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Hospitality students at the online classes during COVID-19 – How personality affects experience?

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\textbf{Abstract}

The recent COVID-19 pandemic has forced all teaching and learning activities to shift to online platforms. Hospitality students are not exempted from this transition even though they are used to offline learning environment and often take a blended learning of theoretical and practical components. This sudden change has caused disruptions in their learning process and created all kinds of anxieties. Thus, this study aimed to explore how the personality traits of hospitality students are associated with their level of anxieties and how their learning experience is affected. A survey was conducted in Hong Kong shortly after the affected semester ended. Results showed that students with high levels of agreeableness and openness to experience perceive a high degree of learning, technical, and financial anxiety. By contrast, students with high levels of conscientiousness, extraversion, and neuroticism partially sense a low degree of these anxieties. Results also revealed that a low degree of learning and financial anxiety can enhance students' perceived online learning and consequently improve student satisfaction. Theoretical development and managerial implications are further discussed.

1. Introduction

Online learning demonstrates distance learning between instructors and students. In this learning mode, all teaching materials and subject assessments are conducted and assessed through virtual platforms. With the advancement of technology, online learning has been supplementing traditional learning and has emerged as an imperative paradigm of modern education; this mode is unrestricted by time or place, thus offering personalized and flexible learning experiences to students (Adel, 2017). The online learning mode has become popular because of its time efficiency and capacity to serve a wide range of student types (e.g., full-time working and long-distance students); it also increases information retention (Li & Lalani, 2020) and partially helps educational institutions to remain competitive and collaborative in a globally sustainable environment (Adel, 2017).

Due to the COVID-19 pandemic, many schools and institutions in Hong Kong have shifted from offline to online teaching due to the implementation of social distancing rules (Houlden & Veletsianos, 2020). Hospitality education is not exempted from these guidelines. All classes, including theory, laboratory, and practicum, are conducted through online platforms. In hospitality education, online learning has been an effective supplement to conventional offline teaching and learning. Online teaching is not new to hospitality instructors. However, not everyone is familiar with the full online teaching mode. Most instructors are not prepared for this sudden transition (Maslen, 2020). Wong (2020) showed that online learning during COVID-19 is stressful for all stakeholders. Students lack...
equipment, such as computers or laptops and data roaming cards for Wi-Fi access (South China Morning Post, 2020; Wong, 2020). This lack of equipment can hamper the online learning process. Meanwhile, instructors are pressured with assessment evaluations and logistics arrangement and planning (Wong, 2020). Educational institutions have faced challenges in persuading their instructors to maintain good online teaching quality and engage students with meaningful online learning experiences. Online learning environments differ from face-to-face classrooms. Moreover, institutions are required to provide technological support and resources (e.g., computer, stable Internet connection, camera, and microphone) to each instructor. Within a short period, institutions, instructors, and students had to adapt to a new teaching-and-learning environment.

From the perspective of students, issues regarding personality traits, such as agreeableness, neuroticism, extraversion, openness, and conscientiousness (Costa & McCrae, 1992), as well as anxiety associated with online learning, has become prominent. In this learning mode, students manage their own learning, thus enhancing their sense of responsibility; however, this setup is also potentially detrimental for students who have difficulty managing their time and energy. Moreover, fear affects the online learning experience of students (Wombacher, Harris, Buckner, Frisby, & Limperos, 2017). For instance, students who have high degrees of neuroticism may lack the confidence to express their opinions via online interaction. Meanwhile, students who are often passive in a traditional classroom can proactively express their views online. Several factors, such as the extent of Internet reliability, the security of the online platform used, and the potential reduction in student attention, contribute to associated anxieties (Bao, 2020). Gomezelj and Civre (2012) argued that student personality is positively related with online learning satisfaction. Hence, institutions and instructors should manage the course content and the learning environment to enhance the perceived and actual learning experiences of students (Marks, Sibley, & Arbaugh, 2005) while minimizing anxiety.

Although literature on online learning exists, gaps in theoretical development and management implications require further investigation. First, personality trait theory has been applied in education. However, studies on the integration of personality traits (Big Five Model) and anxiety in measuring students’ perceived online learning and satisfaction remain nonexistent. Furthermore, whether learning, technical, and financial anxieties influence students’ perceived learning and satisfaction via the online platform remains unknown. In addition, personality is believed to be a more stable predictor of human behavior in comparison with demographic profiles (Costa & McCrae, 1988). Hence, this study adopts personality traits to investigate students’ anxiety, perceived learning, and satisfaction. Second, the COVID-19 pandemic has changed the learning environment of institutions at all levels, i.e., from kindergarten to postgraduate degree, and it is necessary to assess the success of learning outcomes measures and satisfaction during this pandemic (Baber, 2020). Marks et al. (2005) argued that the inconsistency in students’ perceived learning is influenced by assessment methods, instructors, and study design. These internal and external environmental changes require stakeholders to adapt to new teaching styles, improve interactions between instructors and students, and innovate teaching activities and contents. Educational institutions may refer to these findings for strategic planning in their educational institutions. Gomezelj and Civre (2012) and Sahin and Shelley (2008) urged the need to investigate student satisfaction with e-learning. Moreover, Adel (2017) suggested exploring the effect of perceived e-learning quality on student satisfaction. The findings of the previous studies can help address the corresponding concerns. Third, hospitality education involves managerial application with service orientation and hands-on practices via practicum and laboratory learning. With the recent pandemic, the learning mode shifted from face-to-face to online; hence, close-contact and physical interaction are missing. The COVID-19 pandemic is continuously affecting student life; thus, the effectiveness of learning experiences requires further investigation and improvement.

The objectives of this study are as follows: (1) investigate the effect of students’ personality traits on their level of anxiety (learning, technical, and financial), (2) explore the influence of students’ anxiety on their perceived online learning, and (3) evaluate the effect of students’ perceived online learning on their satisfaction. The findings of this study contribute to the academic development of students and the educational management of learning institutions. The COVID-19 pandemic is still going on, thus posing a great level of uncertainty as to how much humans have to rely on online platforms for teaching and learning. Therefore, a thorough understanding of the above-mentioned issues is necessary. In addition, the increasing volatile nature of the social environment requires further understanding of these issues to facilitate multichannel teaching and learning for hospitality students.

2. Literature review

2.1. Students in hospitality higher education

With the growth of the tourism industry worldwide, the hospitality industry has become one of the most popular fields and educating hospitality professionals is necessary (Tsai, Hsu, & Hsu, 2017). Hospitality students are required to be well equipped with knowledge and skills (e.g., from lectures, tutorials, and subject assessments) and professionally trained (e.g., practicum requirement or internship); in this manner, they become competent enough to meet the market demand of their career choice (Chen, Subhash, George, & Weiermair, 2012). Hospitality instructors usually adopt face-to-face teaching approaches, which involve discussions and personal interactions (Lown-Smith et al., 2019). Examples of these approaches are lectures, discussions, field trips, guest lectures, panels/symphosia/ora, small group activities, games or simulations, student presentations, case studies, demonstrations, and experiments (Deale, O’Halloran, Jacques, & Garger, 2010). Moreover, hospitality students must develop their social skills to establish a service orientation for career development. Koc (2019) claims that students develop these professional, social, and interpersonal skills through lectures and internship programs. However, students can possibly have anxiety, which can hinder their social skill development and eventually their personal growth and career advancement (Koc, 2019).
2.2. Personality traits

Personality refers to the underlying traits that determine the patterns of a person’s behavior, thoughts, and feelings, as well as the psychological mechanisms that govern such patterns (Bhagat, Wu, & Chang, 2019; Jani, 2014; Tai, Chen, Chang, & Hong, 2012). Personality traits are relatively stable across time, cultures, and a range of contexts, such as in leadership, workplace, and academics (Barnes, Mahar, Wong, & Rune, 2017). One of the most widely adopted personality models is Costa and McCrae’s Big Five model, which includes five personality traits: agreeableness, neuroticism, extraversion, openness to experience, and conscientiousness (Costa & McCrae, 1988). Agreeableness is one’s ability to get along with others. Agreeable dimensions include traits, such as being warm, empathetic, generous, and moral (Jani, 2014). Neuroticism explains the degree of stimulus needed to arouse negative emotions in an individual (Tai et al., 2012). It evaluates emotional stability and instability, including anxiety, uptightness, and nervousness. In addition, neurotic people pay attention to negative information (Costa & McCrae, 1992). Extraversion measures the assertiveness and social aspects of one’s character. Extraverted students tend to be optimistic, adventurous, talkative, vigorous, assertive, and active (Costa & McCrae, 1992; Jani, 2014). Openness to experience presents an individual who can accept unfamiliar and novel things (Tai et al., 2012). An individual’s openness to experience are manifested by qualities of being creative, curious, artistic, intellectual, deep, and insightful (Jani, 2014; John & Srivastava, 1999). Conscientiousness refers to the efficiency, precision, persistence, organizational skills, coordination, and industriousness of a person (Jani, 2014).

The types of personality traits (e.g., individual playfulness and personal innovativeness) are crucial when adapting to online technology (Wu & Ke, 2015). These traits may also align with openness to new experiences and neuroticism in the Big Five framework. Other studies have used traits, such as self-efficacy, goal-oriented motivations, and affective processes, to evaluate student performance in an academic context (Chemers, Hu, & García, 2001). Schniderjans and Kim (2005) examined the relationship between undergraduate students’ personality characteristics and a total web-based environment (no class meeting and limited instructor contact). The findings indicated that four out of five characteristics (e.g., conscientiousness, openness to experience, emotional stability, and agreeableness) were correlated with student achievement scores in the college Web course work. However, only extraversion had no relationship with a Web course work. Gomezelj and Cive (2012) noted the considerable influence of personality on student satisfaction. For the purposes of this study and stable personality trait measures, this study adopts the Big Five model to evaluate students’ anxiety, perceived online learning, and student satisfaction with online learning.

2.3. Anxiety

Anxiety is defined as “an emotion characterized by feeling of tension, worried thoughts and physical changes like increased blood pressure (American Psychological Association, n.d.).” Compared with the norm, people with a higher level of anxiety tend to be more emotional and insecure, and they experience more relationship conflicts; in addition, they quickly react to others, which cause less student satisfaction. For the purposes of this study and stable personality trait measures, this study adopts the Big Five model to evaluate students’ anxiety, perceived online learning, and student satisfaction with online learning.

In relation to online learning, three types of anxiety, namely, learning, technical, and financial anxieties, are introduced in this study. Learning anxiety refers to the students’ negative thoughts and anxiety regarding their capabilities, resulting in a decrease in their academic performance (Bresco, Scheaufeli, & Salanova, 2011). Individuals who have high learning anxiety sense a feeling of worry due to lack of human contact and self-discipline (Bertea & Bertea, 2011). This kind of anxiety can also constrain their learning mood. Technical anxiety refers to anxiety regarding computer skills, use of Internet access, and privacy and security concerns (Sahin & Shelley, 2008). This type is similar with technological risk which explains students who will not have the necessary technical skills to use an e-learning platform (Bertea & Bertea, 2011). Technical anxiety can influence the online learning experience because students learn on their own, and technical issues may occur during online study sessions. Financial anxiety stems from the probability that a purchase may result in loss of money or other resources (Chen & He, 2003). According to Mohamed, Hassan, and Spencer (2011), the prevalence of financial anxiety is low in online learning because students do not need to commute and instead study at home. However, students require further financial support to purchase smart phones, computers, headsets, and speakers. If online learning only lasts for a short period (i.e., if the COVID-19 situation improves), then financial anxiety may emerge.

Previous studies have investigated the role and effects of anxiety on an online learning environment. The level of anxiety in an online environment is higher than that in traditional environments. The importance of trust becomes crucial because a customer who does not trust the online environment will not reuse the service (Aldas-Manzano, Ruiz-Mafe, Sanz-Blas, & Lassala-Navarre, 2011). Bertea and Bertea (2011) defined the risks that can lead to anxiety in online learning as communication (e.g., potential lack of prompt feedback from instructors or peers), technological (e.g., potential lack of ability to use the online learning platform effectively), social (e.g., possibility that others will change their perception of the student because of the student’s decision to participate in online learning), psychological (e.g., potential anxiety from reduced social interaction and self-discipline), and time loss. Xie (2017) defined the factors of perceived risks that cause anxiety. These factors include privacy, functionality, content, potential failure to achieve an expected outcome, and time loss. Mohamed et al. (2011) revealed that performance, time loss, psychological (or anxiety), and source risks are highly predictive of the enrollment intention of students in online education, whereas social risk is not as critical.
2.4. Relationship between personality traits and anxiety

The literature has found the relationships between personality traits and anxiety (Kim et al., 2018; Kotov, Gamez, Schmidt, & Watson, 2010). Kim et al. (2018) explored the moderating effect of anxiety on the relationship between personality traits and expo attachment. The results found the moderating effect of high anxiety attachment on openness and conscientiousness on expo attachment and the moderating effect of low anxiety attachment on agreeableness and conscientiousness on expo attachment. Kotov et al. (2010) revealed the relationship between personality traits and anxiety through the high correlation of personality traits (i.e., conscientiousness and disinhibition) with anxiety; however, no link was found between neuroticism, agreeableness, and openness and anxiety.

Given that anxiety may be associated with online learning, personality plays a vital role in students’ experiences in an online learning environment. Students’ anxiety toward technological devices as communication tools directly affects a student’s online learning experience (Wombacher et al., 2017). Agreeable individuals perceive low levels of risk tolerances (or financial anxiety) (Kubilay & Bayrakdaroglu, 2016). Compared with less extraverted ones, individuals with high degrees of extraversion are more willing to tolerate anxiety (Durand, Newby, & Sanghani, 2008; Oehler, Wendt, Wedlich, & Horn, 2018; Pan & Statman, 2013). Individuals with neuroticism experience low levels of anxiety (Gambetti & Giuberti, 2012; Oehler et al., 2018). Individuals who are open to experiences are willing to tolerate a high level of anxiety (Durand et al., 2008). Individuals who are conscientious are unwilling to take financial anxiety (Durand et al., 2008; Oehler & Wedlich, 2018). Thus, the following hypotheses are proposed:

H1a-c. Students’ agreeableness influences their level of a) learning, b) technical, and c) financial anxieties toward online learning.

H2a-c. Students’ neuroticism influences their level of a) learning, b) technical, and c) financial anxieties toward online learning.

H3a-c. Students’ extraversion influences their level of a) learning, b) technical, and c) financial anxieties toward online learning.

H4a-c. Students’ openness influences their level of a) learning, b) technical, and c) financial anxieties toward online learning.

H5a-c. Students’ conscientiousness influences their level of a) learning, b) technical, and c) financial anxieties toward online learning.

2.5. Perceived learning

Perceived learning is explained as “changes in the learner’s perceptions of skill and knowledge levels before and after the learning experience” (Alavi, Marakas, & Youngjin, 2002, p. 406). Perceived learning is to measure quality by the end users (or students), which is necessary to satisfy students (Adel, 2017). Chapman and Henderson (2010) explained the concept of quality in e-learning as the evaluation on the quality of online courses/learning environments on appropriate design and best practice. Perceived learning is considered a core element for course evaluation (Wright, Sunal, & Wilson, 2006). The key to the effectiveness of an educational course is the quality of learning that students obtain. Students’ perceived learning in an online learning context is influenced by numerous factors, such as instructors’ behavior and technological ability (Wombacher et al., 2017). Bhagat et al. (2019) explored the influence of personality traits on students’ perception of online learning. The results unveiled that personality traits positively and negatively affect students’ perception of instructor characteristics, social presence, instructional design, and trust. Meanwhile, Adel (2017) proposed dimensions of perceived e-learning quality as follows: 1) creative classroom measures (e.g., technology, social networks, and innovation management), 2) teaching process measures (e.g., instructor, innovative timetable, and course design), and 3) learning practice measures (e.g., learning outcomes, course delivery, and formal and informal learning).

2.6. Relationship between anxiety and perceived learning

Anxiety is multifaceted; thus, its effect on perceived learning can also be diverse. A previous study found that perceived anxiety influences behavioral and performance intention, such as future enrollment intention and grade expectations (Braunsberger, McCuiston, Patterson, & Watkins, 2016). Low psychological risk and anxieties and other factors, such as the student’s age, also contribute to future enrollment intention, whereas perceived psychological and performance risks and anxieties contribute to the student’s expected performance (Braunsberger et al., 2016). Sahin and Shelley (2008) explained that the technical skills of computer and Internet use influence e-learning satisfaction. Cotton, Hale, Moroney, O’Neal, and Borch (2011) argued that the greater the use of technology in learning, the higher the level of technology anxiety. Another study also revealed that perceived psychological and functional anxieties directly influence intention to use (Xie, 2017). In this study, the categories of anxiety are defined as learning, technical, and financial. Thus, the following hypotheses are proposed:

H6. A low level of learning anxiety enhances students’ perceived online learning.

H7. A low level of technical anxiety enhances students’ perceived online learning.

H8. A low level of financial anxiety enhances students’ perceived online learning.

2.7. Student satisfaction

Bitner and Hubbert (1994) explained that a consumer’s overall satisfaction with an organization is based on all encounters and experiences with that particular organization. Other studies described satisfaction as the extent of contentment a user feels following
their experience with a product or service, as well as the overall positive reaction based on the evaluation of how a product or service is performed in relation to a previous experience with the said product or service (Aldas-Manzano et al., 2011). User satisfaction is a key factor that providers can use to evaluate their product or service. In expectation–confirmation theory, satisfaction occurs when the experience exceeds the users’ expectation, and dissatisfaction transpires when the expected experience is not achieved. Thus, user satisfaction considerably predicts whether the user will continue to use the product or service (Aldas-Manzano et al., 2011; Ramayah, Ahmad, & Hong, 2012). Sojkin, Bartkowiak, and Skuza (2012) identified the key determinants of satisfaction as social conditions, professional advancement, pragmatism of knowledge, educational facilities, courses offered, and faculty’s educational and research achievement.

Within the online learning context, student satisfaction is a key driver in continued motivation to learn (Edens, 2011). Student satisfaction reveals the perception of learning experience (Alqurashi, 2019). Researchers found that factors, such as system quality, information quality, and perceived usefulness, positively influence online learning, whereas the computer self-efficacy of the user positively relates to their satisfaction (Ramayah, Ahmad, & Tan, 2012). Marks et al. (2005) suggested that student satisfaction can be analyzed by exploring students’ attitudes and evaluations of their online classes. In addition, the factors of time, place, and pace flexibility of online class can affect student satisfaction. Moreover, the key determinants, such as student self-motivation, student learning style, instructor knowledge and facilitation, instructor feedback, interaction, and course structure, significantly influenced students’ satisfaction (Eom, Ashill, & Wen, 2006).

2.8. Relationship between perceived learning and student satisfaction

Many determinants have been explored to predict students’ perceived learning and satisfaction. Four key factors include the e-learning environmental factors (e.g., course structure and ease of access/use), the personality and situational factors (e.g., student characteristics and personal innovativeness), the communication dynamics (e.g., information quality and interaction), and the organizational factor (e.g., technological support and service quality) (Yunusa & Umar, 2021). Student satisfaction has been measured by online course study (McLaren, 2004). McLaren (2004) revealed the same satisfaction level in traditional and online course modes of study. Gomezelj and Čivre (2012) argued that when students perceive the confidence of computer expertise (or technical skills of computer and Internet use), their perceived learning is high, consequently enhancing students’ satisfaction. The perceived value in an online learning context is the perceived learning of a student after an online course. Adel (2017) examined the impact of creative classrooms (e.g., technology and social networks), teaching process (e.g., instructor and course design), and learning process (e.g., learning outcomes and course delivery) on perceived e-learning quality. The results showed the positive effect of these factors on perceived e-learning quality. Consequently, the perceived e-learning quality increases students’ satisfaction. Other studies also showed the positive relationship between students’ perceived learning and satisfaction (Barber, 2020; Gray & DiLoreto, 2016; Richardson & Swan, 2003). Based on the above literature, perceived learning may positively influence student satisfaction, leading to a potential positive influence on their intention to reuse or recommend. Thus, the final hypothesis and conceptual model (Fig. 1) are presented as follows:

H9. Students’ perceived learning positively influences their satisfaction.

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Fig. 1. Conceptual relationships among key constructs.
3. Methodology

3.1. Sample and procedure

This study adopts an exploratory and cross-sectional study to explain the online learning experience of undergraduate students in Hong Kong. The target population sample is hospitality and tourism management students who take online courses in Hong Kong due to the COVID-19 pandemic. Normally, these students enroll in courses offline (or physical classroom environment). However, the Hong Kong government has announced school suspensions in view of the COVID-19 pandemic (Xinhuanet, 2020). As a result, online courses have been introduced to continue academic progress. These students have offline (the first two weeks of Semester 2) and online (the remaining 11 weeks of Semester 2) modes of study experiences. Their reflections on online learning provide insights into the mixed modes of studying.

An invitation was sent to 372 hospitality students, and 283 responses were received, indicating a 76.07% response rate. This study created and uploaded a survey instrument on the Google platform in English and Chinese versions. Students had the option to answer the survey using either version. Students received an email invitation to participate in this study with a Google link attached. Data collection proceeded from May 26, 2020 to June 5, 2020, immediately after the affected semester.

3.2. Development of the research instrument

Before the questionnaire was developed, the researchers invited a group of seven lecturers to join a focus group interview. The main purpose was to obtain their observation of the students’ learning behavior in online classes during the affected period; the observations included the students’ overall performance and individual differences, the level of anxiety the students had, and the sources or causes for different types of anxiety. Comparison was also made between the students’ offline and online learning behavior. The interview was conducted in an open-ended format, with the above as the major themes of discussion. The interview lasted for a total of 105 min. The outcomes of the interview led to two major themes. First, students’ personalities are more or less stable, but different personalities lead to different behavior in online classes. Second, sources causing anxiety, including technical and learning anxiety, vary. However, financial anxiety was mentioned less in this interview. Most students have a positive online learning perception and overall satisfaction toward online study. These findings served as a direction for the development of the survey instrument.

On the basis of the interview findings, the survey instrument included three sections. In Section I, the researchers asked the students to rate their anxiety, perceived online learning, and satisfaction. Nine items regarding anxieties (three items on learning, three items on technical, and three items on financial anxieties) were adopted from Mohamed et al. (2011) and the results of the focus group discussion. Perceived learning (three items) was adopted from Marks et al. (2005), and student satisfaction (five items) was obtained from Aldas-Manzano et al. (2011) and Olsen and Brown (2018). These items were rated using a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Students were asked to describe themselves on the basis of the personality traits in Section II. These items (five items each of agreeableness, neuroticism, extraversion, openness, and conscientiousness) were adopted from Bhagat et al. (2019) and Tai et al. (2012). The items regarding neuroticism were recoded to assess how well the students understand the items. For instance, the word “pessimistic” was replaced by “optimistic,” and the word “insecure” was replaced by “secure.” The statement items in Sections I and II were incorporated with online learning contents while retaining the concept of each construct. Lastly, Section III describes the characteristics of student profiles. Five close-ended questions included gender, age, nationality, program study, and year of study.

The survey instrument was created in English and Chinese versions. In addition to the focus group interview with hospitality

| Item                      | n  | %  |
|---------------------------|----|----|
| Gender                    |    |    |
| Male                      | 61 | 21.6|
| Female                    | 222| 78.4|
| Age                       |    |    |
| 17-19 years old           | 3  | 1.1 |
| 20-22 years old           | 197| 69.6|
| 23-25 years old           | 76 | 26.8|
| 26 years old and above    | 7  | 2.5 |
| Nationality               |    |    |
| Chinese (Mainland)        | 11 | 3.9 |
| Chinese (Hong Kong)       | 269| 95.1|
| Others                    | 3  | 1.1 |
| Program                   |    |    |
| Hospitality Management    | 155| 54.9|
| Tourism Management        | 67 | 23.8|
| Event Management          | 60 | 21.3|
| Year                      |    |    |
| Third year                | 54 | 19.1|
| Fourth year               | 229| 80.9|
instructors, a draft of the questionnaire was reviewed by three other hospitality educators to verify the applicability of the measurement items to hospitality students, especially under the current pandemic situation. Comments were consolidated and considered in the revised version. The questionnaire was pilot tested among 25 hospitality students, thus further validating the questionnaire before sending out to the target group. Back-to-back translation was conducted to ensure consistency in meaning and assess the validity of items; this approach is a legitimate procedure proposed by Wilson (2014).

Table 2
Confirmatory factor analysis of constructs.

| Item                               | Standardized loading (t-value) | Average variance extracted (AVE) | Construct reliability (CR) | α     |
|------------------------------------|-------------------------------|----------------------------------|---------------------------|-------|
| **Agreeableness**                  |                               |                                  |                           |       |
| Tolerant                           | .68 (12.47)                   | .73                              | .93                       | .88   |
| Kind                               | .82 (16.24)                   |                                  |                           |       |
| Cooperative                        | .82 (16.17)                   |                                  |                           |       |
| Honest                             | .75 (14.41)                   |                                  |                           |       |
| Responsible                        | .82 (16.42)                   |                                  |                           |       |
| **Neuroticism**                    |                               |                                  |                           |       |
| Depressed                          | .78 (14.88)                   | .72                              | .93                       | .86   |
| Fear                               | .76 (14.31)                   |                                  |                           |       |
| Pessimistic                        | .77 (14.59)                   |                                  |                           |       |
| Sensitive                          | .64 (11.47)                   |                                  |                           |       |
| Insecure                           | .79 (15.12)                   |                                  |                           |       |
| **Extraversion**                   |                               |                                  |                           |       |
| Ambitious                          | .77 (14.74)                   | .69                              | .90                       | .85   |
| Active                             | .86 (17.28)                   |                                  |                           |       |
| Social                             | .83 (16.55)                   |                                  |                           |       |
| Interested in people               | .66 (12.01)                   |                                  |                           |       |
| **Openness**                       |                               | .68                              | .89                       | .84   |
| Curious                            | .69 (12.60)                   |                                  |                           |       |
| Creative                           | .80 (15.58)                   |                                  |                           |       |
| Imaginative                        | .81 (15.84)                   |                                  |                           |       |
| Fond of novelty and change         | .74 (13.92)                   |                                  |                           |       |
| **Conscientiousness**              |                               | .60                              | .82                       | .77   |
| Organized                          | .87 (16.95)                   |                                  |                           |       |
| Efficient                          | .70 (12.67)                   |                                  |                           |       |
| Precise                            | .65 (11.48)                   |                                  |                           |       |
| **Learning anxiety**               |                               | .63                              | .83                       | .81   |
| I find it difficult in keeping myself motivated in online classes | .80 (15.26) |                                  |                           |       |
| Online classes cause me to feel stressed. | .67 (11.97) |                                  |                           |       |
| I have difficulty paying continuous attention to the class materials when I have online classes. | .89 (17.57) |                                  |                           |       |
| **Technical anxiety**              |                               | .53                              | .77                       | .71   |
| The Internet stability used in online teaching will not be reliable. | .60 (10.97) |                                  |                           |       |
| No one can help me if I have technical problems with the technology used in online classes. | .73 (12.87) |                                  |                           |       |
| The online environment (e.g., information leakage) can harm my personal privacy. | .58 (9.72) |                                  |                           |       |
| **Financial anxiety**              |                               | .49                              | .66                       | .69   |
| Online classes involve additional expenditures (e.g., new computer) than on-campus classes. | .71 (10.25) |                                  |                           |       |
| Online classes have higher utility costs (e.g., electricity) than on-campus classes. | .75 (10.67) |                                  |                           |       |
| **Perceived learning**             |                               | .51                              | .75                       | .86   |
| I understand how the content contributes to the established learning outcomes of the course. | .52 (14.72) |                                  |                           |       |
| I have developed the ability to communicate clearly about the courses taught. | .65 (18.25) |                                  |                           |       |
| I have improved my ability to integrate facts and develop generalizations from the class materials. | .67 (16.32) |                                  |                           |       |
| **Student satisfaction**           |                               | .72                              | .93                       | .93   |
| I feel good about online learning experience. | .74 (17.92) |                                  |                           |       |
| I am generally satisfied with the online class arrangement. | .75 (18.25) |                                  |                           |       |
| Online classes have met my learning needs. | .75 (16.89) |                                  |                           |       |
| I am satisfied with the efficiency of the online classes. | .77 (18.57) |                                  |                           |       |
| I am satisfied with the effectiveness of the online classes. | .81 (19.13) |                                  |                           |       |

Chi-square ($\chi^2$) = 1311.90, df = 584, $p < 0.00$, Comparative Fit Index (CFI) = 0.95, Non-normed Fit Index (NNFI) = 0.94, Room Mean Square Error of Approximation (RMSEA) = 0.06.
3.3. Data analysis

Several statistical techniques were adopted to measure the research objectives by using SPSS Statistics 25 and LISREL version 8.80 software. Descriptive statistics was used to explain the respondents’ demographic profiles. This study used confirmatory factor analysis to examine the reliability and validity of the measures. Structural equation modeling with LISREL was used to assess the causal relationships among personality traits, anxiety, perceived learning, and student satisfaction.

4. Results

4.1. Demographic characteristics of respondents

Table 1 describes the demographic characteristics of the respondents. From the 283 respondents in the study, 61 (21.6%) are male and 222 (78.4%) are female. The majority of the respondents were 20–22 years old (69.6%, n = 197). The 23–25 year old age group represented 26.8% (n = 76) of the respondents, followed by the 26 year old and above age group (2.5%, n = 7), and the 17–19 year-old age group (1.1%, n = 3). Most of the respondents were Chinese from Hong Kong (95.1%, n = 269), while the rest of the sample were Mainland Chinese (3.9%, n = 11) or other nationalities (1.1%, n = 3). In terms of program of study, 155 (54.9%) of the respondents were studying in the hospitality management program, 67 (23.8%) were in the tourism management program, and 60 (21.3%) in the event management program. Most of the respondents were in their fourth year of their degree (80.9%, n = 229), and the rest of the respondents were in their third year (19.1%, n = 54).

4.2. Confirmatory factor analysis (CFA) of the key constructs

Table 2 presents the factor loadings, average variance extracted (AVE), and construct reliability (CR) of the key constructs as obtained from the CFA results. The model shows a good fit of data with \( \chi^2 = 1311.90, \) degree of freedom (df) = 584, \( \chi^2/df = 2.24, \) p < 0.00, comparative fit index (CFI) = 0.95, non-normed fit index (NNFI) = 0.94, and root mean square error of approximation (RMSEA) = 0.06. These figures have met the recommended values of goodness-of-fit indices suggested by Bagozzi and Yi (1988) and Brown and Cudeck (1993). The values of standardized loading range from 0.52 to 0.89 and t-values are between 9.72 and 19.13. One item (The online classes I have attended are not worth the tuition I paid) of financial anxiety is omitted due to the low standardized loading, hence only two items of financial anxiety remained. These ranges are statistically significant at the 0.01 level, thereby verifying their acceptability (Churchill, 1979). The AVE estimates of the constructs range from 0.49 to 0.73 while their CR ranges from 0.66 to 0.93. Most AVE and CR figures meet the recommended values for internal and external validity measures as suggested by Fornell and Larcker (1981), except financial anxiety construct (AVE = 0.49).

Table 3 explains the AVE, mean, standard deviation, correlation, and square root of AVE per construct. The numbers bolded in the diagonal line present the square root values of AVEs. Discriminant validity was tested by checking whether the square root AVE of each construct is greater than the value of correlation (Hair, Black, Babin, Anderson, & Tatham, 2006). The results of discriminant validity testing, the square root AVE value of financial anxiety is 0.70 and is greater than the correlation values of the other constructs, which range from 0.00 to 0.53. Furthermore, the square root AVE of agreeableness is 0.85, which is greater than the correlation values of the other constructs, which range from −0.09–0.76. Other pair comparisons reveal the same result, thus confirming the existence of discriminant validity. The mean and standard deviation (SD) scores range from 3.11 (SD = 0.79) of student satisfaction to 4.03 (SD = 0.50) of agreeableness.

4.3. Effect of personality traits on anxiety, perceived learning, and student satisfaction

The structural paths among personality traits, types of anxiety, perceived learning, and student satisfaction are presented in Table 4. The structural equation model presents the model fit with \( \chi^2 = 1493.29, \) degree of freedom (df) = 600, \( \chi^2/df = 2.48, \) p < 0.00,

| Construct          | AVE | Mean | SD   | Correlations and square root of AVE |
|--------------------|-----|------|------|-----------------------------------|
|                    |     |      |      | PTA | PTE | PTO | PTC | LA | TA | FA | PL | SS |
| Agreeableness (PTA)| .73 | 4.03 | .50  | .85 |     |     |     |     |     |     |     |
| Neuroticism (PTN)  | .72 | 3.36 | .65  | .39 | .85 |     |     |     |     |     |     |
| Extraversion (PTE) | .69 | 3.43 | .69  | .44 | .51 | .83 |     |     |     |     |     |
| Openness (PTO)     | .68 | 3.62 | .61  | .61 | .51 | .72 | .82 |     |     |     |     |
| Conscientiousness  | .60 | 3.79 | .57  | .76 | .41 | .40 | .59 | .77 |     |     |     |
| Learning anxiety   | .63 | 3.24 | .84  | .04 | .20 | .13 | .12 | .17 | .79 |     |     |
| Technical anxiety  | .53 | 3.53 | .75  | .05 | .12 | .19 | .02 | .08 | .52 | .73 |     |
| Financial anxiety  | .49 | 3.14 | .88  | .09 | .00 | .07 | .05 | .14 | .38 | .53 | .70 |
| Perceived learning | .51 | 3.31 | .65  | .20 | .11 | .16 | .19 | .33 | .41 | .27 | .40 |
| Student satisfaction| .72 | 3.11 | .79  | .15 | .18 | .05 | .15 | .31 | .66 | .43 | .36 |

AVE = Average variance extracted, SD = Standard deviation, Diagonal = Square root of the average variance extracted.
relationship with perceived online learning ($r = 3.46$, $p < 0.01$), technical ($r = 2.30$, $t-value = 3.45$, $p < 0.01$), and financial anxieties ($r = 1.90$, $t-value = 3.23$, $p < 0.01$), thereby supporting H1a, H1b, and H1c. Neuroticism affects financial anxiety ($r = -0.36$, $t-value = 1.89$, $p < 0.05$), thereby supporting H2c. However, neuroticism does not influence learning and technical anxieties ($p > 0.05$), thereby rejecting H2a and H2b. Extraversion negatively influences technical anxiety ($r = -0.84$, $t-value = -2.86$, $p < 0.01$) and financial anxiety ($r = -0.54$, $t-value = -2.11$, $p < 0.05$), thereby supporting H3b and H3c. However, extraversion does not influence learning anxiety ($p > 0.05$), thereby rejecting H3a. Openness positively affects learning anxiety ($r = 0.77$, $t-value = 2.38$, $p < 0.05$), technical anxiety ($r = 1.26$, $t-value = 3.18$, $p < 0.01$), as well as financial anxiety ($r = 0.91$, $t-value = 2.63$, $p < 0.01$), thereby supporting H4a, H4b, and H4c. Lastly, conscientiousness is found to negatively influence learning anxiety ($r = -2.57$, $t-value = -3.86$, $p < 0.01$), technical anxiety ($r = -3.00$, $t-value = -3.74$, $p < 0.01$), and financial anxiety ($r = -2.62$, $t-value = -3.72$, $p < 0.01$), thereby confirming H5a, H5b, and H5c.

Moreover, the low level of learning anxiety ($\beta = -0.37$, $t-value = -4.65$, $p < 0.01$) and financial anxiety ($\beta = -0.32$, $t-value = -3.46$, $p < 0.01$) significantly enhances perceived online learning, thereby supporting H6 and H8. However, technical anxiety has no relationship with perceived online learning ($p > 0.05$), thereby rejecting H7. Perceived online learning ($\beta = 0.65$, $t-value = 9.95$, $p < 0.01$) significantly affects student satisfaction, thereby supporting H9. The overall $R^2$ of personality explains 44% of learning anxiety, 61% of technical anxiety, and 43% of financial anxiety. The $R^2$ of anxieties (learning, technical, and financial anxieties) accounts for 30% of perceived online learning, while the overall $R^2$ of perceived learning explains 43% of student satisfaction.

### 5. Discussion and implications

This study examines the hypothetical relationships among the personality traits, level of anxiety in different aspects, perceived online learning, and satisfaction of hospitality students. The results reveal positive and negative relationships, confirming the results of Adel (2017), Barnes et al. (2017), Durand et al. (2008), Sahin and Shelley (2008), and Oehler et al. (2018).

The personality traits (agreeableness, neuroticism, extraversion, openness, and conscientiousness) of hospitality students are found to be either positively or negatively associated with their anxieties (learning, technical, and financial) within the online learning environment. The level of students’ agreeableness positively influences their learning, technical, and financial anxieties. That is, the higher the level of agreeableness, the higher the anxieties the students perceived. This finding contradicts that of Kubilay and Bayrakdaroglu (2016), who suggested that agreeable people tend to have less anxiety. In an online learning environment, individuals with high agreeableness rarely participate and comment in online discussions, have less empathy, and avoid conflicts in social interactions (Barnes et al., 2017; Ha, Kim, & Jo, 2013). This finding may pertain to the fact that hospitality students have less experience in...
participation and less empathy in any online learning activities. When hospitality students are in an online class environment, their agreeable characters are handicapped, and they do not know how to get along with others, thus causing high levels of learning, technical, and financial anxieties. Students with a high level of neurotism tend not to be financial anxious; this finding contradicts that of Gambetti and Giussberti (2012) and Oehler et al. (2018). This finding is reflected in a situation wherein students who rated high in neuroticism spend more time for online information search and study. Students may perceive low financial anxiety in comparison with time spent for online learning. Extraversion negatively affects technical and financial anxieties; this finding is similar to that of Landers and Lounsbury (2006). Extraverted students prefer face-to-face interactions rather than online ones, and they spend less time on the Internet (Landers & Lounsbury, 2006), thus causing high levels of technical and financial anxieties. Hospitality students have their hands on their learning process, and their learning acquisition skill is largely hindered in online environments. Hong Kong’s specific environment may also explain this finding. Most hospitality students in Hong Kong resides in small apartments where utility fee is high and room space is tight. Thus, their anxiety level rises when they have to attend online classes in this kind of environment.

Similarly, a positive relationship exists between openness and learning, technical, and financial anxieties. Students who are open to experiences like to explore new things, including online learning. They may face more challenges of computer technical issues and may spend more time on online search, thus causing learning and financial anxieties; this finding is similar with that of Cotton et al. (2011). Depending on the format, platform, and structure in which online courses are delivered, student openness to experience can potentially be limited. Educational institutions had to adapt to the unprecedented pandemic within a short period; thus, some courses are heavily dependent on lecture-based classes. Furthermore, the technological platforms being used may be suitable only for videos or simple lecture-based livestreams, as opposed to facilitating online participation through technological tools. Thus, students who report high on the openness factor may feel limited by the platform and may have reduced opportunities for participation and social interaction, thereby causing high levels of anxiety.

A negative relationship is found between conscientiousness and learning, technical, and financial anxieties. Online learning requires a high self-discipline to be attentive and responsible in class (Bao, 2020). Conscientious individuals are risk adverse (Oehler & Wedlich, 2018) and may be inclined to prepare more for online classes. Conscientious students may also have excellent time management and organization skills, thus lowering their anxiety toward online learning. In a study by Blau, Drennan Jr., Karnik, and Kapanjie (2017), students who are well-prepared for an online class were found to perceive the course favorably, thus positively influencing their intention to recommend. They may also have a high sense of self-awareness, which has been found to play a positive role on individual participation in online learning environments. As a result, student participation affects student performance and engagement (Jin, 2017).

This study further presents the negative relationships of students’ learning and financial anxieties toward their perceived learning, thus supporting the results of the studies of Braunsberger et al. (2016) and Sahin and Shelley (2008). When the level of anxiety decreases, it influences students’ emotion and enhances the evaluation of perceived learning. Most students in the study sample are in their junior and senior years. They are mature and can motivate themselves to participate in online learning, thus leading to low learning anxiety. For low levels of financial anxiety, students do not need to spend money on transportation because they study from home. Most students have a smartphone, a laptop, and/or a desktop; hence, purchasing a new smartphone or computer is unnecessary. Consequently, students with low financial anxiety can enhance their perceived online learning.

This result presents the positive effect of perceived online learning on student satisfaction. This finding is consistent with the results of Adel (2017), Duque (2014), and Gomezelj and Civre (2012). During online learning, students perceive some improvement of their competencies, such as self-motivation, self-engagement, and communication skills. Consequently, students can perform satisfactorily during online class activities and assessments. Alqurashi (2019) argued that the level of student perceived learning and satisfaction of the online course increased when the students understand the course content, share interest to the course, increase new knowledge, and ease of access. These criteria can help students to improve their skills and knowledge of the contents learnt, communication, and industrial applications. As a result, these criteria can stimulate their learning and increase the level of satisfaction to the subject.

The implications on theoretical development and management are discussed as follows: The theoretical development is to integrate the Big Five model of personality traits (Costa & McCrae, 1992; Jani, 2014) and anxiety (Bertea & Bertea, 2011; Sahin & Shelley, 2008) concept explaining the online learning experiences of students during the affected time period. First, the influence of personality traits on the level of anxiety of hospitality students toward the online class environment is identified. The students’ personality traits are either positively or negatively related to their level of anxiety. Second, three sources of anxiety, namely, the learning, technical, and financial anxieties, are confirmed and identified. The students’ level of anxiety is negatively associated with students’ learning experience and satisfaction.

On the basis of the above findings, the following implications are provided: First, although personality traits do not change over time easily, instructors must identify their students’ personalities and apply varied strategies to different students. The best use of course structure and students’ personality characteristics should be exercised to promote their learning experience Schniederjans & Kim (2005). The instructor is recommended to provide more support to students. This support can arouse their motivations and interests, which subsequently improve their level of comprehension and perceived learning (Adel, 2017; Yunusa & Umar, 2021). For instance, most students who have common personality traits can interact and engage in online learning and activities. Neurotic students should be encouraged to reassess their contribution by promoting reward or incentives in online classes and activities (Barnes et al., 2017). To support students with low conscientiousness, instructors can disperse the content into smaller modules, train and work with teaching assistants for further support on online platforms, and structure and moderate offline self-learning activities to complement online discussions (Bao, 2020).

Second, the degree of financial, technical, and learning anxieties should be diminished and controlled to enhance perceived online
learning. Wombacher et al. (2017) argued that students’ personality and anxiety can affect their perception of learning and satisfaction. To minimize potential anxieties, instructors should prepare students with accessible teaching resources, communication tools, ease of technology use, and immediate feedback (Adel, 2017). Additional communication channels with prompt feedback mechanisms (e.g., email, social media, and phone) can reduce learning anxiety. Technical anxiety can be minimized by offering computer training and software functioning to instructors and students who need them (Sahin & Shelley, 2008). The availability of computers and laptops with stable Internet and Wi-Fi connection in campuses may reduce expenses. It also allows flexibility for students when they study in the campus. Hong Kong is a small city, and students may prefer to study in the campus rather than at home. Moreover, different teaching techniques and learning assessments should be applied to suit students’ personalities (Kim et al., 2018).

Third, enhancing perceived online learning can ensure students’ satisfaction. The students’ perception of their learning and satisfaction should be evaluated to improve the quality of course and program (Alqurashi, 2019). Given their positive personality traits, students should be engaged in various learning activities. Instructors should consider students’ personality traits and their possible anxiety toward online learning to monitor learning outcomes and student satisfaction (Adel, 2017). Duque (2014) quoted that collaboration between students and cocreation can be as important as the perceived service quality to students’ learning outcomes, which greatly affect satisfaction. In addition, promoting perceived online learning can be managed by other alternatives besides minimizing perceived risks. Instructors can enhance students’ perceived online learning and satisfaction by developing course assessments that fit students’ interest, thereby promoting student engagement; they can also offer available course materials, respond to students’ inquiry, and provide feedback. The effectiveness of a feedback process (e.g., consistent communication and constructive comments for improvement) that integrates student personality can enrich the learning process (Semley, Huang, & Dalton, 2016). Eom, Wen, and Ashill (2006) stated that meaningful feedback among students and from the instructors could enhance the student perceived learning outcomes.

Lastly, online learning will still be considered in the coming year. Instructors and students are encouraged to prepare and adjust their teaching and learning behavior with the new environment. Instructors can improve their skills and knowledge in the development of course design, facilitating class discussion and technology, and motivating students (Eom & Ashill, 2016). Instructors should ensure that the online platform will not interrupt students’ learning experiences. New teaching initiatives, such as mixed modes (offline and online combination) of learning, can be applied for students who are capable of self-learning and are self-motivated. In the meantime, students can explore new adaptive ways for online learning. Close interactions with classmates and instructors can help students follow the study progress and complete the required learning outcomes with satisfactory academic performance and self-achievement. From the institutional perspective, the extension of e-learning platform can widen the hospitality education, promote excellent teaching and learning environment, and sustain the hospitality program and institutions. The institutions are recommended to invest more online resources, such as computer labs and e-library (Eom et al., 2006), as well as monitor the educational attainment of student performance and personal development (Adel, 2017).

5.1. Conclusion

Online learning may continue even after the COVID-19 pandemic. However, for hospitality students who are used to physical classroom environments, online classes have been a huge challenge. Thus, understanding the relationship among students’ personality traits, anxiety, perceived online learning, and student satisfaction is crucial for the continued development of online learning in hospitality education. The results show the impact of students’ personality traits on various types of anxiety. Among five personality traits, agreeableness and openness positively affect learning, technical, and financial anxiety. Conscientiousness negatively affects all three anxieties. Extraversion negatively influences learning and technical anxieties. Neuroticism negatively affects financial anxiety. Moreover, learning and financial anxieties negatively affect perceived learning. Lastly, students’ perceived learning enhances their learning satisfaction.

With the rapid and unfamiliar learning environment, students’ characteristics and their anxiety influence their perceived online learning and subsequently their satisfaction. Instructors are encouraged to evaluate the effectiveness of online learning on students with varied personalities through different course structure, learning methods and assessment tools. In this manner, anxiety that may emerge during online learning may be reduced with appropriate training of technical skills and support from the instructor and institutions. Satisfaction is a crucial part of education; thus, the assessment of students’ perceived learning and satisfaction can be regularly measured to ensure the achievement of subject learning outcomes and students’ learning enhancement.

5.2. Limitations and future research

This study has several limitations; thus, future research is suggested. First, this study used a convenience sampling approach by inviting undergraduate hospitality and tourism students in a Hong Kong university. The results may only apply to the same program and level of study. Future studies should consider extending the research to other fields of study and levels. Second, this study gathered the overall perceptions of students, and other criteria remained constant. The nature of class structure, subject contents, assessment tools, and student engagement can play an important role and provide different insights. Further investigation on the relationship between student personality types and their need for collaboration and participation in class, as well as how online class structures influence this relationship, should be conducted. Third, a longitudinal study must be considered should online learning continue in the future. Other student demographic factors, such as culture and gender, may also contribute to the understanding of student satisfaction of online learning. A similar investigation in other countries can facilitate comparisons across cultures.
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