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Impact of Personality Traits and Information Privacy Concern on E-Learning Environment Adoption during COVID-19 Pandemic: An Empirical Investigation

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Abstract: In response to the COVID-19 pandemic, teaching and learning processes have experienced significant changes. Higher education institutions in Taiwan employed crisis intervention measures to instantly implement unified learning methods such as online teaching and learning. However, students had no time to prepare. Thus, the study explored the relationship between personality traits and the belief in conspiracy theory as antecedents of students' concern for information privacy (CFIP) and the subsequent relationship between students' CFIP and behavioral intention to report their personal information to e-learning service providers concerning the adoption of the e-learning environment. This cross-sectional study employed a questionnaire to accumulate data from university students in Taiwan. A total of 285 valid responses were used for the final analysis. The research framework was evaluated by structural equation modeling (SEM). The results suggest the proposed model explains about 66.4% of the variance of behavioral intention ($R^2 = 0.664$). The findings support that four personality traits—agreeableness, openness to experiences, conscientiousness, and neuroticism—and belief in conspiracy theory significantly influenced students' CFIP. However, concerning extraversion, an insignificant path coefficient was reported. CFIP mediates the relationship between belief in conspiracy theory and behavioral intention. E-learning service providers should consider these determinants in improving and endorsing principles concerning e-learning environment adoption.

Keywords: COVID-19 pandemic; personality traits; concern for information privacy; e-learning environment; belief in conspiracy theory



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1. Introduction

The novel coronavirus (COVID-19) pandemic has swept the globe since December 2019 and imposed several changes on the general population in many aspects of their lives, including their learning behavior [1]. Several countries imposed numerous preventive measures to restrict its spread (i.e., quarantine, nationwide lockdown, social isolation), significantly influencing individuals' way of living and resulting in several behavioral outcomes [1,2].

The COVID-19 pandemic severely debilitated educational institutions worldwide in teaching and learning ways [1]. Almost every country forcefully shut down educational institutions entirely or partly for a long time, critically affecting students' learning intentions [3,4]. As education is the backbone of developing students and a sustainable society, several countries adopted different methodologies such as online teaching, video graphic teaching, etc., to continue teaching and learning practice during the COVID-19 pandemic [1,5].

A sustainable learning environment influences students' learning motivation and instructors' teaching intention [1]. Previous studies found that a sustainable learning

environment develops pupils' intrinsic motivations, indirectly developing their intention to attain the intended goals [1,5,6]. Dutta et al. [1] suggested that higher education institutions are mainly responsible for creating a positive, sustainable learning environment to develop students' intentions. They also indicated that pupils and instructors benefit from mutual support, revised course work, and a sustainable learning environment.

Higher education institutions (HEIs) in Taiwan, like in other countries, implemented several changes to continue ongoing learning to counter the COVID-19 pandemic [1,7]. HEIs quickly instructed higher education institutions to adopt online teaching instead of traditional face-to-face teaching [8]. However, most pupils and instructors face difficulties in adopting it as they have no prior experience and need to spend a lot of time getting familiar with the technical jargon required for online teaching and learning [6,9,10]. Thus, HEIs adopted strategies to carry out the informative and coherent usefulness of e-learning for both students and instructors, which improved students' motivation to participate in online learning [9,10].

Electronic learning (e-learning) is considered a digital transformation of the traditional teaching medium, where both teaching and learning deliver digitally [1,11]. It also offers an interactive communication environment between instructors and students [5,10,12]. However, the e-learning system is not new. It has been present for a long time [13]. Previous studies indicated that despite the numerous advantages of e-learning, such as enhancing student–instructor interactions, enhancing both pupils' and instructors' enablement, training competence, and organization, e-learning is slow for several reasons [1,5,10,12,13]. Bizerril et al. [14] found that instructors perceived that they are not entirely prepared to deliver instruction online. Dutta et al. [1] found that the positive learning effect influences students to adopt e-learning even during the pandemic. However, the COVID-19 pandemic brought a new renaissance in delivering instruction. HEIs in Taiwan decided to implement a sustainable e-learning environment in Taiwan to counter the pandemic and create an environment for an extended period, the post-pandemic [1]. However, students need to adopt an e-learning environment suddenly, which changes their mental reasoning and may result in modifications in learning development and outcome [1]. Thus, the current study explored students' psychological and cognitive differences in e-learning adoption during the COVID-19 pandemic to understand these differences.

It is well documented that individuals' CFIP revolves around technology innovation. As the organization adopted new technologies for exchanging individuals' information, the concern for information privacy started to accelerate [15,16]. The increasing number of requests for information and intentionally or unintentionally disclosing personal information to third parties increases individuals' privacy concerns regarding storage and access to information [16]. Additionally, educational research has raised concerns about students' psychological concerns as they have had to suddenly switch to online learning from a face-to-face system, which raises a privacy concern among students. Thus, the e-learning environment has triggered a wave of privacy concerns as students feel concerned about their privacy by such services to varying degrees [17,18].

Personality traits are an individual's consistent personality across circumstances [19]. A review of technology adoption literature recommended that individuals' personality traits significantly influence technology adoption behavior [20,21]. Thus, considering that personality traits are an important factor influencing a wide variety of human behaviors and choices, it is crucial to explore their influences on e-learning environment adoption [22,23].

The current study aimed to explore the relationship between students' differences in terms of personality traits and the belief in conspiracy theory as antecedents of their concern for information privacy and the subsequent relationship between students' concern for information privacy and behavioral intention to report their personal information concerning the e-learning environment adoption. We are confident that the current study findings can provide insights into how students can leverage the e-learning environment to manage the associated concerns.

The rest of the paper is structured as follows: Section 2 describes the existing theory on privacy concern and educational technology and how the Big Five personality traits influence students' privacy concern, especially during the COVID-19 pandemic; Section 3 presents how questionnaires were designed and the data collection process; Section 4 presents empirical findings; Section 5 discusses critical findings; Section 6 exhibits the conclusions of the study; and finally, implications of the current study are presented in Section 7.

2. Theoretical Foundation and Research Model

2.1. Privacy Concern and Educational Technology

Warren and Brandies [24] defined the need to protect people's rights in their landmark article, *The Right to Privacy*. Privacy refers to a person's ability to control others' access to personal information [24]. Privacy is violated when individuals cannot maintain their communication with social and physical environments [25,26]. However, privacy concerns are not a new phenomenon; these incidents repeatedly evolve when an individual perceives a threat from an innovative information technology (I.T.) that develops the surveillance, storage, retrieval, and communication of personal information [27,28].

With the rapid advancement of educational technologies, the exchange of students' information has become more convenient [25]. E-learning service providers have better and more sophisticated ways to access and collect personal information; therefore, gaining a student's personal information has become more accessible [27]. As a result, privacy concerns about personal information accelerate tremendously among students as a considerable amount of personal information is interchanged, stored, and shared [28]. Different countries introduced privacy guidelines and standards to guarantee students' personal information is fully protected [29,30]. Despite these attempts, many educators and pupils are still reluctant to use the potential benefits of an e-learning environment due to privacy concerns. According to the study findings by Dienlin et al. [31], people who were more concerned about their online privacy than others also shared slightly less personal information and had substantially more negative attitudes toward information sharing (between-person level). Thus, an inclusive interception of the privacy dynamics concerning the digitization of personal information in adopting an e-learning environment can only be achieved by looking at the factors that influence students' attitudes toward e-learning environment use.

2.2. Big Five Personality Traits

According to previous studies, personality variables are significant in decision-making and information system (I.S.) literature. They clarify our understanding of individuals' information processing styles, attitudes, and behaviors [32–34]. On the other hand, as information technology is becoming more and more personalized [35] nowadays, personality variables can impact how they perceive security [33]. According to the protection motivation theory (PMT), individuals' personality traits influence their perception of the threat, exploring their attitude toward adoption [32–34].

Previous studies have proposed that personality traits might impact CFIP and investigated consumers' responses to corporate use of their personal information [34,36]. Personality traits are used in many studies but have led to inconsistent results until the late 1980s. Goldberg [36] presented the Big Five framework, including five personality traits—agreeableness, conscientiousness, neuroticism, extraversion, and openness to experiences—collectively accounting for the significant dimensions upon which individuals differ and which predict essential outcomes. Thus, the present study incorporated personality traits with the CFIP model to investigate and improve the predictability of how individual traits relate to CFIP in a personal information exchange context that requires self-disclosure of personal information.

2.3. Concern for Information Privacy

Although PMT has been primarily used to define different health-behavior issues such as cancer or smoking [32], the threat's severity is directly proportional to life. Generally,

the threat is outlined as a cause of danger and can bring harm either physically or mentally to an individual. That can also be applied to an increasingly personal technology, whose damage or vulnerability can match that of an emotional risk such as stress [37]. In the context of education, the extent to which e-learning system providers collect and store students' personal information, use that information for other purposes, and allow third parties who are unauthorized to access the information is likely to contribute to the overall level of CFIP [38]. In other words, an individual considers it highly intrusive when he/she perceives that another individual can access his/her personal information discreetly [39]. As collecting personal information about students becomes a usual practice for e-learning service providers, students find it increasingly difficult to protect their information from personal privacy intrusions [40]. Students are likely to experience an extensive range of emotional distress, for example, anxiety, worries, and concern, but their usage of technology could reasonably be questioned, becoming more stressful.

In terms of an individual's concern for information privacy (CFIP), a 15-item instrument that included four dimensions—collection, secondary use, unauthorized access, and errors—was developed by Smith et al. [33] to measure and identify the multi-dimensional nature of an individual's CFIP. According to this instrument, individuals with considerable information privacy concerns identify that (1) unnecessary data are collected; (2) personal information is exercised for undisclosed purposes; (3) personal information is not satisfactorily protected from unauthorized access; and (4) most of the data are inaccurate [33].

To the best of the authors' knowledge, no study has validated that CFIP fully mediates the relationship between the belief in conspiracy theory and the intention to adopt an e-learning environment. If the result holds, the e-learning service providers can develop strategies and policies to reduce students' concerns and improve their behavior to provide personal information to receive better service. Thus, this current result is significant in the context of educational technology adoption, where providing personal information is indispensable for receiving better service.

2.4. Belief in Conspiracy Theories

Conspiracy theories explain significant events that comprise covert plots by authoritative malevolent groups [41]. Commonly accepted conspiracy theories regarding the intention of e-learning adoption contend that the e-learning environment is detrimental, but this fact is covered to maintain profits [42]. A conspiracy belief is the undeserved hypothesis of a conspiracy when other clarifications are more likely [43]. Previous findings indicate that belief in conspiracy negatively influences individuals' adoption intention except in social and political domains [43,44]. Conspiracy beliefs about the source and adoption of technology had a negative effect on attitudes toward preventative measures and cohesion to behavior programs [45]. Concerns about the safety of personal information and innovative technology adoption were related to a drop in adoption rates in several countries [44].

3. Hypothesis Development

Highly agreeable individuals trust others and are less suspicious of their environment [32]. Moreover, agreeable individuals may consider that disclosing personal information could influence others' opinions about them, which might influence their social familiarity and concord [35]. Therefore, an individual with this trait is more considerate about their personal information than others.

Hypothesis 1 (H1). *Agreeableness is positively associated with students' CFIP.*

Junglas et al. [35] defined intellect as an individual's willingness to experience new things and receptiveness to new ideas. Individuals use their intellect and logic to evaluate and realize new situations. It could be argued that people high on this trait recognize the risks better and analyze them more logically to take proper action to mitigate them as required [33]. Therefore, such individuals generally do not have much concern about their

information privacy. Moreover, such people better understand the benefits of disclosing personal information. Thus, it is expected that a higher measure of this trait is related to lower levels of personal information concern.

Hypothesis 2 (H2). *Openness to experiences is negatively associated with students' CFIP.*

Individuals who are emotionally unstable or neurotic are prone to be anxious, impatient, nervous, high-strung, and tense [35], tend to experience more threats and anxieties [33], and evaluate almost all aspects of life as less optimistic and stressful compared to emotionally stable individuals. As a result, due to their problematic nature and tendency to focus on adverse events and possible losses [34–36], neurotic individuals are likely to be worried and concerned about privacy. They evaluate the risks rather than the potential benefits of disclosing personal information.

Hypothesis 3a (H3a). *Neuroticism is positively associated with students' CFIP.*

Hypothesis 3b (H3b). *Neuroticism is positively associated with students' belief in conspiracy theory.*

Hypothesis 3c (H3c). *Neuroticism is positively associated with students' behavioral intention.*

Conscientious individuals are competent, accomplished, logical, and foresighted [35]. They are also less likely to be risk takers and less willing to get involved in risky situations [33]. As a result, highly conscientious individuals are more attentive to their personal information than others. Since they tend to give attention to detail and consider different aspects of a decision, they can likely pinpoint the potential risk involved in disclosing personal information [34,36]. Furthermore, individuals with this trait consider personal information privacy invasion as risky behavior.

Hypothesis 4a (H4a). *Conscientiousness is positively associated with students' CFIP.*

Hypothesis 4b (H4b). *Conscientiousness is positively associated with students' BCT.*

Hypothesis 4c (H4c). *Conscientiousness is positively associated with students' behavioral intention.*

Extraverted individuals are inclined to experience positive life events. They are energetic, outgoing, and dominant in social situations [35]. They also tend to display riskier behavior due to their need for arousal [32] and to be more competitive, aggressive, cheerful, and self-effectual than their introverted counterparts [33]. As a result, it is anticipated that extraverted individuals should be less likely to be concerned about disclosing their personal information [34]. According to the study by Junglas et al. [35], extroverted individuals could have a lower level of information privacy concerns, thus likely to achieve their higher need for social interaction. Therefore, we anticipate that extraverted individuals should be less likely to be concerned about disclosing their personal information.

Hypothesis 5a (H5a). *Extraversion is negatively associated with students' CFIP.*

Hypothesis 5b (H5b). *Extraversion is positively associated with students' BCT.*

Hypothesis 5c (H5c). *Extraversion is positively associated with students' behavioral intention.*

Belief in conspiracy negatively contributes to individuals' CFIP. Negative statements about service efficiency generally influenced educational technology uptake [43]. A conspiracy belief is the unnecessary supposition of a conspiracy when other explanations are more likely [42]. Conspiracy beliefs about the efficiency of the technology had a negative impact on behavioral intention [45]. Fears about the CFIP contributed to a negative intention to adopt a novel technology [41]. A growing body of research shows that belief in a conspiracy can negatively affect behavior [42,44,45].

Hypothesis 6 (H6). *Belief in conspiracy theory negatively influences students' CFIP.*

Hypothesis 7 (H7). *Belief in conspiracy theory is negatively associated with behavioral intention.*

Smith et al. [34] hypothesized that CFIP mediates the relationship between organizational information privacy concern and behavioral intentions. This finding was confirmed, while CFIP was verified as a second-order factor model in a nomological network [36]. Thus, the present study posits, in agreement with the hypothesized effect developed by previous studies [32,34,36], that this relationship will hold positive in educational information technology use.

Individuals anxious about using educational technology are less trusting of service providers with whom they share their personal information. This is, to some extent, because previous literature on information privacy suggested that online service providers do not provide appropriate privacy protection to their users [19]. However, previous studies indicated that users are less concerned with processes than with better understanding the related risks and how to remove them [35,36]. Thus, individuals worried about using educational technologies are more informed about how to protect their personal information when sharing information with service providers. They are potentially less concerned about sharing personal information with providers, interpreting that such information will be used to provide better service [19].

Hypothesis 8 (H8). *CFIP is negatively associated with behavioral intention.*

Hypothesis 9 (H9). *The relationship between belief in conspiracy theory and behavioral intention is fully mediated by CFIP.*

These hypotheses are proposed in the research framework in Figure 1.

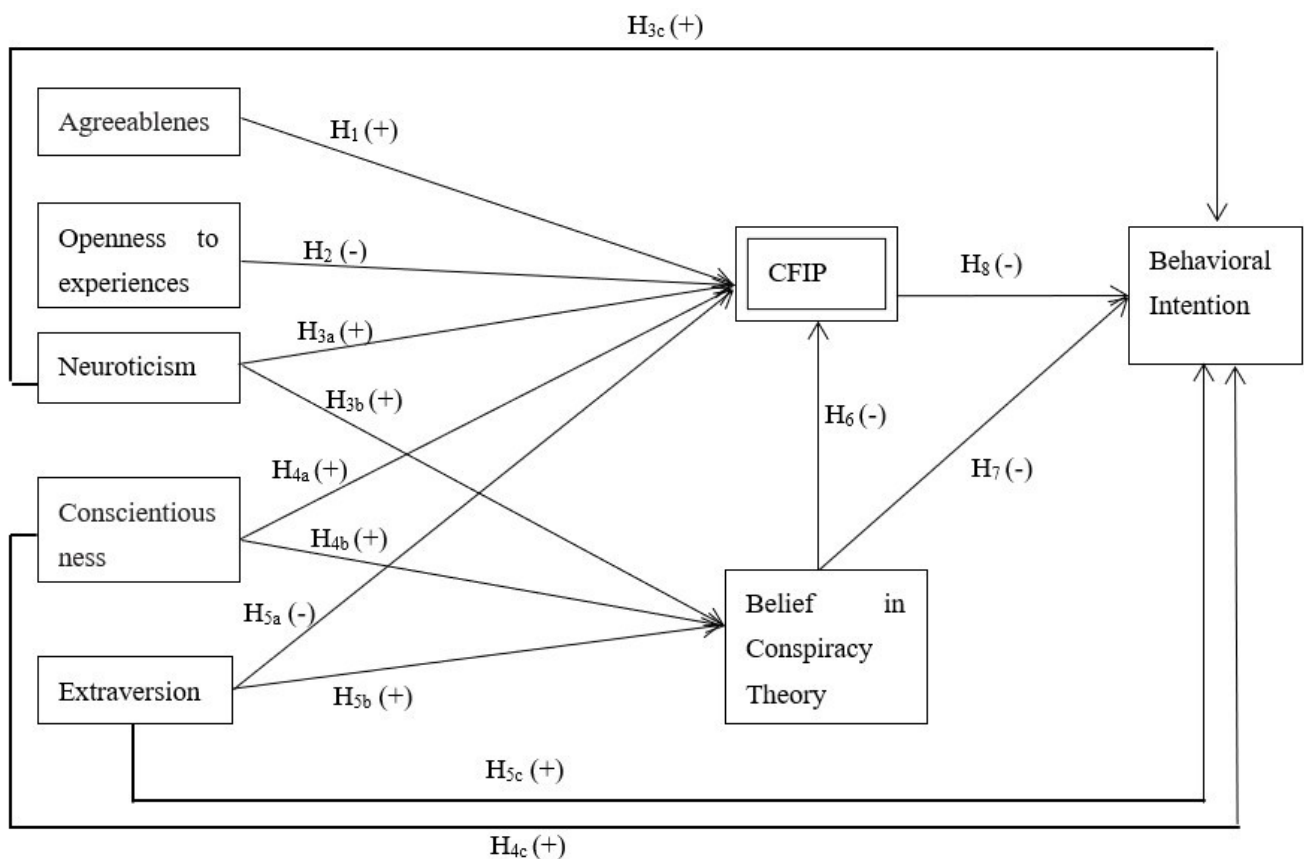


Figure 1. Research framework.

4. Materials and Methods

4.1. Questionnaire Design and Data Collection

A mixed methodology was employed to develop and endorse the current research model. A literature review and comprehensive interviews with the experts in educational technology use were carried out to develop the study model. Finally, the proposed model was tested using a survey methodology.

The instrument used for the current study included three sections. In the first section, the cover page, the purpose of the study, and a definition of CFIP were provided. The second section regarded respondents' basic information, including their age, gender, and educational level. The third section contained indicators regarding personality traits, belief in conspiracy theory, CFIP, and adoption intention (42 items). The respondents were instructed to use a five-point Likert scale to assess each item, ranging from 1 for strongly disagree to 5 for strongly agree.

A preliminary list of measurement items was developed and is summarized in Appendix A (Table A1) after reviewing literature regarding personality traits, CFIP, and belief in conspiracy theory. A pre-test and a pilot test were carried out to verify the instrument. Pre-testing is not well organized despite its importance for instrument validity [46]. Many experts acknowledge the practice is intuitive and informal [47]. Lack of guidance also applies to sample size. Previous studies did not address a pre-test's sample size [48,49]. Others cite 5–8 participants [50] or as many as possible [47]. However, little rationale is provided for these numbers beyond the availability of resources; most authors describe what is usually done but do not provide the reasons for it. Thus, seven experts were used for the pre-test. Out of seven experts, three professors are from information management (IM), and four doctoral scholars are from the information science field. The content of the items was modified according to the expert group to improve the reliability and validity of the items. The pilot study involved fifty respondents self-selected from the study population. Respondents were asked to indicate the format, appropriateness, wording of items, and the instrument's length. Some items were revised to characterize the survey's intention based on the respondents' pre- and pilot test replies. The reliability of all items was satisfactory (Cronbach's alpha is above 0.80), and items loaded in the confirmatory factor analysis are 0.70 or more. Therefore, the instrument has endorsed reliability and content validity. The pilot study result is reported in Appendix B (Table A2).

4.2. Research Setting

The target population for the present study was Taiwanese. We used a convenience sampling approach as the survey instrument. It is cost-effective and has been considerably used in information system (IS) research [51,52]. All participants were provided with consent forms and information sheets that mentioned the present study's objective. Respondents were also aware of the option to quit participation during the study.

Because of the speedy intensification of COVID-19 cases, Taiwan's colleges and universities adopted online teaching instead of conventional face-to-face teaching. As the present investigation explored the learning technique and acceptance of pupils influenced by the adjustment in the studying environment during the COVID-19 pandemic, the purposive sampling method was employed to collect data. Pre-defined conditions were used in terms of the selection procedure of the study participants to meet the study purpose more clearly. Primarily, the students had to have experience in taking courses in conventional classroom learning. Secondly, the students had to have experience operating digital mediums such as laptops, multimedia phones, iPads, etc., to confirm the basic technology literacy level required for the e-learning environment. Thirdly, students had to use digital mediums not less than 12 h a week for e-learning purposes. Students who met the conditions mentioned above were probable contributors to the present investigation.

5. Results

5.1. Demographic Data

The current study collected 290 responses, of which 5 were considered unusable due to incomplete answers. Therefore, we incorporated 285 valid responses for the final analysis. The demographics of respondents are shown in Table 1. It indicates respondents are distinct in gender, age, and educational level.

Table 1. Sample demographics.

Item	Option	Count	Percentage %
Gender	Male	145	50.88
	Female	140	49.12
Age	18-24	186	65.26
	25-30	81	28.42
	>30	18	6.32
Education Level	Bachelor	172	60.35
	Associate Degree	82	28.77
	Master	31	10.88

5.2. Tests of the Measurement Model

Reliability was tested using Cronbach's alpha and composite reliability (CR) to measure the model's internal consistency. Table 2 shows Cronbach's alpha of each construct ranged from 0.917 to 0.986, which is well above the suggested value of 0.7 by Hair et al. [53]. CR values of latent factors are above 0.7, recommended by Hair et al. [53], suggesting good reliability and consistency for measurement items of each construct.

Table 2. Measurement model.

Dimension	Items	Loadings	No. of Items	Cronbach's Alpha	Composite Reliability	AVE
CFHIP (2nd-Order Construct)	Collection	0.867	15	0.946	0.962	0.842
	Unauthorized Access	0.921				
	Secondary Use	0.916				
Collection (1st-order construct)	Errors	0.862	4	0.986	0.974	0.856
	COI1	0.924				
	COI2	0.901				
	COI3	0.930				
Unauthorized Access (1st-order construct)	COI4	0.812	3	0.971	0.982	0.917
	UA1	0.898				
	UA2	0.924				
Secondary Use (1st-order construct)	UA3	0.952	4	0.951	0.964	0.908
	SU1	0.926				
	SU2	0.918				
	SU3	0.936				
Errors (1st-order construct)	SU4	0.916	4	0.954	0.968	0.917
	ERR1	0.947				
	ERR2	0.911				
	ERR3	0.937				
Extroversion	ERR4	0.957	4	0.976	0.981	0.891
	EXT1	0.954				
	EXT2	0.928				
	EXT3	0.915				
Agreeableness	EXT4	0.850	3	0.936	0.962	0.926
	AGR1	0.991				
	AGR2	0.982				
	AGR3	0.949				

Table 2. Cont.

Dimension	Items	Loadings	No. of Items	Cronbach's Alpha	Composite Reliability	AVE
Neuroticism	NEUR1	0.978	3	0.957	0.971	0.892
	NEUR2	0.953				
	NEUR3	0.956				
Conscientiousness	CNS1	0.954	4	0.981	0.916	0.891
	CNS2	0.916				
	CNS3	0.973				
	CNS4	0.972				
Open to experiences	INT1	0.947	5	0.958	0.937	0.916
	INT2	0.916				
	INT3	0.959				
	INT4	0.944				
	INT5	0.957				
Belief in conspiracy theory	BCT1	0.965	4	0.917	0.954	0.914
	BCT2	0.944				
	BCT3	0.937				
	BCT4	0.955				
Behavioral intention	BINT1	0.965	4	0.962	0.972	0.906
	BINT2	0.972				
	BINT3	0.817				
	BINT4	0.821				

Convergent validity of the scales was examined by using three standards suggested by Bagozzi and Yi [54]: (1) loadings of each indicator should be higher than 0.7; (2) C.R. should be above 0.7; and (3) the average variance extracted (AVE) of each construct should exceed the variance due to the measurement error of that construct (AVE should surpass 0.50). As Table 2 reports, the factor loading of each item in the measuring model of the current study is well above 0.7. C.R. values range from 0.916 to 0.982. AVE constructs' values range from 0.842 to 0.926, thus meeting each condition for convergent validity.

To test discriminant validity, Fornell and Larcker [55] suggested that the square root of the AVE of the construct should be greater than the estimated correlation shared between the construct and other constructs in the model. Table 3 shows the square root of AVE for each construct was more significant than the correlation values of the construct, thus meeting the condition for discriminant validity.

Table 3. AVE and correlation among constructs.

	CFHIP	EXT	AGR	NEUR	CNS	INT	BCT	BINT
CFHIP	0.91							
EXT	0.34	0.94						
AGR	0.26	0.14	0.96					
NEUR	0.27	0.17	0.15	0.94				
CNS	0.38	0.18	0.21	0.17	0.94			
INT	0.18	0.21	0.08	0.12	0.21	0.957		
BCT	0.16	0.17	0.27	0.16	0.17	0.29	0.95	
BINT	0.31	0.26	0.18	0.28	0.19	0.26	0.34	0.95
Correlations within second-order construct			Collection	Unauthorized Access	Secondary Use	Errors		
Collection			0.92					
Unauthorized Access			0.49	0.95				
Secondary Use			0.64	0.67	0.95			
Errors			0.68	0.71	0.42	0.957		

5.3. Tests of the Structural Model

Figure 2 displays each path’s standardized path coefficients, path significances, and variance (R^2). The four personality traits—agreeableness ($\beta = 0.33$), openness to experiences ($\beta = -0.52$), neuroticism ($\beta = 0.54$), and conscientiousness ($\beta = 0.51$)—and the belief in conspiracy theory ($\beta = -0.24$) significantly influenced and explained 32% of the variance of the CFIP (Figure 2). Hypothesis 5a was not supported.

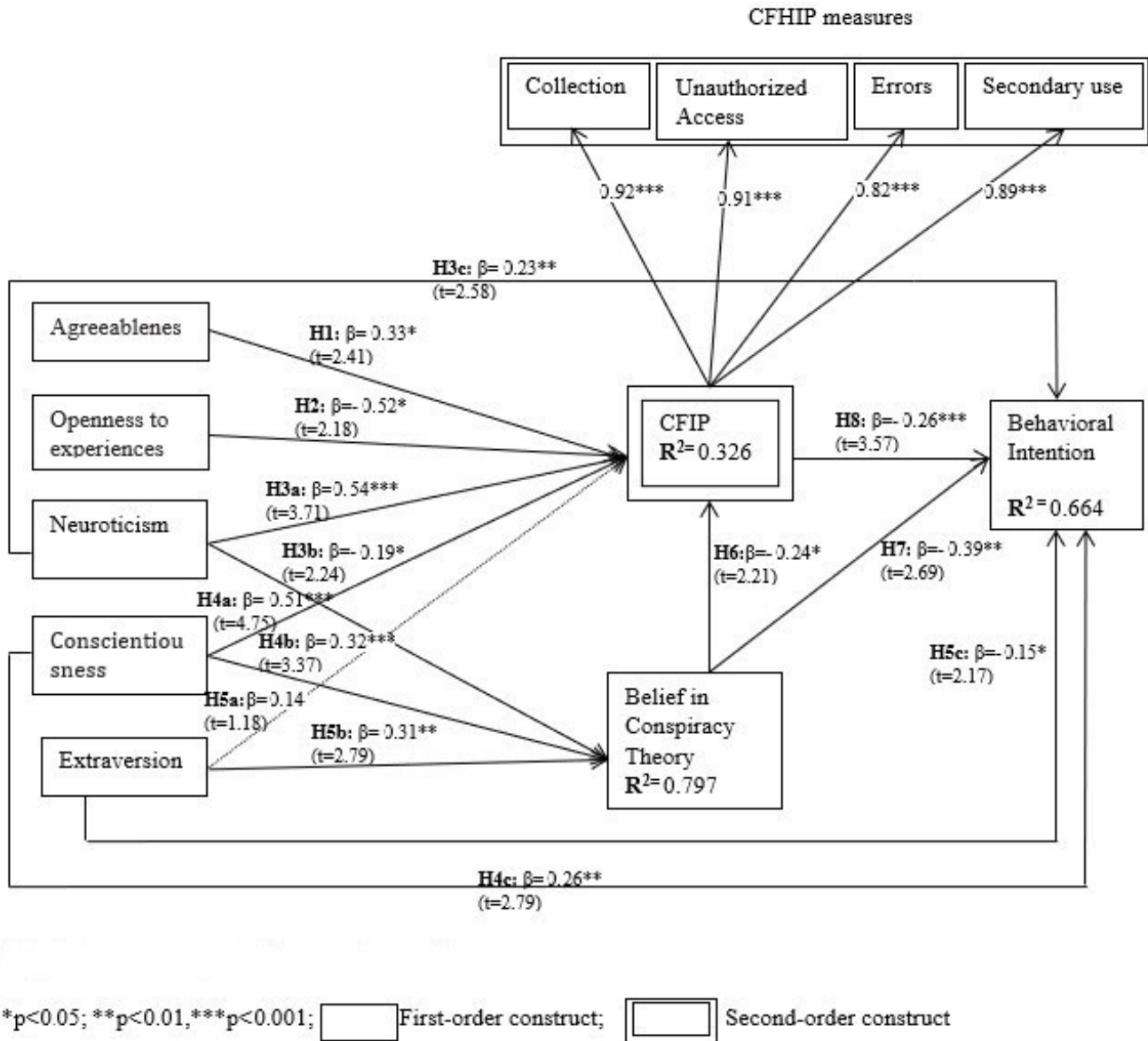


Figure 2. Path Diagram and Casual Relationships.

Personality traits significantly explained 79.7% of the belief in conspiracy theory. Three personality traits, neuroticism ($\beta = -0.19$), conscientiousness ($\beta = 0.32$), and extraversion ($\beta = 0.31$), significantly contributed to the explanation of this variance for the belief in conspiracy theory (Figure 2). Students indicating a lower level of neuroticism and higher levels of extraversion and conscientiousness showed significant degrees of belief in conspiracy theory in adopting an e-learning environment during the COVID-19 pandemic.

The belief in conspiracy theory ($\beta = -0.39$), CFIP ($\beta = -0.26$), and three personality traits, extraversion ($\beta = -0.15$), conscientiousness ($\beta = 0.26$), and neuroticism ($\beta = 0.23$), significantly explain 66% of the variance in behavioral intention (Figure 2). Students who started with a higher degree of conscientiousness and a higher level of belief in conspiracy

theory in adopting an e-learning environment expected significant potential from using the e-learning environment. However, surprisingly, students who had a lower level of extraversion and a higher level of neuroticism were also concerned with the significant effects of adopting an e-learning environment. A summary of the hypotheses' tests is presented in Table 4.

Table 4. Result of hypotheses testing.

Hypothesis	Proposed Hypothesis Relationship	Path Coefficients	t-Statistics	Hypothesis Test Results
H1	AGR → CFIP	0.33	2.41	Supported
H2	INT → CFIP	−0.52	2.18	Supported
H3a	NEUR → CFIP	0.54	3.71	Supported
H3b	NEUR → BCT	−0.19	2.24	Supported
H3c	NEUR → BINT	0.23	2.58	Supported
H4a	CNS → CFIP	0.51	4.75	Supported
H4b	CNS → BCT	0.32	3.37	Supported
H4c	CNS → BINT	0.26	2.79	Supported
H5a	EXT → CFIP	0.14	1.18	Rejected
H5b	EXT → BCT	0.31	2.79	Supported
H5c	EXT → BINT	−0.15	2.17	Supported
H6	BCT → CFIP	−0.24	2.21	Supported
H7	BCT → BINT	−0.39	2.69	Supported
H8	CFIP → BINT	−0.26	3.57	Supported

To test Hypothesis 9, the Sobel test statistic of 3.34, $p < 0.001$, implies CFIP mediates the relationship between the belief in conspiracy theory and behavioral intention. It considerably validates the influence of the belief in conspiracy theory on behavioral intention.

6. Discussion

6.1. Key Findings

Agreeable students, as hypothesized, have a higher sensitivity to their personal information and are more concerned about potential adverse social outcomes of disclosing their personal information to third parties. Similarly, conscientious students characterized by self-discipline and ambition understand better how to take an influential role in getting out of risky behaviors and participate in beneficial ones during the COVID-19 pandemic. Thus, it is considered that they have a better level of CFIP than non-conscientious students.

Neuroticism increases worries about potential negative consequences and sensitivity, and emotionally unstable students are more concerned and fearful about their personal information.

The present study did not find any positive relationship between extroversion and CFIP. An extrovert individual generally enjoys social interactions and actively participates in communication with others. They are open-minded and ready to share their personal information with others. However, study findings indicate even extroverts are less likely to share information online, as unauthorized access to information may cause social stigma and harm their reputation during the COVID-19 pandemic. Additionally, extroverts are more likely to reveal their private information in face-to-face interaction than in the online environment. This finding is significant because it suggests that different personality traits may perform differently in communication environments. Students' CFIP and degree of trust in e-learning providers influence their intention to provide information. These findings align with the Internet consumer trust model and electronic exchange model [56]. However, additional research is required to explore the conclusion further.

With openness to experiences, students are less concerned about information privacy. They use their rationale to understand the environment and are ready to accept new opportunities during the COVID-19 pandemic. They have a better perception of controlling

the risk and know ways to mitigate risk as needed, which gives them the confidence to take the bold decision to receive better service.

Conscientiousness is consistent with the findings of the previous studies [32,36] and is a significant predictor of both belief in conspiracy theory and behavioral intention. The study findings confirm that highly conscientious students have a sense of usefulness and an aptitude to emphasize intentions. Compared to less conscientious students, they can have impressive confidence in their aptitude to select an e-learning environment during the COVID-19 pandemic to attain anticipated results from their decision.

The current study findings show that more extraverted (better inventiveness, confidence, self-reliance in their capability to function and action) and emotional students demonstrate an intense belief in their aptitude to choose an e-learning environment during the COVID-19 pandemic. The positive association between extraversion and openness implies that highly extroverted students determine higher resolution concerning adopting an e-learning environment during the COVID-19 pandemic.

The current findings suggest that high neuroticism (worry and nervousness) or introversion may contribute to students' comprehensive beliefs and potential, which effectively helps achieve their intentions to adopt an e-learning environment during the COVID-19 pandemic. The current study findings also indicate that lower extraversion and higher neuroticism contribute to students' higher expectations regarding the consequences of adopting an e-learning environment. In other words, the present findings suggest that conscientiousness is a significant personality trait for adopting an e-learning environment during the COVID-19 pandemic. However, the conclusions need to be examined further. Due to the insufficient research that has analyzed the contribution of personality traits concerning I.T. adoption during the COVID-19 pandemic [36], there is considerable significance in conducting further research to find reasonable explanations.

The belief in conspiracy theory reflects the uncertainty of provided services consumption on online platforms, and students' belief in a conspiracy theory is negatively related to CFIP. Previous research has also confirmed the correlation between belief in conspiracy theory and I.T. adoption intention [43,44]. The findings suggest that students' psychological state may be linked to how they interact with their current environment and how well they manage their rational perceptions. Students who experience extremely stressful events during the pandemic, such as quarantine or social distancing, are at enhanced risk of developing an adverse concern toward the system. Thus, a negative interaction between Taiwanese and their cognitive perception is predicated on the alignment of their privacy concern and I.T. adoption intention. Additionally, speculation about the long-term lockdown, negative experience of previously used technology, and even efficiency of the current e-learning environment negatively influence students' readiness to share private information. These undesirable opinions disperse as a normative belief among people, which ultimately jeopardizes the system's overall achievement.

6.2. Limitations and Future Research

Despite its substantial outcomes and implications, the current study has a few limitations. First, the implications are based on a single survey with samples from Taiwan. Therefore, researchers must be cautious when simplifying the findings in other online teaching and learning settings. Future studies should use a cross-cultural context to investigate the disparities in antecedents to adoption intention. Second, the comparatively reasonable variance is registered for behavioral intention, only 66.4%, leaving 33.6% unexplained. Therefore, future studies should incorporate other rational considering factors (thinking and feeling), and irrational perceptive aspects (sensing and instinct) could help explain the unexplained variance more clearly.

7. Conclusions

E-learning service providers are increasingly implementing I.T. in providing online teaching and learning during the COVID-19 pandemic. However, a deterring factor in educational I.T. adoption is students' CFIP. The current study explored how students' CFIP is influenced by the Big Five personality traits and the belief in conspiracy theory. As students are the leading user group adopting an e-learning environment, their intention is the primary condition to ensure that the expected benefits will be materialized.

SEM analysis also demonstrated that the model provided meaningful insight and better explanatory power to predict students' intention to adopt an e-learning environment during the COVID-19 pandemic. The current study identified that agreeableness, openness to experiences, neuroticism, and conscientiousness directly influence students' privacy concerns. Belief in conspiracy theory positively impacts students' behavioral intention; CFIP mediates the relationship between the belief in conspiracy theory and behavioral intention. A highly conscientious student desires to participate in the educational technology adoption decision making. A neurotic student has significant sensitivity to his/her private information. Extrovert students are risk takers ready to get and share information in a public meeting. However, findings indicate they are less interested in sharing their personal information online or offline due to social stigma. Intelligent students are ready to share their private information to receive better service.

8. Contributions

8.1. Academic Implications

This study contributes to theory and practice in multiple ways. First, the current study can be considered an early step toward understanding how students' psychological conditions, the belief in conspiracy theory, and privacy concern influence their decision making in adopting a novel e-learning environment. Second, the study instrument provides an overall assessment of the e-learning environment (technology, behavioral, or user's personality differences) from the users' perspective during the pandemic. Third, believing in conspiracy theory is negatively related to adaptive behavior. However, better self-control in the conspiracy is associated with better performance and more optimal cognitive responses. The belief increases students' desire for self-regulation, and sustaining positive intention to adopt a better e-learning environment provides a new direction for researchers to contemplate in subsequent research. Fourth, as the current study focused on e-learning environment adoption during the COVID-19 pandemic, any development regarding a better understanding of phenomena can translate into higher adoption of an education technology after implementation. Fifth, past conspiracy theories hampered information technology adoption programs, including the novel educational technology adoption during the current COVID-19 pandemic. It is a reason for concern that if students believe in conspiracy theories, they will disperse quickly and deter others from taking up new IT. However, if they perceive adopting new IT is valuable and provides benefits in the learning process during the COVID-19 pandemic, they can also spread positivity and value its use, which successively will develop a positive intention among students living and interacting with each other. Sixth, a previous study developed a typology of Internet users, segmenting them into fundamentalists, rationalists, and different students based on their CFIP [25]. The current study findings fragment students based on their particular personality traits' adoption patterns of the e-learning environment. Although personality traits could not be transformed, as these are inherent and constant personalities over time [8], it could be used as a leverage point for education researchers and technology designers that certain personality traits are more essential in the perception of CFIP than others.

8.2. Practical Implications

First, the current study explored the threat of privacy concerns influencing students' IT adoption behavior. The risk remains students' concern when using IT to manage their learning behavior. Thus, e-learning service providers should focus on privacy and

information transaction security and develop a restricted risk management policy when launching similar services. For example, they should emphasize their effort to limit the risk of information transaction services on their platform and could use advanced encryption technologies to enhance the security and stability of provided services. Second, the current study findings contribute to understanding how students' personality traits influence their expectancy to adopt an e-learning environment during the COVID-19 pandemic. Educational IT service providers should explore results to improve students' proficiency, personalities, and self-sufficiency to achieve effective transitions for their learning behavior. Third, they expected conspiratorial ideas and opposition to adopting novel educational IT, which affected their intention. This may go along with a general tendency to resist administrative efforts to contain the pandemic (including adopting novel IT). Conspiracy beliefs and e-learning environment skepticism were also somewhat more common among students with a fear of using IT in the learning process (although this particular effect was feeble), presumably among those who have limited IT access due to a lack of knowledge of the IT environment and concern for their information outflow. Thus, the government should bring out precise regulations regarding information transactions to reduce psychological anxiety and improve the adoption rate. Finally, the current study findings lead to better technology usage. E-learning service providers and policymakers should consider these findings before further spending on new IT implementation.

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Appendix A

Table A1. Measurement Items.

Construct	Item No.	Item	References
Agreeable-ness	AGR1	I feel little concern for others	[37]
	AGR2	I am interested in people	
	AGR3	I take time out for others	
Openness to experience	INT1	I have a creative imagination	[19,37]
	INT2	I am quick to understand things	
	INT3	I have excellent ideas	
	INT4	I delight in thinking about things	
	INT5	I delight in looking for a profound implication in things	
Neuroticism	NEUR1	I get stressed out easily	[37]
	NEUR2	I am worried about the things	
	NEUR3	I am easily disturbed	
Conscientiousness	CNS1	I pay attention to details	[19,37]
	CNS2	I am always prepared	
	CNS3	I follow a schedule	
	CNS4	I make policies and stick to them	

Table A1. Cont.

Construct	Item No.	Item	References
Extraversion	EXT1	I am the life of party	[19,37]
	EXT2	I feel comfortable around people	
	EXT3	Generally, I start the conversation	
	EXT4	I don't mind being the heart of consideration	
Belief in Conspiracy theory	BCT1	I believe the e-learning service providers keeps many important secrets about the e-learning environment from individuals.	
	BCT2	I believe progress toward e-learning environment is deliberately being hindered.	
	BCT3	I believe e-learning service providers suppress information about to deceive the individuals.	
	BCT4	I believe a lot of important information regarding e-learning environment is deliberately concealed from the individuals out of self-interest.	
Behavioral Intention	BINT1	I intend to use e-learning environment in the near future to manage my learning process.	[19]
	BINT2	I plan to use e-learning environment in the near future to manage my learning process.	
	BINT3	My willingness to use e-learning environment is high.	
	BINT4	Whatever the environments, I do not intend to use e-learning environment.	
Collection	COL1	It usually bothers me when e-learning providers ask me for personal Information.	[19,34]
	COL2	I sometimes think for a while e-learning service providers ask me to provide personal information	
	COL3	It bothers me to give personal information to so many e-learning service providers.	
	COL4	It bothers me that e-learning service providers collect too much personal information	
Error	ERR1	E-learning service providers should repeatedly check the accuracy of individuals' personal information without considering cost.	[19,34]
	ERR2	E-learning service providers should use more measures to ensure the accuracy of individuals' personal information.	
	ERR3	E-learning service providers should have a more comprehensive method to correct for errors in individuals' personal information.	
	ERR4	E-learning service providers should devote more time and manpower to verify the accuracy of individuals' personal information.	
Secondary Use	SU1	E-learning service providers should never use individuals' personal information for any other purposes unless it has been authorized by the individual.	[19,34]
	SU2	When people give personal information to a e-learning service provider for some reason, the e-learning provider should never use the information for any other purpose.	
	SU3	E-learning service providers should never sell individuals' personal information to another provider.	
	SU4	E-learning service providers should not share individuals' personal information with other providers unless it has been authorized by the individuals.	

Table A1. Cont.

Construct	Item No.	Item	References
Unauthorized Access	UA1	E-learning service providers should devote more time and efforts to preventing the unauthorized access of individuals' personal information.	[19,34]
	UA2	E-learning service providers should prevent unauthorized people from accessing individuals' personal information without considering the cost.	
	UA3	E-learning service providers should take more measures to ensure that unauthorized people cannot use their computer to access individuals' personal information.	

Appendix B

Table A2. Results of confirmatory factor analysis and reliability analysis.

Constructs	Item	Loadings	Standardized Cronbach's α
Agreeableness	AGR1	0.816	0.856
	AGR2	0.776	
	AGR3	0.865	
Openness to experience	INT1	0.829	0.925
	INT2	0.843	
	INT3	0.831	
	INT4	0.810	
	INT5	0.819	
Neuroticism	NEUR1	0.827	0.946
	NEUR2	0.854	
	NEUR3	0.892	
Conscientiousness	CNS1	0.828	0.878
	CNS2	0.814	
	CNS3	0.879	
	CNS4	0.841	
Extraversion	EXT1	0.816	0.919
	EXT2	0.825	
	EXT3	0.828	
	EXT4	0.717	
Belief in Conspiracy theory	BCT1	0.847	0.927
	BCT2	0.851	
	BCT3	0.890	
	BCT4	0.852	
Behavioral Intention	BINT1	0.881	0.838
	BINT2	0.875	
	BINT3	0.845	
	BINT4	0.792	

Table A2. Cont.

Constructs	Item	Loadings	Standardized Cronbach's α
Collection	COL1	0.828	0.826
	COL2	0.796	
	COL3	0.865	
	COL4	0.872	
Errors	ERR1	0.819	0.821
	ERR2	0.848	
	ERR3	0.881	
	ERR4	0.825	
Secondary Use	SU1	0.869	0.841
	SU2	0.848	
	SU3	0.854	
	SU4	0.851	
Unauthorized Access	UA1	0.830	0.832
	UA2	0.867	
	UA3	0.881	

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