efficacy and accomplishment – competence needs satisfaction. Consistent with Deci and Ryan's (2000, 2017) Self-Determination Theory and Basic Psychological Needs Theory, and Fredrickson's (1998, 2001, 2004a) Broaden-and Build Theory, the study findings confirm that psychological needs satisfaction enhances interest and enjoyment of academic tasks as well as boosts internalization, that facilitate students' autonomous academic motivation during online learning.

5.4.2 Methodological Implications

Methodologically, the current study showed the utility of correlational design in investigating the mediating effect of psychological needs satisfaction on the relationship between presence and academic motivation, and gratitude and academic motivation, during online learning. While a true experiment is typically viewed to be superior to a correlational study, it is not always practical to utilize the former in educational psychology research. That is, random sampling of participants and manipulation of variables in educational contexts, especially in tertiary educational contexts during online learning, would be a challenge. Nevertheless, the findings of this study suggest that a correlational study is sufficient to detect the mediating effect of psychological needs satisfaction on the relationship between presence, gratitude, and academic motivation. As such, although generalization and causality would still be limitations of the current methodology, correlational studies can be utilized to investigate the topic area.

The current study demonstrated successful use of self-report in investigating presence, gratitude, academic motivation, and psychological needs satisfaction. Despite the risk of social desirability bias, self-reports provide vital information for the investigation of

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academic motivation in relation to presence, gratitude, and psychological needs satisfaction, as ultimately, students' perception of these factors is crucial. The current study has shown that the Academic Motivation Scale (AMS; Vallerand et al., 1992), Community of Inquiry Survey (COI Survey; Arbaugh et al., 2008), Gratitude Questionnaire-Six-Item Form (GQ-6; McCullough et al., 2002), and Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS; Chen et al., 2014) are adequate measures of academic motivation, presence, gratitude, and psychological needs satisfaction respectively, particularly in the context of online learning at private universities in Malaysia. In addition, the current study has underscored the value of attention check questions in studies utilising surveys. The incorporation of attention check questions in the current study enabled the detection of participants who were not fully engaged with the survey. Excluding their data prior to hypotheses testing allowed for more valid conclusions.

5.4.3 Practical Implications

The significant relationship between presence and academic motivation found in the current study reinforces the need to enhance presence, particularly social presence, in online learning. Consequently, this demands university lecturers and administrators to be more mindful and continuously work on enhancing presence in an effort to increase students' academic motivation. Similarly, the significant relationship found between gratitude and academic motivation provides another evidence-based factor for university administrations to target to boost students' academic motivation. Further, as psychological needs satisfaction has been discovered as a mediator of the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation, tertiary institutions may focus on students' psychological needs satisfaction more to improve academic motivation. That is, university administrations need to facilitate the fulfilment of students' autonomy, competence, and

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relatedness needs during online learning. The efforts may include creating opportunities for students to self-organize and make own choices that are consistent with their integrated sense of self in the learning contexts, to have an impact on their environment and accomplish valued outcomes in it, and to feel genuinely connected to, love, and care for others, and to be loved and cared for by others. Collectively, the findings of the current study provide insights into addressing the problem of low academic motivation among students during online learning, in turn, aid university administrations to address the higher rates of attrition in online learning, by tackling the low academic motivation problem.

5.5 Recommendations from the Study

Drawing from the discussion of the findings and their implications, there are several suggestions that the different relevant stakeholders including the university lecturers, university administrations, and undergraduate students may consider. University lecturers should be more mindful and continuously work on enhancing presence in an effort to increase students' academic motivation, particularly autonomous academic motivation. Specifically, lecturers should create opportunities for students to construct meaning through continued communication during online learning. Spaces should also be created for students to project their personal characteristics, thus presenting themselves as "real" persons to other individuals during online learning. Lecturers should also design, facilitate, and direct cognitive and social processes for students to realize personally and educationally meaningful learning outcomes. For instance, lecturers may integrate course design elements such as developing welcome messages, including student profiles, and structuring collaborative learning activities. Lecturers may also contribute to discussion boards, promptly answer emails, provide frequent feedback, strike up conversations, share personal stories and experiences, use humour and emoticons, address students by name, and allow

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options for students to address the lecturer to promote social presence (Aragon, 2003). These steps to increase the level of presence would address the problem of isolation from peers and lecturers that is frequently cited as a factor for reduced motivation during online learning. University lecturers may utilize the Community of Inquiry Survey to periodically assess students' level of presence and intervene as needed. University administrations should support these efforts by providing the essential tools and training to the lecturers.

In addition, university administrations should invest in interventions that promote gratitude in students with the ultimate goal of enhancing students' academic motivation, particularly autonomous academic motivation, and reducing academic amotivation. That is, students should be guided to develop a life orientation of noticing and appreciating the positive in the world. Nawa and Yamagishi's (2021) gratitude journal intervention referenced earlier in the paper is an example of such intervention that university administrations may model after. The university administrations can also administer the Gratitude Questionnaire - Six Item Form before and after the interventions to assess the effectiveness of the interventions. Lecturers may express their sense of care for the students, value students' contributions, as well as promote helping behaviours in the teaching and learning environment, to cultivate gratitude among students (Cownie, 2017).

Furthermore, tertiary institutions should focus on students' psychological needs satisfaction more to improve academic motivation. University administrations can work with both the faculty members and students to create new or enhance existing avenues that promote students' psychological needs satisfaction, that is, fulfilment of autonomy, competence, and relatedness needs, during online learning. Specifically, opportunities need to be created for the fulfilment of students' need for freedom to self-organize and make own choices, that are

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consistent with their integrated sense of self. Students' desire to have an impact on their environment and accomplish valued outcomes in it should be supported. Opportunities should also be created for the fulfilment of students' need to feel genuinely connected to, love, and care for others, and to be loved and cared for by others. Universities may utilize the Basic Psychological Need Satisfaction and Frustration Scale to periodically assess students' level of psychological needs satisfaction and intervene as needed.

Students should also be mindful of their perception of presence. They should capitalize on ways to construct meaning through continued communication and to project their personal characteristics, thus presenting themselves as "real" persons to other individuals during online learning, to ultimately realize personally and educationally meaningful learning outcomes. Students should also work on developing a life orientation of noticing and appreciating the positive in the world. Further, students should be fully engaged in avenues that aid the fulfilment of their need for freedom to self-organize and make own choices that are consistent with their integrated sense of self, to have an impact on their environment and accomplish valued outcomes in it, and to feel genuinely connected to, love, and care for others, and to be loved and cared for by others. When students notice a lack of opportunities for doing the above, they should alert their lecturers and university administrations. Ultimately, the abovementioned ways would help students to enhance their level of academic motivation, particularly autonomous academic motivation, and reduce academic amotivation during online learning.

5.6 Recommendations for Future Research

As the current study has established the mediation role of psychological needs satisfaction on the relationships between presence and academic motivation, and gratitude and academic

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motivation, future studies, equipped with more resources, may expand on the correlational design and investigate the stated relationships by employing an experimental design. Specifically, levels of presence and gratitude can be manipulated and the resulting effect on psychological needs satisfaction, and in turn, academic motivation can be observed. Such experimental studies can also inform potential interventions that university lecturers and administrations may implement to enhance presence, gratitude, and psychological needs satisfaction with the ultimate goal of increasing students' academic motivation during online learning.

Although information on students' age, gender, ethnicity, socioeconomic status, academic major, and year of study was collected and supplementary analyses to investigate their influence on the relationships between presence, gratitude, psychological needs satisfaction, and academic motivation were conducted, the resulting conclusions are still tentative as the sociodemographic data were not perfect. For instance, a significant proportion of respondents indicated their year of study as final year as opposed to providing a number. As different programs have different years of study, the resulting analysis was limited. As such, future researchers may plan to investigate the moderating role of the stated sociodemographic variables and collect data using pre-determined response scales only, as providing "Others (please specify)" may introduce ambiguous data that limit analyses. In addition, as differences can be expected between local and international students studying at private universities in Malaysia, future researchers may attempt to recruit a higher number of international students and examine if nationality has an influence on the stated relationships.

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Furthermore, future researchers with greater resources may investigate the mediating role of psychological needs satisfaction on the relationships between presence and academic motivation, and gratitude and academic motivation during online learning utilising a longitudinal study. The current snapshot study did not capture the long-term changes, especially in regards to students' academic motivation. Collecting data at different time periods, specifically, presence and gratitude at Time 1, psychological needs satisfaction at Time 2, and academic motivation at Time 3, with a gap of at least two weeks in between the measurements would be fruitful. Finally, as the current study employed quantitative methodology only, a mixed-methods research that also captures students' lived experiences during online learning, especially in regards to presence, gratitude, psychological needs satisfaction, and academic motivation, may provide a more comprehensive understanding of the topic in the future.

5.7 Conclusion

Academic motivation is a vital aspect of human learning and development. It is essential to better understand both direct and indirect predictors of superior academic motivation, to address the problem of declining academic motivation among undergraduates in online learning. As lack of interaction has been cited as a central reason for reduced academic motivation in online learning, this study examined the associations between (i) presence and academic motivation and (ii) gratitude and academic motivation. Recent systematic reviews and meta-analyses have found psychological needs satisfaction to be related to autonomous motivation and indicators of wellbeing. As such, this study examined the mediating role of psychological needs satisfaction on the relationships between (i) presence and academic motivation and (ii) gratitude and academic motivation, particularly, in a collectivistic nation, Malaysia.

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The results of the study revealed that there are significant positive relationships between presence and autonomous academic motivation as well as between presence and controlled academic motivation. There is also a significant negative relationship between presence and academic amotivation. In addition, there is a significant positive relationship between gratitude and autonomous academic motivation. There is a significant negative relationship between gratitude and academic amotivation. However, it was found that there is no significant relationship between gratitude and controlled academic motivation. Furthermore, the results of the study suggested that psychological needs satisfaction significantly mediates the relationship between social presence and autonomous academic motivation, but not the relationship between cognitive presence and autonomous academic motivation and the relationship between teaching presence and autonomous academic motivation. Psychological needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation. However, it was found that psychological needs satisfaction does not significantly mediate the relationships between (i) cognitive presence and controlled academic motivation, (ii) social presence and controlled academic motivation, and (iii) teaching presence and controlled academic motivation. Psychological needs satisfaction does not significantly mediate the relationship between gratitude and controlled academic motivation as well. Further, psychological needs satisfaction was found to significantly mediate the relationship between social presence and academic amotivation, but not the relationship between cognitive presence and academic amotivation and the relationship between teaching presence and academic amotivation. Psychological needs satisfaction significantly mediates the relationship between gratitude and academic amotivation. The resulting mediation model is shown in Figure 5.1 below.

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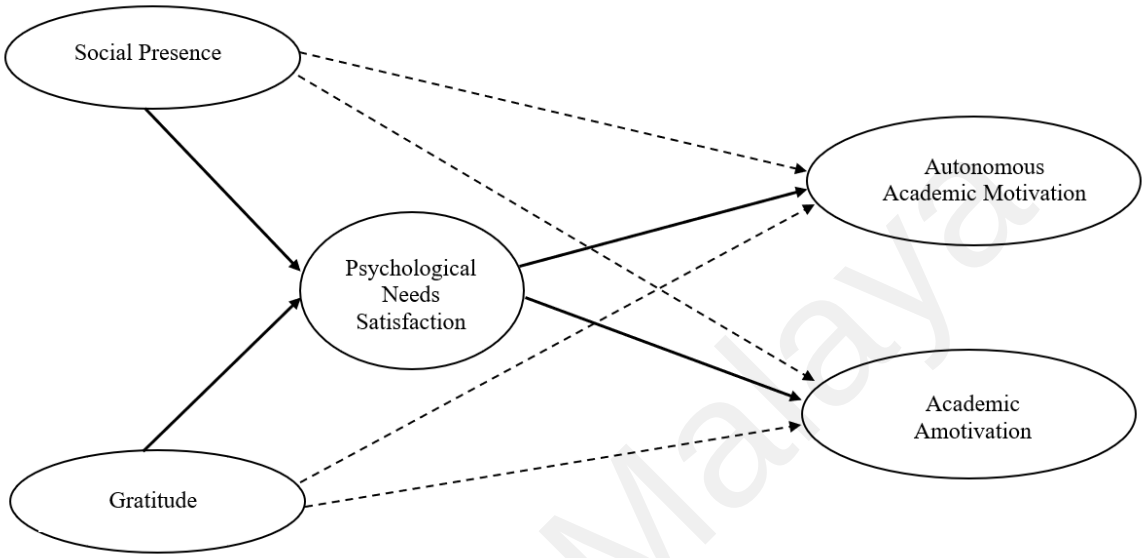
Figure 5.1

Mediation Model of the Relations Between Presence, Gratitude, Academic Motivation, and Psychological Needs Satisfaction



The current research has helped in addressing the gap in the literature on explanatory mechanisms of the relationship between presence and academic motivation and the relationship between gratitude and academic motivation. Specifically, the study has enlightened that psychological needs satisfaction significantly mediates the relationship between presence and autonomous academic motivation and the relationship between presence and academic amotivation, but not the relationship between presence and controlled academic motivation. Similarly, psychological needs satisfaction significantly mediates the relationship between gratitude and autonomous academic motivation and the relationship between gratitude and academic amotivation, but not the relationship between gratitude and controlled academic motivation. The current study findings also provide further empirical support for a number of theories that informed the study namely Garrison et al.'s (2000) Community of Inquiry Framework, Fredrickson's (1998, 2001, 2004a) Broaden-and-Build

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Theory, and Deci and Ryan's (2000, 2017) Self-Determination Theory and Basic Psychological Needs Theory. Further, the current study has demonstrated the utility of correlational design and self-reports in investigating the mediating effect of psychological needs satisfaction on the relationship between presence and academic motivation, and gratitude and academic motivation, during online learning. Additionally, the findings of the current study provide insights into addressing the problem of low academic motivation among students during online learning, in turn, aid university administrations to address the higher rates of attrition in online learning.

Finally, it is hoped that the recommendations from the study and recommendations for future research presented above are critically reflected and acted upon by all relevant parties including academic researchers, university lecturers, university administrations, and undergraduate students, with the ultimate goal of enhancing students' academic motivation during online learning and ensuring their academic success.

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