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Exploring the Behavioral Intention of Higher Education Students Using Interactive Films for Online Learning

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Abstract:
With the continuous popularization of online learning in higher education, interactive films, as digital media that integrate non-linear narrative and user decision-making mechanisms, are expected to create a personalized and immersive learning experience in online education. This study constructs and validates a theoretical model integrating perceived usefulness, perceived ease of use, autonomy, competence, and relatedness based on the Technology Acceptance Model (TAM) and Basic Psychological Needs Theory (BPNT), to explore the influence on students' behavioral intentions regarding online learning through interactive films. The study distributed paper questionnaires to university students from six higher education institutions in Chongqing and employed Structural Equation Modeling (SEM) for empirical testing of the relationships among variables. The results indicate that, apart from association, all other factors significantly influence behavioral intentions, confirming the applicability of the integrated TAM and BPNT model in this context. In the future, efforts should be made to enhance its usefulness and ease of use at the instructional design level to meet students' autonomy and competence needs for a better user experience. This includes improving tool availability and motivation support to expand its potential applications in online education.

Keywords: Online Learning, Interactive Film, Behavioral Intention, Technology Acceptance Model, Basic Psychological Needs Theory

INTRODUCTION

In recent years, the use of online learning in Chinese higher education has become increasingly common. Among them, online learning videos have gradually become an important teaching medium in the field of higher education due to their time flexibility and convenient accessibility (Huang et al., 2020). However, traditional online video learning is often dominated by one-way information transmission, and this learning mode has been found to be ineffective in motivating students effectively (Al-Qoyyim et al., 2022). Interactive films, as an innovative online teaching medium, integrate cinematic storytelling with user interaction technologies and are characterized by non-linear narratives, user-driven decision-making, and high interactivity (Green & Jenkins, 2014). In recent years, some studies have begun to focus on the application of interactive films in the field of education, highlighting that this novel technology can create engaging learning materials through film narratives and promote students' active learning and critical thinking by simulating situations and decision-making activities (Dahlan et al., 2023). Furthermore, it allows students to independently choose narrative paths, creating a more personalized and immersive learning experience (Palma Stade, 2022). However, despite the potential of interactive films in education, the widespread and effective application of any new teaching technology depends on whether students are willing to use it (Estriegana, 2019), and the factors influencing higher education students' behavioral intention to use online learning tools are complex.

Many theories and frameworks are used in research on the prediction and explanation of user behaviors related to the adoption and use of various technologies to support learning and teaching processes, but among them, the Technology Acceptance Model (TAM) is considered a leading scientific paradigm, being the most widely used powerful and effective model in this field with perceived ease of use and perceived usefulness as prominent predictive factors. However, it often integrates successfully with a range of other contributing theories and models within different application domains (Granić, 2022). Palma Stade (2022) points out that interactive films allow students to autonomously choose the narrative path and direction of the story, thereby enabling students to connect with virtual scenarios and receive real-time situational feedback, making it easier for them to perceive their improvement in ability during the learning process and consequently enhance their autonomy in learning.

Autonomy, competence, and relatedness are considered fundamental psychological needs of human beings (Ryan & Deci, 2000), and it has been pointed out that satisfying these basic psychological needs can enhance students' motivation and engagement in online learning as well as positively impact their user experience, learning motivation, and intention to use technology (Şahin & Şahin, 2022). Therefore, when examining the behavioral intention to use interactive film online learning technologies, fundamental psychological need factors should be taken into account. The integration of TAM with students' basic psychological needs is not uncommon in research, as many studies have examined how psychological factors influence student's technology acceptance. However, existing research primarily focuses on traditional learning platforms such as MOOCs and SPOCs (Psathas et al., 2020), while there is still limited research on contextualized and interactive online learning tools. As a potential development in this field, interactive films can enhance students' learning experiences through personalized decision-making, situational simulation, and real-time feedback (Dahlan et al., 2024), factors that are highly related to basic psychological needs. Therefore, the impact of interactive films on online learning regarding learners' basic psychological needs is worth serious consideration.

Based on the above views, this article takes Chongqing higher education students as research subjects to explore their willingness and influencing mechanisms to use interactive films for online learning. By combining the Technology Acceptance Model with the Basic Psychological Needs Theory, a quantitative analysis of multiple key factors is conducted to obtain generalizable conclusions, revealing the acceptance mechanism and influencing factors of interactive film-based online learning. Perceived usefulness, perceived ease of use, autonomy, competence need satisfaction, and relatedness are integrated into a unified analytical framework for comprehensive study. Furthermore, this study aims to provide theoretical support and practical guidance for the development and application of interactive film online learning materials in the higher education sector, thereby enhancing students' online learning experiences and outcomes.

OBJECTIVES

The objective of this study is to explore the factors influencing higher education students' behavioral intention to engage in online learning through interactive films and examine its determinants. Given that the Traditional Technology Acceptance Model (TAM) primarily focuses on cognitive factors of technology use (perceived usefulness and perceived ease of use), with limited attention to individuals' intrinsic motivation and emotional experiences during the learning process, this study emphasizes incorporating students' basic psychological needs into the model to expand discussions on factors influencing student behavioral intention. The conceptual model of this study describes the relationships between perceived usefulness, perceived ease of use, autonomy, competence, relatedness, and students' behavioral intention to use interactive films for online learning (Figure 1). The model posits that these factors exhibit a significant correlation with students' behavioral intentions and that the variables collectively influence students' willingness to engage in online interactive film learning, aiming for a more comprehensive explanation of the acceptance mechanism involved.

1. Technology Acceptance Model

The Technology Acceptance Model proposed by Davis (1989) explains how users adopt and use new technologies. TAM considers perceived usefulness (PU) and perceived ease of use (PEU) as key factors influencing user acceptance. These two variables can influence users' behavioral intention (BI) and ultimately determine actual usage.

In the field of online learning, TAM has been widely used to investigate students' acceptance of online learning systems, MOOCs, adaptive learning platforms, and educational technology tools (Psathas et al., 2020). Research has shown that in virtual learning environments, learners are more likely to exhibit a stronger intention to use tools if they perceive those tools as enhancing learning outcomes and being easy to use (Sukirman & Fitriningtyas, 2020[iii]). Therefore, it is worth examining whether perceived usefulness (PU) and perceived ease of use (PEU) directly influence students' behavioral intentions regarding the utilization of interactive films for online learning in higher education.

1.1 The Impact of Perceived Usefulness on Higher Education Students' Behavioral Intention to Use Interactive Films for Online Learning

Perceived Usefulness (PU) is one of the key variables defined in the TAM, referring to the extent to which an individual believes that using a specific technology or tool can enhance their performance and efficiency (Davis, 1989). According to Davis's research, individuals' behavioral intention to use technological tools is often strongly influenced by the actual benefits and perceived value brought about by the tool, that is, users are more inclined to adopt those technological tools that can directly or indirectly improve their performance and meet personal goals. This has been validated by many researchers in online learning environments, who point out that students' activity levels on online learning platforms are often closely related to their perceived enhancement of learning outcomes (Bucur & Șerban, 2019 [iv]). This is especially true in higher education contexts, where students place greater emphasis on the practical assistance provided by tools for their academic performance (Sukirman & Fitriningtyas, 2020).

Perceived usefulness when using interactive films for online learning may manifest as students believing that interactive video-based learning can effectively enhance their knowledge understanding, practical skills, or problem-solving abilities. The interactive film course, through nonlinear narrative structures and situational simulations (Dahlan et al., 2023), not only enables students to better understand complex concepts but also facilitates their application of acquired knowledge in real-world scenarios.

However, as an emerging online teaching method, whether the actual learning benefits of interactive films can be widely perceived and recognized by students still needs more empirical research support. Therefore, this study aims to conduct an in-depth analysis of the impact of perceived usefulness on students' intention to use interactive films for online learning, to clarify the practical utility of interactive film-based online education in higher education, and proposes the following hypotheses:

H1a: The perceived usefulness has a significant impact on higher education students' behavioral intention to use interactive films for online learning.

1.2 The Impact of Perceived Ease of Use on Higher Education Students' Behavioral Intention to Use Interactive Films for Online Learning

Perceived Ease of Use (PEU) is another important variable in TAM, which refers to the extent to which individuals perceive that using a certain technology can be mastered and operated proficiently without much effort (Davis, 1989). The usability of technology directly impacts an individual's initial experience with the technology, subsequently determining the likelihood of continued use (Venkatesh & Davis, 1996).

Previous studies have indicated that, in online learning environments, complex technologies often increase users' cognitive burden, leading to individuals developing resistance or reducing their willingness to use; conversely, user-friendly technologies can significantly improve users' positive emotional experiences and acceptance intentions (Alharthi, 2020).

Interactive films, through their non-linear narrative structures and interactive choices, render the learning process more personalized and dynamic. This characteristic of interactivity places higher demands on students' cognitive resources. Therefore, the usability of interactive online movie learning is crucial, and whether the interface design is clear, and the interaction logic is simple and clear will directly affect students' adaptability and satisfaction in initial use, which may significantly influence their behavioral intention to continue using it. Therefore, this study proposes the following hypothesis:

H1b: The perceived ease of use has a significant impact on students' behavioral intention to use interactive films for online learning.

2. Basic Psychological Needs Theory

Basic Psychological Needs Theory (BPNT) was proposed by Deci and Ryan in 2000, emphasizing the importance of satisfying three basic needs: autonomy, competence, and relatedness to an individual's intrinsic motivation and behavioral intention. Research has found that in educational settings if psychological needs are effectively met during the learning process, it can promote students' active engagement in learning activities and enhance their

motivation to learn and willingness to continue learning (Goldman et al., 2022). Therefore, BPNT is also widely applied in online learning research and is often used to explore methods for enhancing learner engagement and enthusiasm (Wang et al., 2019).

The integration of TAM with students' basic psychological needs is an important research direction in the field of online learning. Many studies have investigated how psychological factors influence students' technology acceptance; however, existing research predominantly focuses on MOOCs, SPOCs, or blended learning platforms, while studies regarding context-based online learning tools remain limited (Psathas et al., 2020). Therefore, it is worth discussing whether the basic psychological needs of higher education students using interactive films for online learning will directly affect their intention to engage with this tool in the online educational context.

2.1 The Impact of Autonomy on Higher Education Students' Behavioral Intention to Use Interactive Films for Online Learning

Autonomy is a fundamental component of the self-determination theory. According to Deci and Ryan, it refers to the degree of perceived freedom of choice and self-determination experienced by individuals during activities or decision-making processes. In terms of autonomy and learning, the study by Muller and Louw (2004) found that when the learning environment allows students to freely explore and autonomously choose their content and methods, they often exhibit higher levels of motivation and engagement in their studies. This is because the presence of choice during the learning process enhances learners' intrinsic motivation, and stimulates interest in learning, thereby positively influencing both the persistence and depth of their engagement in educational activities.

Interactive films, with their nonlinear narrative structure and numerous interactive decision points, significantly enhance learners' autonomy in educational contexts (Palma Stade, 2022), allowing students to determine the progression of course content based on their interests and needs. Experiential autonomy not only helps students to develop a sense of control over the learning process psychologically but also makes it easier for them to experience the fun and significance of the learning activities themselves, significantly increasing their behavioral intention to use educational technology (Reinders & White, 2011). Therefore, this study proposes the following hypothesis:

H2a: Autonomy has a significant impact on higher education students' behavioral intention to use interactive films for online learning.

2.2 The Impact of Relatedness on Higher Education Students' Behavioral Intention to Use Interactive Films for Online Learning

In BPNT, relatedness refers to the degree to which an individual establishes good interpersonal relationships and obtains a sense of belonging in a specific environment or activity. In online learning environments, connectedness refers to the sense of students' connection with others in social settings, which typically helps students better perceive learning benefits and enhance their satisfaction with the learning experience (Zhou et al., 2021), consequently increasing students' behavioral intention to use learning technologies.

However, in the context of interactive films as online learning tools, the role of relatedness may not be fully realized. Firstly, the fundamental mechanism of interactive films is personalized decision-making and immediate feedback, rather than social interaction (Green & Jenkins, 2014). Furthermore, research indicates that in self-paced online learning environments, autonomy and competence have a greater impact on the intention to use than relatedness (Frikha et al., 2022). Some studies suggest that association is often associated with collaborative learning and social interactions (Girelli et al., 2018), while using interactive films for online learning emphasizes learners' self-exploration and personalized learning paths, rather than social participation. Furthermore, if social elements are introduced during the viewing of interactive films, the asynchronous progress of each viewer and the ability to backtrack at any point in the film may result in spoilers, leading to decreased enjoyment and engagement for audiences (Johnson & Rosenbaum).

In the context of this study, autonomy and competence may be the primary factors influencing higher education students' use of interactive films for online learning. However, considering relatedness is still an important

component in BPNT, and past research has often found that relatedness positively influences the behavioral intention to use learning tools, its impact remains worth exploring. Therefore, this study posits the following hypothesis:

H2b: The relatedness has a significant impact on higher education students' behavioral intention to use interactive films for online learning.

2.3 The Impact of Competence on Higher Education Students' Behavioral Intention to Use Interactive Films for Online Learning

Deci and Ryan argue that competence refers to an individual's perception and evaluation of their abilities when engaging in a particular activity or task, which is crucial for stimulating motivation for sustained action. Şahin, F & Şahin, Y. L (2022) pointed out that in learning activities when learners perceive a gradual improvement in their abilities and can effectively solve the problems encountered during learning, their confidence is strengthened which in turn enhances motivation and willingness to continue participating in related learning activities.

Interactive films can aid students in continuously adjusting their strategies, obtaining feedback, and gradually improving learning outcomes during online learning by simulating real-life scenarios, setting task challenges, and facilitating interactive decision-making (Green & Jenkins, 2014), which may enable students to directly experience an enhancement of personal capability throughout the process of operation and decision-making. Simultaneously, interactive films possess the characteristic of immediate feedback, which often enables students to significantly perceive improvements in their abilities. This can enhance students' intrinsic motivation and encourage them to engage more deeply and persistently with educational tools (Harper, 2009). Therefore, this study proposes the following hypotheses:

H2c: The competence has a significant impact on higher education students' behavioral intention to use interactive films for online learning.

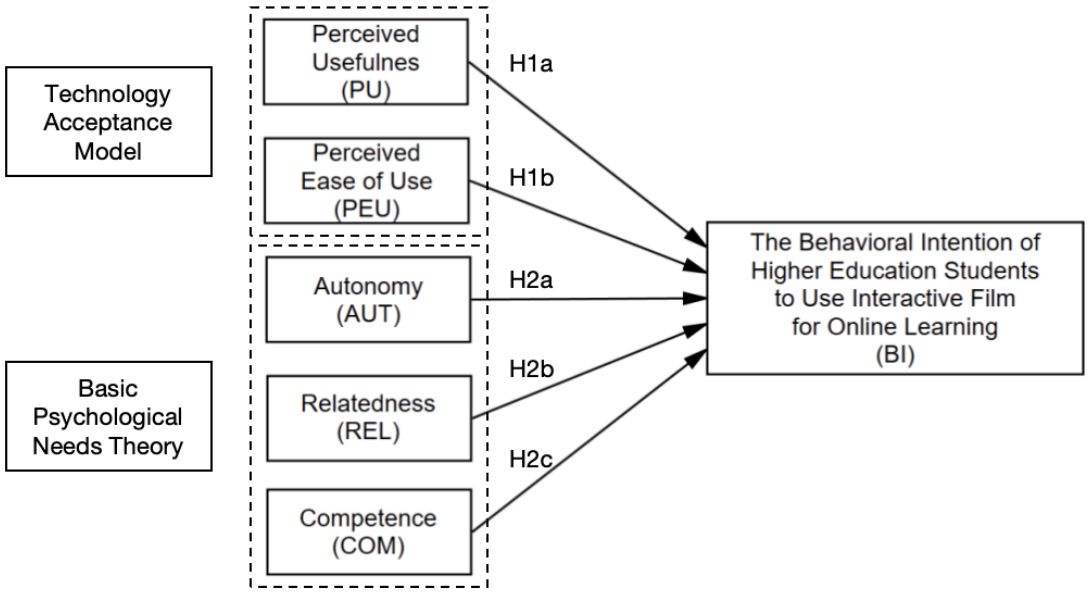

Figure1 Conceptual Framework

METHODS

1. Research Data

This study conducted a questionnaire survey from January to February 2025 among students at higher education institutions in Chongqing, aiming to understand their evaluations of perceived usefulness, perceived ease of use, autonomy, competence, and relatedness during the process of online learning using interactive films, as well as

their behavioral intentions toward utilizing interactive films for online learning. To ensure the representativeness of the samples, this study combines the characteristics of types and scales of higher education in Chongqing city. Various types of universities including comprehensive undergraduate institutions, applied undergraduate institutions, and higher vocational colleges were selected. A total of 6 universities located in Shapingba District, Jiulongpo District, Yuzhong District, Nanan District, Jiangbei District, and Beibei District of Chongqing City were chosen for data collection. These regions are characterized by a high concentration of universities, diverse student demographics, and various types of institutions that possess substantial enrollment numbers along with comprehensive online education facilities. They serve as a strong representation of the overall state of higher education students in Chongqing. All questionnaires were distributed in the study areas of six higher education institutions, including entrances to lecture halls, study rooms, and libraries, in paper format.

A total of 600 questionnaires were distributed in this survey. After excluding incomplete responses, questionnaires with all options the same, and those with obvious illogical answers, a total of 401 valid questionnaires were collected. The valid survey data collected will be used for further data analysis.

Table 1. Analysis of Demographic Information

Profiles	Characteristics	Number	Percentage (%)	Cumulative Percentage (%)
Gender	Male	174	43.4	43.4
	Female	227	56.6	100
Education	Higher vocational student	102	25.4	25.4
	Undergraduate	177	44.1	69.5
	Master Student	96	23.9	93.5
	Doctoral student	26	6.5	100
Major	Humanities and Social Sciences	69	17.2	17.2
	Art and design	69	17.2	34.4
	Business and management	82	20.4	54.9
	Medicine and Health	48	12	66.8
	Science and Engineering	65	16.2	83
	Others	68	17	100
Current Frequency of Online Learning Use	Not used	22	5.5	5.5
	Within 1 hour/week	59	14.7	20.2
	1-3 hours/week	157	39.2	59.4
	More than 3 hours/week	163	40.6	100
Experience of Watching Interactive Films	Have	217	54.1	54.1
	Do not have	184	45.9	100

2. Questionnaire Design

The questionnaire of this study was designed and adapted based on existing mature scales. Through a review and integration of literature, combined with the interactive film online learning usage scenario, a measurement questionnaire was formed. The questionnaire is divided into two parts: the first part consists of students' basic information, including gender, age, major category, experience, and frequency of online learning, and experience with interactive films related to interaction. The second part is the variable measurement section which includes measurements of perceived usefulness, perceived ease of use, autonomy, competence, relatedness and willingness for student behavior. All observation indicators are measured using a Likert five-point scale.

3. Sample Overview

In the survey sample, male students accounted for 43.4%, while female students comprised 56.6%. The educational background of the surveyed students predominantly consists of undergraduates and vocational college students, while also including a balanced representation from master's and doctoral groups. Overall, this study's subjects encompass a diverse group of higher education students varying in gender, educational levels, and disciplinary backgrounds. All participants have prior experience with online learning, and more than half possess some background in interactive film viewing; thus the sample is considered to be somewhat representative (Table 1).

RESULTS

1. Reliability and Validity Analysis

Data reliability is the evaluation of the degree of measurement consistency in a conceptual model, typically measured using Cronbach's α and construct reliability (CR). The reliability analysis results (Table 2) indicate that Cronbach's α is at a minimum of 0.67 (> 0.6), meeting the standards for social science research. The minimum confidence level is 0.629 (> 0.50), indicating good reliability and stability of the survey data.

Table 2 Goodness-of-fit Index of Conceptual Model

Name	Items	Unstd. Estimate	Std. Error	Z	P	Std. Estimate	Cronbach's α	AVE	CR
PU	PU1	1	-	-	-	0.731	0.769	0.583	0.875
	PU2	1.149	0.076	15.206	0	0.789			
	PU3	1.133	0.074	15.408	0	0.799			
	PU4	1.173	0.076	15.356	0	0.796			
	PU5	0.996	0.074	13.422	0	0.697			
PEU	PEU1	1	-	-	-	0.612	0.669	0.604	0.882
	PEU2	1.099	0.099	11.121	0	0.648			
	PEU3	-1.584	0.115	-13.728	0	-0.869			
	PEU4	-1.55	0.115	-13.514	0	-0.849			
	PEU5	-1.677	0.122	-13.703	0	-0.867			
AUT	AUT1	1	-	-	-	0.921	0.752	0.344	0.629
	AUT2	0.935	0.036	25.933	0	0.871			
	AUT3	-0.138	0.036	-3.833	0	-0.195			
	AUT4	-0.098	0.038	-2.544	0.011	-0.131			
	AUT5	-0.207	0.043	-4.769	0	-0.241			

REL	REL1	1	-	-	-	0.348	0.799	0.368	0.727
	REL2	1.422	0.251	5.672	0	0.528			
	REL3	2.445	0.391	6.253	0	0.789			
	REL4	2.359	0.377	6.25	0	0.782			
	REL5	1.507	0.282	5.341	0	0.453			
COM	COM1	1	-	-	-	0.813	0.709	0.587	0.894
	COM2	1.096	0.069	15.946	0	0.729			
	COM3	1.106	0.06	18.446	0	0.813			
	COM4	1.099	0.054	20.225	0	0.87			
	COM5	1.022	0.062	16.575	0	0.751			
	COM6	0.837	0.068	12.325	0	0.592			
BI	BI1	1	-	-	-	0.766	0.726	0.609	0.886
	BI2	0.972	0.068	14.396	0	0.705			
	BI3	1.05	0.063	16.759	0	0.805			
	BI4	1.004	0.058	17.224	0	0.824			
	BI5	1.066	0.064	16.571	0	0.797			

Data validity is the assessment of the accuracy level of measurement scales. First, the KMO value of the total scale was tested to be 0.936 (>0.8), indicating that the survey data as a whole had good validity. Secondly, the convergent validity of the scale is assessed through average variance extracted (AVE), where an AVE value greater than 0.50 typically indicates good convergent validity for the latent variable; however, Fornell and Larcker (1981) suggest that an AVE close to 0.36 is also considered an acceptable threshold. As shown in Table 2, the AVE values of most variables are greater than 0.50, with the lowest AVE value being 0.34, close to 0.36, indicating a good level of validity.

2. Discriminant Validity Testing

This study conducted discriminant validity testing on all potential dimensions. By comparing, it was found that the Square Root of AVE for each dimension is higher than the Pearson Correlation of Latent Variables, indicating a good discriminant validity (Table 3).

Table 3 The discriminatory validity test of potential variables

	PU	PEU	AUT	REL	COM	BI
PU	0.764					
PEU	-0.165	0.777				
AUT	-0.214	0.55	0.587			
REL	0.506	-0.046	0.179	0.607		
COM	-0.487	0.38	0.271	-0.391	0.766	
BI	-0.638	0.512	0.413	-0.337	0.645	0.780

3. Relevance Test

This study examines the correlation by using the mean values of all potential dimensions. Through the Pearson correlation test (Table 4), it can be observed that all independent variables are significantly correlated with each

other ($P < 0.01$), and all independent variables show a significant correlation with the dependent variable ($P < 0.01$).

Table 4 Pearson Correlation

	PUmean	PEUmean	AUTmean	RELmean	COMmean	BImean
PUmean	1	-.209**	-.135**	.410**	-.412**	-.494**
PEUmean	-.209**	1	.370**	-.105**	.345**	.416**
AUTmean	-.135**	.370**	1	.106**	.173**	.281**
RELmean	.410**	-.105**	.106**	1	-.332**	-.244**
COMmean	-.412**	.345**	.173**	-.332**	1	.520**
BImean	-.494**	.416**	.281**	-.244**	.520**	1

4. Verification of Conceptual Model

Using AMOS 26.0 software, the concept model is estimated and goodness of fit testing is conducted through maximum likelihood estimation. In this study, PGFI, PNFI, and PCFI are all higher than the recommended standards, indicating a good fit for the model (Table 5).

Table 5 Fit Index of Conceptual Model

Common Indicators	χ2	df	p	χ2/df	GFI	RMSEA	RMR	CFI	NFI	NNFI
Criteria	-	-	>0.05	<3	>0.9	<0.10	<0.05	>0.9	>0.9	>0.9
Value	2516.719	428	0	5.88	0.684	0.11	0.159	0.757	0.722	0.736
Other Indicators	TLI	AGFI	IFI	PGFI	PNFI	PCFI	SRMR	RMSEA 90% CI		
Criteria	>0.9	>0.9	>0.9	>0.5	>0.5	>0.5	<0.1	-		
Value	0.736	0.634	0.758	0.59	0.665	0.697	0.131	0.099 ~ 0.116		

The results of the model path hypothesis tests are presented in Table 6, indicating that all research hypotheses hold except for hypothesis H2b. Among them, H1a, H1b, and H2c reached significance at p=0.001 confidence level, assuming that H2a reached significance at p=0.05 confidence level (Table 6). It is evident that perceived usefulness, perceived ease of use, autonomy, and competence significantly influence higher education students' behavioral intention to engage in online learning through interactive films. In contrast, the impact of relatedness on behavioral intention is relatively weak; it does not serve as a critical factor affecting higher education students' willingness to utilize interactive films for online learning.

Table 6 Standardized Test Results of Hypothesized Path

Hypothesis	Path	Unstd. Estimate	Std. Error	Z	P	Std. Estimate	Support
H1a	PU→BI	-0.494	0.045	-10.906	***	-0.42	Yes
H1b	PEU→BI	0.504	0.068	7.361	***	0.276	Yes
H2a	AUT→BI	0.149	0.066	2.275	0.023	0.089	Yes
H2b	REL→BI	-0.01	0.06	-0.166	0.868	-0.006	No
H2c	COM→BI	0.367	0.044	8.263	***	0.309	Yes

DISCUSSION

This study constructed a multidimensional comprehensive model based on TAM and BPNT, using quantitative methods to explore the key factors influencing higher education students in Chongqing's willingness to engage in online learning through interactive videos. The empirical analysis through structural equation modeling yields the following conclusions: (1) Perceived usefulness and perceived ease of use are significantly related to students' behavioral intention to use interactive films for online learning, indicating that students' cognitive evaluations of interactive film-based online learning play a key role in their usage decision-making; (2) Autonomy and competence as psychological motivation variables in the learning process also significantly influence students' behavioral intention to use interactive films for online learning, further emphasizing the importance of basic psychological needs in the technology adoption process; (3) Association did not exhibit a significant effect, suggesting that social interaction may not be fully stimulated or have a decisive role within current interactive film-based online learning environments.

As one of the core variables of BPNT, relatedness did not demonstrate a significant effect in this study. This finding suggests that social interactions among learners have yet to be fully stimulated in the context of current interactive online learning films. On one hand, this may be related to the narrative structure of interactive films being primarily centered around "individual pathways," lacking content designed for social interaction or peer communication; on the other hand, it may stem from students' needs for "social learning" not being significantly stimulated in this environment. This result provides direction for the optimization of subsequent interactive film-based online learning, specifically on how to set group roles through narrative contexts or enhance a sense of community to improve students' experiences of social belonging.

Overall, this study integrates two theoretical perspectives, TAM and BPNT, to construct and validate a more comprehensive model of online learning acceptance for interactive films. It demonstrates that interactive film-based online learning, as a digital media form characterized by both interactivity and narrative elements, has significant advantages in enhancing students' willingness to engage in online learning. The research findings not only theoretically expand the applicability of technology adoption models but also provide insights into the instructional design and practical application of interactive films in higher education contexts. First, teaching platforms should focus on improving the usefulness and usability of tools, optimizing interface design and content logic; secondly, they should pay more attention to student psychological experience and motivation for learning, enhance students' autonomy and competence in learning by designing more interactive ways with choices and feedback to meet their psychological needs. In future research, the applicability of the model can be further validated in different regions and educational levels, taking into account control variables such as gender, grade level, major background, etc., thus introducing moderating variables to enhance the explanatory power of the model. In addition, the content type and interactive depth of online interactive films for learning may also have indirect effects on behavioral intentions, which should be further investigated in future research to promote continuous innovation and optimization of digital teaching in higher education.

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