BIG FIVE PERSONALITY TRAITS AND STUDENTS' SATISFACTION WITH SYNCHRONOUS ONLINE ACADEMIC LEARNING (SOAL)

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Abstract

The purpose of this study is to identify the role personality plays in students' satisfaction with synchronous online academic learning (SOAL), especially during the COVID-19 pandemic. According to the literature, overall students' satisfaction with SOAL depends on a number of factors including the quality of SOAL, the quality of the course design, the responsiveness of the instructors, the institutional preparedness, the infrastructure available, and the fairness of the evaluation system. To fully explore the students' satisfaction with SOAL it is important to examine another important aspect that relates to students' personalities. For the purpose of this research, an online questionnaire was delivered to undergraduate business students of a public university in Athens during the first spring lockdown period of 2020. The findings of the study indicate that openness and conscientiousness, two of the big five personality traits, present a positive relationship with overall satisfaction with SOAL (Sahinidis & Tsaknis, 2021). They also revealed that students with higher levels of overall satisfaction with SOAL present higher levels of openness, conscientiousness, extraversion, and agreeableness but lower levels of neuroticism. This research study will make a remarkable contribution to the literature regarding the relationship between personality and students' satisfaction with SOAL.

Keywords: Big Five Personality Model, Personality Traits, University Student Learning, Student Satisfaction, Synchronous Online Academic Learning

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1. INTRODUCTION

Indubitably, the post-COVID-19 academic reality will be significantly different from the previous one (Gaur, Mudgal, Kaur, & Sharma, 2020; Rodriguez-Segura et al., 2020). Coronavirus disease (COVID-19) posed a challenge for tertiary education which was abruptly called to adjust to a virtual environment (Law, 2021; Tayyib et al., 2021). Recent evidence indicate that lockdowns affected approximately 91% of the students' population (UNESCO, 2020; Hebebci, Bertiz, & Alan, 2020). In the context of this emerging situation, academic programs had to adjust to the new challenges, by switching to a remote digital format and replacing the approach of face-to-face education with synchronous academic online learning (SOAL) (Liaqat, 2021). The synchronous online education has become the "new normal" or otherwise the "new norm" of academic learning delivery during the COVID-19 period (Zuo et al., 2021; Senel & Senel, 2021).

According to Benito et al. (2021), the education model adopted during the COVID-19 crisis was based on the example of other industries and particularly the digitalization of commerce. Higher education had to adapt to the new reality and moved to online delivery of academic curricula while simultaneously maintaining the quality and the integrity of the academic process (Cicha, Rizun, Rutecka, & Strzelecki, 2021). In this ongoing process and despite the newness of the procedure, both educators and students have shown positive reflexes and adaptability to remote learning (Yuan, 2021; Gürler, Uslu, & Dastan, 2021). Furthermore, students, being presented with the opportunity to formulate their academic program in accordance with their personal needs in terms of time, place, space, and pace of study, have benefited from online learning flexibility (Yuan, 2021).

However, it is worth mentioning that online learning may not be suitable for every student because of their varying personality. Several studies suggest that both personality and prior knowledge affect the overall outcomes obtained from online academic learning (Cohen & Baruth, 2017). The aim of this research study, therefore, is to identify the role personality plays in students' satisfaction with SOAL. The study struggles to examine whether there are specific personality traits of a student that affect his/her overall satisfaction with SOAL. This research study will make a remarkable contribution to the literature as the relevant studies regarding the relationship between personality and students' satisfaction with SOAL are scarce and have been limited thus far. It is evident, that the review of the literature revealed that there is a need for a great amount of research to address this relationship between personality and student satisfaction with SOAL (Keller & Karau, 2013). Especially, during the COVID-19 lockdown period, the measurement of students' satisfaction with SOAL has received growing attention from researchers in academia (Sahinidis, Xanthopoulou, Tsaknis, & Vassiliou, 2021).

The structure of this research paper is as follows. Section 2 reviews the relevant literature on the factors that affect directly and positively the student satisfaction with SOAL, based on the importance of SOAL during the COVID-19 pandemic. Additionally, to relate the role personality plays in students' satisfaction with SOAL, it is considered important to review the Big Five personality traits, which include the five characteristics of openness, conscientiousness, extraversion, agreeableness, and neuroticism. Section 3 analyses the methodology used to conduct empirical research on the relationship between students' personality and their satisfaction with SOAL. Section 4 presents the research findings of the study comprising of different variable analyses and statistical methods. Section 5 refers to the discussion of the research data. Section 6 includes the summary of the paper with the limitations of the study, recommendations for further research, and its contribution to the academic education.

2. LITERATURE REVIEW

The model of the flipped classroom has received broader acceptance and is considered a new paradigm that builds on technological capabilities to promote a more active educational procedure where the cultivation of critical thinking and the encouragement of the student are prioritized (Yen, 2020). The COVID-19 pandemic affected education procedures and has resulted in a major interruption of education systems worldwide (Pokhrel & Chhetri, 2021). Recent studies exploring the effectiveness of the flipped classroom model on students' learning during the COVID-19 pandemic have revealed a positive evaluation of the approach in teaching and learning processes (Campillo-Ferrer & Miralles-Martínez, 2021; Latorre-Cosculluela et al., 2021). Especially the study of Latorre-Cosculluela et al. (2021) emphasized the great importance of flipped classrooms in the development of students' personal and professional skills. The study of Rodriguez-Segura et al. (2020) focuses on the utility of incorporating tools such as the Microsoft Teams platform in the academic experience and concludes that their potential as alternatives to traditional educational practices is strong since they allow for the students to have a better organizational spectrum defined by their own personal needs.

Comparing the synchronous learning environment and the asynchronous methods of teaching and learning, the first one has been shown to correlate with higher overall student satisfaction (Tayyib et al., 2021). Several research studies have noted that synchronous delivery of online learning using web conferencing tools, such as Zoom, Microsoft Teams, Skype, is preferable to asynchronous one since it is perceived as a more interpersonal and interactive procedure, bearing more resemblance to the traditional model (Skylar, 2009; Abdous & Yoshimura, 2010; Tayyib et al., 2021). The synchronous delivery of online learning via live stream lectures encourages the live interaction between the teacher and the students, provides the possibility of instant feedback and opportunities for socialization (Oki, Sunariani, Irmawati, & Luthfi, 2020; Polakova & Klimova, 2021). In the recent study of Benito et al. (2021), comparing the results in four universities using SOAL, the majority of the students found satisfactory online experience during the COVID-19 period (Benito et al., 2021). The study of Liaqat (2021) exploring online education satisfaction revealed that

the majority of students demonstrated a positive or neutral attitude towards the online education system — describing it as a quality learning experience. It is also worth mentioning that students' satisfaction is one of the most significant indicators of online learning's success and quality (Puška, Puška, Dragić, Maksimović, & Osmanović, 2021).

The extraordinary and unpredictable nature of the COVID-19 crisis did not allow for a coordinated and unified transition to the online academic environment and each university adopted different online educational platforms and provided guidance to the instructors for the delivery of their course material (García-Alberti, Suárez, Chiyón, & Mosquera Feijoo, 2021). Some scholars suggest that changes should be made to curricula, in accordance with the experiences of the virtual educational environment, and therefore it is strongly suggested that measures (such as internet quality, and more user-friendly apps) facilitating students with the use of technology be promoted (Gaur et al., 2020). More recent studies suggest that the familiarity of students and teachers with technology enhanced their preparedness level for transition to a digital environment and its challenges (Oki et al., 2020). A study by Liaqat (2021) revealed that almost all the students received IT assistance when they needed and they displayed satisfaction not only for the technical support but also for the video technology of online learning material delivery. Bao (2020) proposes that the necessary technical support, when there are functional issues of educational platforms, is linked to higher online learning satisfaction. The dissatisfaction of students with distance learning is rooted in the incompetence of instructors and poor technological infrastructure (Hebebci et al., 2020). For synchronous online education, among the determinants of user satisfaction listed are the online educational platform design, operation, and function (Sahinidis & Tsaknis, 2021).

Course quality can be a crucial factor in student online satisfaction (Bao, 2020). In the context of academic duties, instructors are also responsible for the course design and structure which is considered crucially important for students' satisfaction (Roach & Lemasters, 2006). In the study of Liaqat (2021), among the findings, 90% of students showed a positive attitude towards course delivery, reporting that instructors have provided well-structured, guided, and informative course material. Furthermore, they displayed satisfaction towards the course management system and the provided activities. Studies have shown that there is a strong connection between user satisfaction, effective delivery of teaching, and quality of course material and design (Sun, Tsai, Finger, Chen, & Yeh, 2008; Martín Rodríguez, González-Gómez, & Guardiola, 2019).

The process of transferring course material to an online form is necessary but not sufficient for a successful course completion during the SOAL education. Apart from course quality and technological equipment, another important factor for the successful delivery of online education is the teacher's quality and ability to organize the online class and guide and support students during the learning process (Tayyib et al., 2021). Teachers' positive attitude towards online education could be a determinant for a successful online delivery of

learning (Anarinejad & Mohammadi, 2014). Arbaugh (2000) indicated that online learning satisfaction is significantly positively correlated with user interactions with others. As such, instructors need to have continuous interaction with students to achieve learning outcomes via synchronous online education (Liaqat, 2021). In Liaqat's (2021) recent study, half of the students who participated in the research study considered that the instructors in online education demonstrated responsiveness to students and there was an effective interaction with them. Impersonal teaching and the lack of visual contact and interaction with the instructor are important disadvantages of online courses and could lead to poor SOAL education (Karavida, Charissi, & Tympa, 2021).

A crucial factor closely related to students' satisfaction is the perceived fairness of the exams which is important for academic integrity. Assessment methods could be viewed as a determinant of students' satisfaction (Sun et al., 2008). In their study, Swartz and Cole (2013) investigated if fairness can be applied equally in online assessment and its relationship with e-learning satisfaction and emphasized the academic integrity aspect of online course delivery. Indeed, the effectiveness and the quality assessment method influence the satisfaction of online students (Martín Rodríguez et al., 2019). According to Mama-Timotheou (2015), the perception of the students is that they could receive the same grades with face-to-face teaching. In the online environment, the traditional assessment method of a single exam at the end of the course is not considered sufficient or fair. Students seem to prefer and are more satisfied with periodic assignments and coursework that would allow for interaction with their professors and for a better understanding of both the academic material of the course and the assessment form (Jung, 2012; Senel & Senel, 2021). In recent studies, the students showed a positive preference for the online assessment method (Liaqat, 2021) while online assignments were as valid and reliable as face-to-face assessments (Martín Rodríguez et al., 2019). Overall, students who are considered to have been assessed fairly tend to score higher in satisfaction (Benito et al., 2021).

Based on the review of the literature as discussed above, all of these variables — the quality of SOAL, quality of course design, the responsiveness of the instructors, institutional preparedness, infrastructure available, and the fairness of evaluation system — affect directly and positively the student satisfaction with SOAL. To relate the role personality plays in students' satisfaction with SOAL, it is considered important to firstly review the Big Five personality traits, which include openness, conscientiousness, extraversion, agreeableness, and neuroticism. This theoretical model comprises the fundamental structure of human personality.

Openness to experience is a human trait that refers to a curious person, creative, adventuresome with a vivid imagination that has new ideas. Individuals with this trait have lack of concentration, are not predictable, love taking risks, and appreciate art (Friedman & Schustack, 2016; Sahinidis, Frangos, & Fragkos, 2013). In addition, this personality characteristic is usually related to high individual performance both in academic studies and in

the workplace environment (Zhao & Seibert, 2006). Conscientiousness is the personality trait that describes work discipline, organization, self-control, responsibility towards others, and acceptance of the rules (Zhao & Seibert, 2006). Individuals with this trait are reliable, act with dignity, are persistent, well organized, and attentive (Toegel & Barsoux, 2012; Sahinidis & Tsaknis, 2021). Extraversion is the personality trait that refers to interpersonal skills, describes the satisfaction and creation of positive emotions by external factors related to sociability, social acceptance, and recognition (O'Donoghue & Rabin, 2000). Individuals with this personality characteristic are warm, approachable, energetic, social, confident, ambitious, and search for stimulation through communication with others (Sahinidis et al., 2013). Agreeableness is a trait that describes the behavior toward others, is an optimistic view of human behavior. Individuals with this personality characteristic are modest, unselfish, collaborative, trustful, avoid conflicts and show kindness and interest in the needs of others (Sahinidis, Tsaknis, Gkika, & Stavroulakis, 2020). Individuals with low levels of this trait are unscrupulous, selfish, and suspicious (Toegel & Barsoux, 2012; Sahinidis & Tsaknis, 2021). Neuroticism is a personality trait that describes psychological stress and negative emotional arousal (Friedman & Schustack, 2016). Individuals with this trait have low levels of emotional stability, suffer from depression, stress, have negative feelings, are usually angry, and are emotionally sensitive. Also, it is noted that individuals with low emotional stability can be either insecure or very dynamic. In many cases, these unstable emotions are related to their dynamism (Zhao & Seibert, 2006; Sahinidis et al., 2020; Toegel & Barsoux, 2012).

The literature has not addressed yet the existence or not of the relationship between the Big Five personality traits and the students' satisfaction with SOAL and therefore there is a need for more research in order to shed some more light on the nature of the correlation between the student personality based on the Big Five model and their satisfaction with SOAL (Cohen & Baruth, 2017; Bolliger & Erichsen, 2012). It is the aim of this study to examine the existence of this relationship analyzing the research data and findings in different contexts to produce reliable and usable results for further studies.

3. METHODOLOGY

An in-depth review of the literature was initially conducted in order to identify the different factors involved in order to investigate the complex relationship between personality and student satisfaction with SOAL. After setting up the scope and orientation of the proposed study and given its complexity, the appropriate quantitative research method was selected in the form of an online survey. For the purpose of this research, an anonymous questionnaire was delivered to undergraduate business students studying at a public university in Athens during the first spring lockdown period of 2020 (March to April). There were overall

555 undergraduate business students responding to the questionnaire. The sample of the respondents was a convenience one representing more than three-quarters of the students registered in the class, one given also the fact that the resources available were limited at the time. We expect that this size sample will be adequate for reliable statistical analyses in order to produce valid and coherent conclusions (Tsaknis & Sahinidis, 2020). For the assessment of the Big Five personality traits (openness to experience, conscientiousness, extraversion, agreeableness, neuroticism) a 30-item survey question of a 7-point Likert scale was used. Overall student satisfaction with SOAL was measured with a 5-item survey question using a 7-point Likert scale. Factor analysis was conducted on the research data in order to reduce the total number of Big Five personality variables into fewer numbers of factors representing the five factors of the Big Five personality traits (openness to experience, conscientiousness, extraversion, agreeableness, neuroticism) and the critical factors of the overall satisfaction with SOAL). For each factor derived from the factor analysis and for each survey question, the corresponding new variables were calculated as the average of the questions corresponding to each subscale. Furthermore, multiple regression analysis was used with the five personality traits as independent variables and overall satisfaction with SOAL as a dependent. Cluster analysis was also conducted which divided our sample and indicated that the emphasis should be placed on personality traits when we measure satisfaction with SOAL. The data were empirically tested using the SPSS Statistics software version 24. To summarize, the methods applied in this paper are factor analysis, regression, and cluster analysis. Another method that could be suitable for conducting this research is structural equation modeling.

4. RESULTS

The total sample of the study (n = 555) consisted of 326 (59%) females and 229 (41%) males. Factor analysis revealed the structure of the observed correlations and determined the groups of variables that have a high correlation of the Big Five personality factors and satisfaction with SOAL variables (openness to experience, conscientiousness, extraversion, agreeableness, neuroticism, overall satisfaction with SOAL) as shown in the table below (Table 1). KMO and Bartlett's test examines homoscedasticity and shows that the research data were adequate for this analysis (KMO = 0.808, $x^2 = 4262$, Bartlett's test significance < 0.001). The Cronbach's alpha reliability test was used to measure the internal consistency of the research data and conducted for the questions of each Big Five factor and student's satisfaction with SOAL variables. The results have shown that the alpha coefficient for openness is 0.79, for conscientiousness is 0.75, for extraversion is 0.75, for neuroticism is 0.7, for agreeableness is 0.57 and for overall satisfaction with SOAL is 0.83.

Table 1. Structure of the variables

Big Five personality test	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism	Overall satisfaction with SOAL
"I am authentic with new ideas"	0.63					
"I have a vivid imagination"	0.78					
"I am Inventive"	0.75					
"I like to play with ideas"	0.81					
"I do my job carefully"		0.67				
"I am reliable"		0.82				
"I work efficiently"		0.81				
"I talk too much"			0.66			
"I am sociable"			0.68			
"I start conversations"			0.80			
"I feel comfortable in the crowd"			0.71			
"I sympathize with others feelings"				0.79		
"I have a soft heart"				0.50		
"I treat with kindness"				0.80		
"I worry about things"					0.63	
"I am not calm"					0.81	
"I am stressed out easily"					0.57	
"I get upset easily"					0.79	
"Quality of the synchronous online academic learning"						0.76
"Quality of the course design"						0.84
"Responsiveness of the instructors"						0.80
"Institutional preparedness infrastructure and support"						0.69
"Fairness of the evaluation system"						0.72

In the following table (Table 2) the descriptive statistics (mean, std. deviation, variance) of the six factors of total research data are demonstrated while the results show that all the variables are normally distributed regarding the values of kurtosis and skewness [−2, +2].

Table 2. Descriptive statistics of the total sample

Factors	N	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
					Statistic	Std. Error	Statistic	Std. Error
Openness	555	5.006	1.038	1.077	-0.217	0.104	-0.170	0.207
Conscientiousness	555	5.789	0.840	0.705	-0.605	0.104	0.058	0.207
Extraversion	555	4.293	1.198	1.434	-0.082	0.104	-0.330	0.207
Agreeableness	555	5.538	1.074	1.154	-1.031	0.104	1.539	0.207
Neuroticism	555	3.678	1.118	1.250	0.184	0.104	-0.332	0.207
Overall satisfaction	555	4.743	1.227	1.505	-0.516	0.104	-0.171	0.207

Table 3 represents the model summary where the overall regression model was indeed significant. In particular, the results indicated that 14.6% of the variance in the dependent variable (overall satisfaction with SOAL) is related to the independent variables (openness to experience, conscientiousness, extraversion, agreeableness, neuroticism) (F = 18.704, p < 0.01).

Table 3. Model summary

Model	R	R^2	Adjusted R^2	Std. error of the estimate	Change statistics				
					R^2 change	F change	df1	df2	Sig. F change
1	0.382a	0.146	0.138	1.13903	0.146	18.704	5	549	0.000

Note: a. Predictors: (Constant), neuroticism, agreeableness, openness, extraversion, conscientiousness.

Table 4 indicates the predictive ability of the Big Five independent variables (that comprise the Big Five personality traits), in terms of overall satisfaction with SOAL. Openness and conscientiousness have a positive and statistically significant relationship with overall satisfaction with SOAL. All other variables (extraversion, agreeableness, neuroticism) have not demonstrated statistically significant results. The variable that affects overall satisfaction with SOAL to the greatest extend is conscientiousness.

Table 4. Coefficients

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.357	0.485		2.799	0.005
	Openness	0.265	0.054	0.224	4.927	0.000
	Conscientiousness	0.310	0.065	0.212	4.747	0.000
	Extraversion	0.028	0.044	0.027	0.633	0.527
	Agreeableness	0.024	0.047	0.021	0.505	0.614
	Neuroticism	0.003	0.045	0.003	0.074	0.941

Note: a. Dependent variable: Overall satisfaction.

Finally, cluster analysis (Table 5) divided the research data (sample) into two groups. The first group consisted of 287 students whose mean of overall satisfaction with SOAL was 5.17 while the second group consisted of 268 students whose mean of overall satisfaction with SOAL was 4.28.

This analysis revealed that students with higher levels of overall satisfaction with SOAL have higher levels of extraversion, conscientiousness, openness, and agreeableness, but demonstrated lower levels of neuroticism than the students with lower levels of overall satisfaction with SOAL.

Table 5. Cluster analysis

TwoStep cluster	Cluster 1		Cluster 2	
	N	Mean	N	Mean
Openness	287	5.49	268	4.49
Conscientiousness	287	6.18	268	5.37
Extraversion	287	4.94	268	3.6
Agreeableness	287	5.99	268	5.05
Neuroticism	287	3.18	268	4.22
Overall satisfaction with SOAL	287	5.17	268	4.28

The findings above indicate the emphases that need to be placed on personality traits when we measure satisfaction with SOAL. Institutions, teachers, and policymakers taking into consideration these findings will be able to create better educational programs that will fit better the needs of their students and will maximize their satisfaction.

5. DISCUSSION

In recent years, the concept of online student satisfaction has received growing attention in academic (Cohen & Baruth, 2017), but there are no research studies yet that addresses the nature of the existence of the relationship between personality and students' satisfaction with online learning environment (Downs, 2019; Sahinidis & Tsaknis, 2021). The wide use of SOAL in higher education was indeed inevitable due to COVID-19 pandemic lockdowns. Students' satisfaction is considered one of the most significant variables continuing using synchronous e-learning in academic in the future (Puška et al., 2021). It is also worth noting that online learning may not be suitable for every student because of their varying personalities. It is, therefore, critical to identify the characteristics of the students that have high levels of satisfaction with SOAL because this can possibly maximize the utility of the academic programs by generating satisfied students.

For the purpose of this research, an anonymous questionnaire was delivered to undergraduate business students studying at a public university in Athens during the first spring lockdown period of 2020. The sample of 555 students was a convenience one representing more than three-quarters of the students registered in the class. The findings of the current research study revealed that, apart from other important factors, such as the quality of SOAL, the quality of course design, the responsiveness of the instructors, the institutional preparedness, the infrastructure available, and the fairness of the evaluation system, there is also a need to emphasize on personality traits when we measure students' satisfaction with SOAL. The results of the study suggest that there is a relationship between the Big Five model and the overall satisfaction of academic students with SOAL. In particular, openness and conscientiousness have a positive and statistically significant relationship with overall satisfaction with SOAL while the other three Big Five variables — extraversion, agreeableness, neuroticism — did not

demonstrate statistically significant results. The variable that affects overall satisfaction with SOAL to the greatest extend is conscientiousness. Furthermore, the results demonstrated that is likely that students with higher levels of overall satisfaction with SOAL have higher levels of extraversion, conscientiousness, openness, and agreeableness. The research evidence about the personality traits that affect satisfaction with SOAL may help to the successful course designs and will lead to a higher satisfaction level of the students (Cohen & Baruth, 2017).

6. CONCLUSION

The aim of this study was to identify the role personality plays in students' satisfaction with SOAL, especially during the COVID-19 pandemic. According to the literature, overall students' satisfaction with SOAL depends on a number of factors including, but not limited, to the quality of SOAL, the quality of the course design, the responsiveness of the instructors, the Institutional preparedness, the infrastructure available, and the fairness of the evaluation system. To fully explore the students' satisfaction with SOAL it is important though to examine another important aspect that relates to students' personalities. This study investigated the existence of the relationship between personality and students' satisfaction with SOAL and revealed that some of the Big Five personality factors have a positive and statistically significant correlation with overall satisfaction with SOAL. In particular, the findings of the study indicate that openness and conscientiousness, two of the Big Five personality traits, present a positive relationship with overall satisfaction with SOAL. In addition, the factor with the strongest association with overall satisfaction with SOAL is conscientiousness. The findings also suggest that students with higher levels of overall satisfaction with SOAL present higher levels of openness, conscientiousness, extraversion, and agreeableness but lower levels of neuroticism. This research study could make a remarkable contribution to the literature as relevant studies regarding the relationship between personality and students' satisfaction with SOAL are scarce and have been limited thus far. However, there is a need for further research studies to be conducted in order to confirm the validity of the research findings and contribute to the generalization of the conclusions.

This research study has a number of limitations that should be taken into consideration. One limitation is the fact that the findings are based on a particular sample, business students of a University in Athens that, as a result, are not representative of all higher education students. In addition, another limitation is that the sample comprises only Greek students and does not take into consideration all the different ethnic backgrounds (Tsaknis & Sahinidis, 2020). Finally, the regression model analyzed for the current study does not include demographic characteristics of the sample such as age, gender, and year of study.

Institutions, teachers, and policymakers taking into consideration these findings will be able to create improved educational programs that will fit better the needs of their students and will maximize their satisfaction. Future studies could test the validity of the findings reported here, in different contexts and research the potential existence of latent variables which may be confounding the relationships between personality and students' satisfaction with SOAl (Sahinidis & Tsaknis, 2021; Sahinidis & Tsaknis, 2020).

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