

Negative Spillover Effects of Travel Memories and Social Media on Foreign Generation Z's Sustainable Educational Tourism Intentions in China

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ABSTRACT:

China is rapidly positioning itself as a sustainable educational tourism destination through cultural preservation, policy support, and international collaboration. However, negative online narratives and prior adverse travel experiences may threaten this sustainable development. This study investigates how negative travel memories and unfavorable social media commentary jointly affect the sustainability of foreign Generation Z's educational tourism intentions in China. Drawing on Social Information Processing Theory and the Theory of Planned Behavior, this research conceptualizes negative spillover as a barrier to sustainable behavioral intention formation. Using PLS-SEM on survey data from 206 foreign Gen Z travelers, the results reveal that negative travel memories significantly weaken attitudes toward educational tourism and reduce behavioral intentions, thereby challenging long-term destination sustainability. Interestingly, moderate negative comments on social media stimulate more balanced perceptions and enhance subjective norms, reflecting Gen Z's critical thinking in digital environments. Moreover, individuals high in openness to experience are less susceptible to negative spillover, contributing to resilience in sustainable travel intention. The study enriches sustainability discourse by integrating psychological and digital dimensions into the SIPT-TPB framework, offering practical insights for policymakers and destination marketers to foster responsible digital communication, mitigate negative spillover, and strengthen the sustainable appeal of China's educational tourism sector.

Keywords: Sustainable educational tourism, Negative spillover, Openness to experience, PLS-SEM, Generation Z.

1. Introduction

In recent years, the steady expansion of international tourism has been propelled by accelerating globalization and digitalization. By 2024, global international tourist arrivals reached 1.4 billion, an increase of 140 million from 2023, representing 11 percent year-on-year growth. Preliminary forecasts by UN Tourism (2025) project a further 3 % to 5 % increase in international arrivals in 2025.

Among emerging forms of mobility, educational tourism, which integrates learning with experiential travel, has garnered increasing interest among Generation Z (Gen Z). As one of the world's leading tourism destinations, China has actively promoted the development of educational tourism by leveraging its rich cultural resources and supportive national policies.

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According to China's National Immigration Administration (NIA, 2024), the country has further liberalized its transit visa exemption policy, extending the permitted stay for eligible foreign nationals from 72 or 144 hours to a unified 240 hours. This policy shift has notably spurred growth in short-term educational tourism programs. With such institutional support, China has increasingly attracted international students to participate in educational tourism programs. Educational tourism emphasizes immersive learning and cross-cultural engagement, aiming to enhance participants' global competence through site-based investigations and experiential learning (Ritchie et al., 2003). With rapid transformations in how information is disseminated and consumed, the processes through which tourism experiences are formed, evaluated, and shared have also undergone fundamental change. Tourist perceptions are now shaped more by digital media and diverse feedback on social platforms (Kim et al., 2017). Given Gen Z's heavy reliance on online information, these shifts significantly reshape their travel decision-making processes.

In today's digitally saturated environment, travelers are inevitably exposed to a range of online feedback during their journeys, encompassing both positive impressions and negative experiences. Prior research has shown that negative information tends to exert a stronger and more enduring influence on consumer cognition and decision-making than positive information (Chevalier & Mayzlin, 2006). Such effects often extend beyond isolated events to generate what scholars refer to as a negative spillover effect, influencing individuals' future travel attitudes, perceived social norms, and behavioral intentions (Nilsson et al., 2017).

This phenomenon is particularly salient among Gen Z, who have grown up in an environment heavily shaped by digital technology and are highly reliant on social media reviews and user-generated content (Uthaisar et al., 2024). Moreover, trust in the source of social media content plays a crucial role: recent evidence suggests that consumers' trust in social media influencers can positively affect every stage of their travel decision-making process, resulting in cross-phase spillover effects (Pop et al., 2022). These dynamics underscore why negative reviews and reports on social media may have a disproportionate impact on travel-related decisions among Gen Z travelers.

While previous studies have examined how positive content can enhance travel intention and satisfaction (Tussyadiah et al., 2017; Filieri et al., 2015), empirical research exploring how negative travel memories and adverse social media feedback influence educational tourism intention via both cognitive and affective pathways remains limited. In particular, the underlying mechanisms within integrated frameworks that combine Social Information Processing Theory (SIPT) and the Theory of Planned Behavior (TPB) are not yet fully clarified.

Furthermore, individual-level moderators, such as personality traits like openness, have not been sufficiently considered in examining how different people respond to negative information. This oversight restricts the generalizability of current findings across diverse traveler segments. Although emerging research has begun to investigate Gen Z travel behavior in the digital context (Luong et al., 2024; Rather, 2021), in-depth understanding of the psychological mechanisms triggered by negative tourism-related information is still lacking.

To address this gap, the present study proposes an integrated analytical framework that combines SIPT and TPB to investigate how negative information influences

educational travel decision-making among Gen Z in a digital environment. The study offers empirical contributions to the literature on negative information processing and advances theoretical understanding of Gen Z's decision-making traits in digitally mediated contexts.

2. Literature review

2.1 Negative Spillover Effects

This study investigates how Gen Z travelers respond to negative travel memories and negative social media comments in digital environments, with a focus on educational tourism in China. As digital natives, Gen Z exhibits heightened sensitivity to negative information and greater reliance on social media, making them especially vulnerable to negative spillover effects. In this context, negative memories and negative online comments serve as two core carriers of such effects, embedded in subjective recollections and user-generated content on digital platforms.

Negative travel memories refer to emotionally charged recollections of unpleasant tourism experiences. As subjective constructions, tourism memories play a key role in shaping attitudes and future behavioral decisions (Tung & Ritchie, 2011). While prior research has emphasized the benefits of positive memories in enhancing destination appeal and revisit intention (Nguyen *et al.*, 2025), limited attention has been given to negative memories. These are long-lasting impressions of adverse events, often accompanied by strong emotional encoding and stored in long-term memory. When triggered by similar contexts, they can significantly influence tourists' attitudes and decisions (Hosany *et al.*, 2022).

Negative social media comments refer to tourism-related posts containing unfavorable reviews, complaints, or critical narratives shared on digital platforms (Su *et al.*, 2022). Such content, easily accessible and widely circulated, can shape peer perceptions and social norms, thereby influencing travel intention.

Many researchers have shown interest in empirical studies concerning negative travel memories and negative comments on social media. Existing literature has preliminarily revealed their multiple impacts on tourism-related psychology and behavior, as partially summarized in Table 1. In research on travel satisfaction, negative memories often weaken tourists' overall positive evaluations of their travel experiences. Rozin and Royzman (2001) found that in the fields of cognitive psychology and emotional processing, negative information is generally considered more persuasive and influential than positive information. Therefore, compared with positive memories, negative memories tend to generate stronger avoidance-oriented behavioral tendencies. In addition, Kim *et al.* (2022) noted that when tourists experience negative events such as safety incidents or service failures during travel, these emotionally charged memories activate perceptions of destination related risks. These activated perceptions reduce the likelihood of revisiting the same destination.

Table 1: Summary of research on the negative spillover effect
 Negative memories also influence word-of-mouth communication. Some studies

Author(year)	Main finding	Negative spillovers context	Domain
Chen et al. (2025)	Incremental mindset mitigates negative spillover effects from service failures in tourism.	Service failure in tourism experiences	Tourism psychology / Service management
Adamopoulos (2024)	Fraudulent reviews distort product recommendations and harm platform trust.	Tourism product recommendation systems	Tourism technology / Platform trust
Stone & Sthapit (2024)	Negative food and drink experiences are memorable and affect destination perception.	Culinary tourism	Culinary tourism / Perceived experience
Li et al. (2023)	Negative emotions from destination advertising influence perception of subsequent tourism content.	Destination advertising	Marketing communication / Tourism advertising
Su et al. (2023)	Recollection of negative experiences influences tourists' subjective well-being.	Recollection and storytelling of tourism experiences	Tourism psychology / Subjective well-being
Zhao et al. (2023)	Negative tourism memories reduce revisit intention via episodic future thinking.	Negative memories affecting future travel decisions	Tourism cognition / Behavioral intention
Ouyang et al. (2020)	A hotel scam triggered widespread negative perception across social media.	Social media and tourism crisis events	Crisis communication / Social media discourse
Song et al. (2020)	Accommodation sharing platforms generate negative spillovers on nearby attractions.	Peer-to-peer accommodation and tourist attractions	Sharing economy / Urban tourism environment
Park et al. (2017)	Negative reviews cause spillover effects to other nearby hotels.	Online hotel reviews platforms	Online reviews / Accommodation management
Ma et al. (2015)	Negative tourist reviews can spread spatially and impact urban tourism economies.	Tourist flows and city-level tourism reputation	Urban tourism / Spatial diffusion effect

have shown that tourists are more likely to share negative travel experiences than positive ones on social media or online platforms. These negative memories tend to exhibit high emotional contagion, which makes them more capable of resonating with others and triggering emotional reactions. This process contributes to the formation of negative word-of-mouth effects (Li & Liu, 2022).

Regarding negative comments on social media, similar findings have been reported in prior research. Su *et al.* (2022) showed that highly credible negative reviews reduce potential tourists' trust in a destination and weaken their attitudes and behavioral intentions to some extent. Negative comments often prompt tourists to abandon their originally intended destinations and choose alternative options with more favorable evaluations. According to Pavesi and Gartner (2016), negative reviews on social platforms significantly decrease tourists' willingness to revisit a destination.

Negative travel experiences often carry strong emotional intensity, which leads to more vivid and durable memories. Neuroscience research shows that negative events tend to be encoded with higher intensity and consolidation strength, making them more accessible at retrieval. The mechanism of memory encoding intensity explains why negative travel memories disproportionately influence attitudes and intentions in sustainable educational tourism. In SIPT-TPB framework, this means that strongly encoded negative travel memories feed into the Attitude component. Tourists are more likely to form negative beliefs about the destination based on these salient recollections. These enduring negative memories also shape how information is processed socially. When tourists share their negative experiences on social media or hear others' accounts, these high-intensity memories contribute to the formation of subjective norms and can reduce perceived behavioral control, such as tourists feel less capable of handling travel challenges.

This effect is especially salient among Gen Z travelers, who tend to form strong negative impressions of destinations based on emotionally intense experiences, resulting in decreased willingness to engage in future tourism behavior (Kim *et al.*, 2022). Two core psychological mechanisms underlie these spillover effects: emotional transfer and cognitive generalization.

At the emotional level, travelers often experience high-arousal emotions such as anger, shame, or insecurity during negative events. These emotions are deeply encoded into long-term memory and are reactivated when similar tourism contexts are encountered. For example, an unpleasant experience in France may evoke negative associations when considering other European destinations. This emotional resonance can reduce both affective preference and cognitive evaluations across similar destinations. Attitudes can shift not only over time but also across related geographic or cultural contexts, reflecting a transfer of emotions from a specific experience to a broader destination category.

At the cognitive level, the representativeness heuristic suggests that individuals judge an entire category based on one salient experience (Tversky & Kahneman, 1974). Negative travel experiences, due to their vividness and emotional salience, often serve as cognitive anchors for future evaluations. These anchoring effects influence judgments not only of the original destination but also of others that are geographically close, culturally similar, or portrayed in similar ways in the media. This process results in category-based image contamination.

In the context of digital communication, social media has become a primary channel through which Gen Z constructs cognition and forms decisions. Its immediacy and interactivity amplify sensitivity to authenticity. While negative reviews are often perceived as risk signals, they can also yield positive effects. Sparks and Browning (2011) found that the presence of some negative comments enhances the perceived credibility of

review platforms. Overly positive reviews may instead raise suspicions of manipulation. Moderate negativity can promote perceptions of transparency and foster more favorable destination evaluations. Filieri et al. (2015) further argued that negative reviews can increase user attention and encourage deeper cognitive processing, leading to more informed and potentially positive judgments.

Negative comments also act as social cues that shape subjective norms. Mohd Azhar et al. (2022) found that the widespread presence of negative comments enhances the influence of social pressure in decision-making. Gen Z users, in particular, tend to internalize concentrated negative discourse as peer expectations and adjust their attitudes and behavioral intentions accordingly. The empirical findings of this study support these mechanisms, leading to the following hypotheses:

H1: Negative travel memories have a negative effect on the educational travel attitude of Gen Z.

H2a: Negative comments on social media have a positive effect on the educational travel attitude of Gen Z.

H2b: Negative comments on social media have a positive effect on the subjective norm of Gen Z in educational travel.

2.2 The Theory of Planned Behavior Model

The TPB, developed by Ajzen (1991), explains behavioral intention through three key variables: attitude, subjective norm, and perceived behavioral control. It has been widely applied across fields such as tourism, health, and education (Ayeh et al., 2023; Huang et al., 2020). This study adopts TPB as its theoretical foundation due to its suitability for explaining behaviors that are influenced by both rational judgment and external constraints (Han et al., 2024; Meng et al., 2020).

TPB is applied here to explain how Gen Z forms behavioral intentions toward educational tourism when exposed to multisource information in digital environments. Attitude reflects an individual's overall evaluation of educational tourism, while subjective norm captures perceived social pressure, and perceived behavioral control refers to one's confidence in managing resources and constraints. Gen Z's intentions are shaped by prior experiences, risk perceptions, and evaluations formed within their social environment (Lam & Hsu, 2006; Quintal et al., 2010).

Given the emotionally charged and information-saturated digital space Gen Z inhabits, a purely rational model like TPB is limited (Liu et al., 2021). Therefore, this study incorporates negative spillover effects and SIPT to expand TPB's explanatory scope under conditions of digital interference and emotional influence.

Negative memories activate internal emotional systems, while negative comments trigger external social evaluation mechanisms. These effects can influence intention through indirect psychological pathways (Li et al., 2021; Xu et al., 2021). Thus, behavioral intention is modeled as the final dependent variable, capturing Gen Z's decision-making tendencies under the influence of negative stimuli.

Attitude serves as a key mediator. Even under uncertainty, attitude remains a strong predictor of behavioral intention (Han et al., 2010; Quintal et al., 2010). Gen Z may adopt systematic information processing, balancing benefits, risks, and personal development potential to form constructive evaluations. Subjective norm, shaped by social

media discourse, also plays a mediating role. Highly visible negative comments can diminish perceived social support, weakening intention (Che *et al.*, 2023).

Finally, Gen Z's perceived behavioral control is often low due to uncertainty about time, budget, or resources, suppressing intention (Wu *et al.*, 2023). In this study, it is measured via self-assessed financial sufficiency and schedule flexibility (Zhao & Liu, 2023), reflecting their resource management strategies. Based on these mechanisms, the following hypotheses are proposed:

H3: Attitude plays a positive mediating role between perceived negative travel memories and educational tourism behavioral intention among Gen Z.

H4: Subjective norm plays a negative mediating role between perceived negative travel memories and negative comments on social media and the educational tourism behavioral intention of Gen Z.

H5: Perceived behavioral control over educational tourism has a negative effect on the behavioral intention of Gen Z.

2.3 Social Information Processing Theory

This study adopts SIPT as the theoretical foundation for examining moderating effects. SIPT posits that when facing complex social environments and information stimuli, individuals actively receive, interpret, and internalize social cues to form attitudes and behaviors (Pfeffer & Salancik, 1978). Widely applied in organizational behavior, educational communication, and tourism research (Zhou *et al.*, 2024; Middleton *et al.*, 2019), SIPT helps explain how information environments influence individual decision-making.

In tourism studies, SIPT has been used to explore how travelers rely on others' experiences to process risks and evaluate destinations. Sparks and Browning (2011) showed that negative online reviews strongly disrupt attitude formation and booking intention. Similarly, Aliperti and Cruz (2019) emphasized the role of social networks and peer evaluations in shaping tourists' perceptions of risk.

This study argues that the personality trait of openness moderates how Gen Z travelers respond to negative travel memories and negative social media comments. Openness, one of the Big Five traits, reflects cognitive flexibility, curiosity, and a willingness to engage with novel stimuli (McCrae & Costa, 1997). Gen Z travelers high in openness tend to process negative information critically. Rather than being constrained by single-source negativity, they seek complementary perspectives, interpret reviews reflectively, and frame negative experiences as opportunities for learning. SIPT supports this view, as individuals' responses to social cues depend not only on the information itself but also on internal psychological traits (Pfeffer & Salancik, 1978; DeYoung *et al.*, 2014).

Empirical studies have found that open individuals engage more deeply with review content, infer reviewer motives, and demonstrate greater exploratory behavior (Huang *et al.*, 2021). They are also more likely to identify positive value in negative experiences and experience complex emotional responses that reduce unidirectional negativity (Barford & Smillie, 2016).

According to SIPT, individuals construct meaning through interpretation based on cognitive frameworks. Travelers with high openness adopt more flexible and positive cognitive structures when processing uncertain or critical information (Tan & Tang, 2013).

For example, when recalling communication barriers, they may reflect on personal growth rather than react negatively. When exposed to unfavorable reviews, they often avoid immediate judgment and instead seek multiple viewpoints. Even when social media consensus is largely negative, open individuals show stronger independent thinking and maintain positive expectations if aligned with personal values.

Therefore, openness moderates the impact of negative travel memories and negative social media comments on both attitude and subjective norm. Travelers with high openness are more tolerant of critical information and less influenced by collective negativity. Based on this, the following hypotheses are proposed:

H6a: Openness moderates the relationship between negative travel memories and attitude. As openness increases, the negative effect of negative travel memories on attitude becomes weaker.

H6b: Openness moderates the relationship between negative social media comments and attitude. As openness increases, the negative effect of negative comments on attitude becomes weaker.

H6c: Openness moderates the relationship between negative social media comments and subjective norm. As openness increases, the negative effect of negative comments on subjective norm becomes weaker.

3. Methodology

To empirically test the conceptual model (Figure 1), this study employed Partial Least Squares Structural Equation Modeling (PLS-SEM), a variance-based technique suited for prediction-oriented research with complex models and relatively small samples (Hair et al., 2021). The model includes three independent variables—negative travel memories, negative social media comments, and perceived behavioral control—and examines their influence on Gen Z's educational tourism intention through two mediators: attitude and subjective norm. Openness to experience was introduced as a moderating variable to assess its role in processing negative digital information. The study followed a cross-sectional design conducted in three stages.

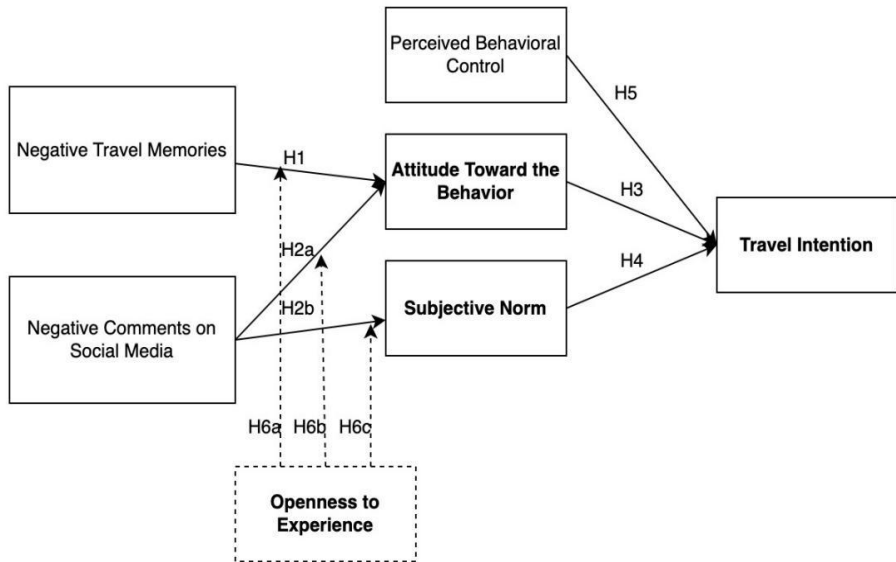


Figure 1: *Conceptual framework*

In the first stage, validated scales were adapted from prior studies and pretested for clarity and contextual relevance to Chinese educational tourism, enhancing content validity (see Table 2). In the second stage, data were collected via online survey using snowball sampling, targeting Gen Z individuals with international travel experience who planned or considered educational tourism in China. CMV was mitigated using procedural remedies such as anonymity assurance and neutrality of responses (Kock et al., 2021). The minimum required sample size was calculated as 119 via G*Power (like as Figure 2).

Table 2: Questionnaire Items

Constructs	Indicators	Source
Negative travel memories (NTM)	The destination was an unsafe place. The general local infrastructure of the destination was not adequate (e.g., airport road network, trails, etc.). I and/or my travel group faced unexpected difficulties while traveling.	Kim (2022)
Negative comments on social media (NCSM)	The local people at the destination were unfriendly. The description of the negative comment is informative. The negative comment is an honest description of China educational tourism experience.	Banerjee & Chua (2021)

<p>Attitude Toward the Behavior (ATB)</p>	<p>The strength of negative comments on social media is the vast amount of detailed information available about China educational tourism programs. I check if the China educational tourism-related information available in negative social media comments is logical. (R) I find educational tourism in China to be very interesting.</p>	<p>Zhao& Liu (2023)</p>
<p>Subjective Norm (SN)</p>	<p>I consider educational tourism in China to be worthwhile. I believe that educational tourism in China is meaningful. I think of educational tourism in China as a joyful activity. I will participate in educational tourism in China because it is popular among my friends/family.</p>	<p>Hsieh et al. (2016)</p>
<p>Perceived Behavioral Control (PBC)</p>	<p>I will participate in educational tourism in China because my friends/family have talked a lot about it. I will participate in educational tourism in China because it has been recommended by my friends/family. People who are important to me think participating in educational tourism in China is good. I have enough time to participate in educational tourism in China. I have enough money to participate in educational tourism in China. If I want to, I feel like I can participate in educational tourism in China. I feel nothing will prevent me from traveling to Chinese educational tourism if I want.</p>	<p>Zhao& Liu (2023); Park et al. (2017)</p>
<p>Travel Intention (TI)</p>	<p>I will save time and money within 24 months for the purpose of participating in educational tourism in China. I will participate in educational tourism in China with friends/family within 24 months. China is my first choice for educational tourism overseas in the future. Intend to visit Chinese educational tourism in the next 12 months.</p>	<p>Park et al. (2017); Lam & Hsu (2006)</p>
<p>Openness to Experience (OTE)</p>	<p>I am very quick at processing information. I have a constant desire to learn more. I feel that an opportunity to learn about the cultures of others is something to be treasured. I continually strive to uncover information about topics that are new to me.</p>	<p>Woo et al. (2014)</p>

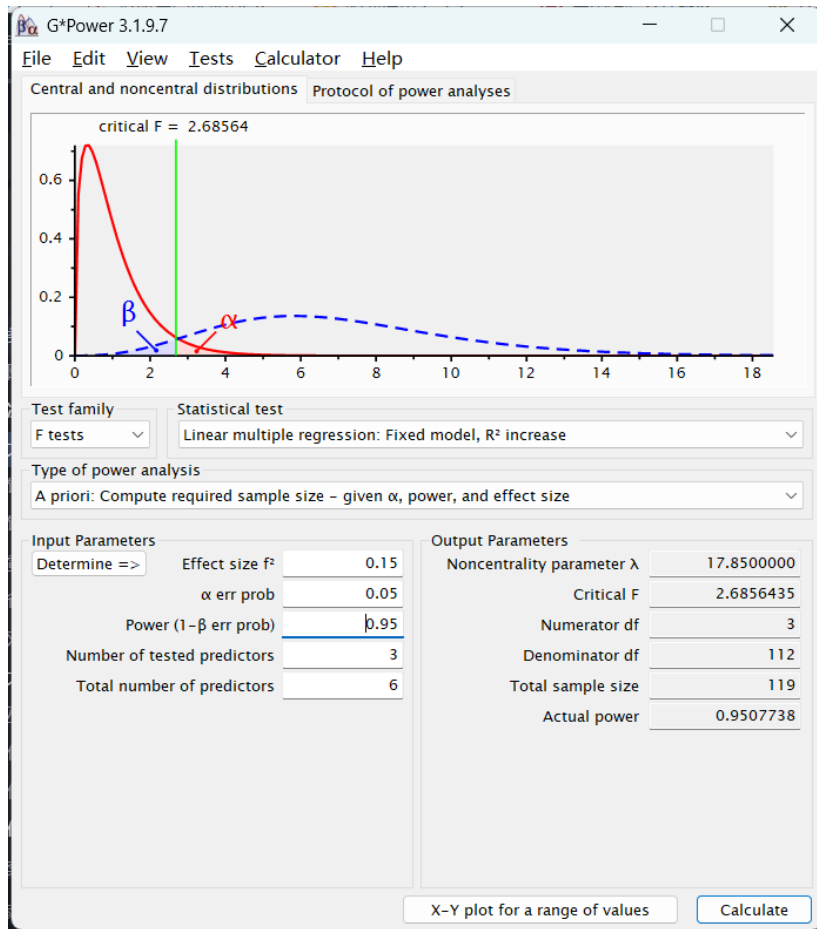


Figure 2: *G*power*

A total of 300 questionnaires were distributed, and 206 valid responses were retained (74.9% response rate). Respondents came from both Asian (65%) and Western (35%) countries. Gender, age, and travel frequency were collected as demographic covariates. All participants were presented with culturally relevant scenarios to ensure cross-cultural validity.

Data were analyzed using SmartPLS 4.0. Measurement model evaluation included average variance extracted ($AVE \geq 0.5$), composite reliability ($CR \geq 0.7$), and the heterotrait–monotrait ratio of correlations ($HTMT \leq 0.85$) to assess convergent and discriminant validity (Henseler *et al.*, 2015). Structural model analysis assessed R^2 , Q^2 , and f^2 , and interaction terms were used to test moderating effects (Hair *et al.*, 2021).

4. Results

4.1 Demographic Variables

In the third stage of data collection, only respondents born between 1995 and 2010, with international travel experience and interest in educational tourism in China, were included. Questionnaires with straight-lining or over 15% missing data were excluded,

resulting in 206 valid responses and a final response rate of 74.9% (see Figure 3). All retained data showed high integrity, with minimal missing values and no evidence of patterned or careless responses. Likert-scale items showed normal variation, and all English items were numerically coded (e.g., “Strongly Agree” = 7, “Strongly Disagree” = 1) to meet reflective measurement model requirements. Categorical variables such as gender and cultural background were dummy coded.

Demographic	Categories	Number	Percentage
Age	18-20	31	15.05
	21-23	53	25.73
	24-26	72	34.95
	27-28	50	24.27
Gender	Female	83	40.29
	Male	87	42.23
	Non-binary	21	10.19
	Prefer not to say	15	7.28
Highest Academic Qualification	Bachelor's Degree	93	45.15
	Doctor's Degree	12	5.83
	High School or equivalent	10	4.85
	Master's Degree	91	44.17
Travel Frequency	Frequently	81	39.32
	Occasionally	90	43.69
	Rarely	35	16.99

Figure 3: Demographic variables

To detect outliers, Mahalanobis distance and standardized z-scores were calculated, with no extreme values exceeding ± 3.29 identified in the final sample. Non-response bias was assessed by comparing the first and last 50 respondents on age, gender, and tourism intention using independent t-tests; no significant differences were found ($p > 0.05$), indicating the absence of non-response bias. To address CMV, procedural remedies were applied during data collection. Harman’s single-factor test showed the first factor accounted for 25.069% of the total variance, suggesting CMV was not a major concern.

In the demographic analysis, some categories showed a 0% response rate. No respondents were aged 15–17, which aligns with the study’s target population, as individuals in this age group typically lack the autonomy and financial means to engage in international educational programs independently. Similarly, no participants reported holding a professional degree or selecting the “other” option for education level. The sample was composed mainly of individuals with undergraduate, master’s, or doctoral degrees, consistent with the study’s focus. These groups represent the core participants in Chinese cultural immersion programs, given their academic readiness and motivation for cross-cultural learning.

4.2 Measurement Model Assessment

To ensure the reliability and validity of the measurement model, this study first conducted assessments of internal consistency reliability, indicator reliability, and convergent validity for each latent construct.

The measurement model demonstrated satisfactory reliability and validity. As shown in Figure 4 and Figure 5, with the exception of a few items (TI3=0.157 and PBC2=0.413), all indicator loadings exceeded 0.70, indicating strong measurement validity for the majority of items. Following the recommendations of Hair *et al.* (2019), indicators with loadings below 0.40 should be removed to improve model fit. Based on this guideline, the item TI3 was deleted. Although the loading of PBC2 did not meet the ideal 0.70 threshold, it was retained due to its theoretical significance and the potential reduction in content validity if removed. According to Hulland (1999), a loading between 0.40 and 0.70 is acceptable in exploratory research. Therefore, PBC2 was retained for further analysis, with ongoing attention to its performance in subsequent tests.

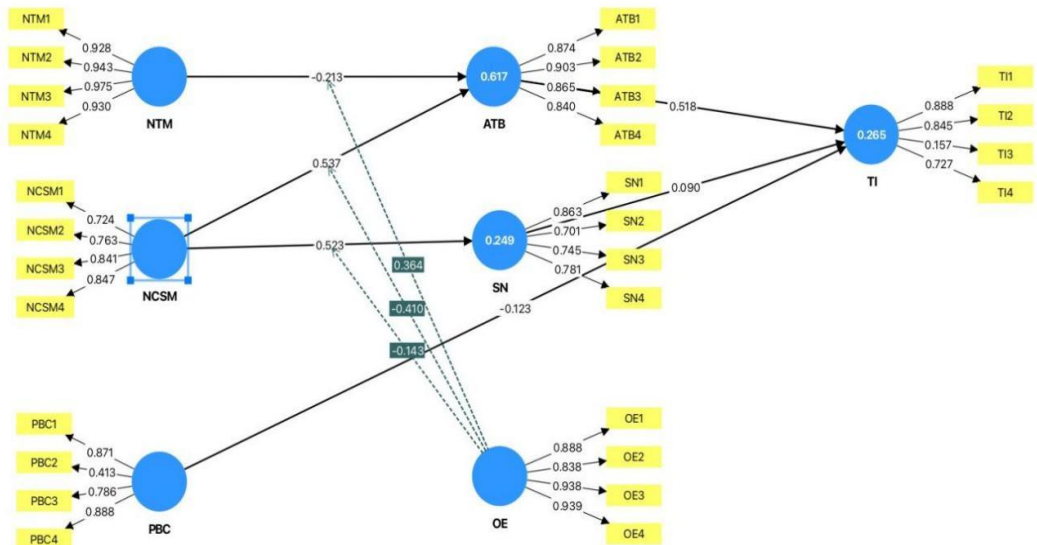


Figure 4: Model Path

Constructs	Items	Indicator Reliability	Convergent Validity	Internal Consistency Reliability	
		Outer Loadings	AVE	CR (rho_c)	Cronbach's Alpha
Attitude Toward the Behavior	ATB1	0.874	0.759	0.926	0.896
	ATB2	0.903			
	ATB3	0.865			
	ATB4	0.840			
Negative Comments on Social Media	NCSM1	0.724	0.633	0.873	0.805
	NCSM2	0.763			
	NCSM3	0.841			
	NCSM4	0.847			
Negative Travel Memories	NTM1	0.928	0.892	0.971	0.960
	NTM2	0.943			
	NTM3	0.975			
	NTM4	0.930			
Openness to Experience	OE1	0.888	0.813	0.945	0.925
	OE2	0.838			
	OE3	0.938			
	OE4	0.939			
Perceived Behavioral Control	PBC1	0.871	0.584	0.840	0.768
	PBC2	0.413			
	PBC3	0.786			
	PBC4	0.888			
Subjective Norm	SN1	0.863	0.601	0.857	0.776
	SN2	0.701			
	SN3	0.745			
	SN4	0.781			
Travel Intention	TI1	0.888	0.514	0.779	0.800
	TI2	0.845			
	TI3	0.157			
	TI4	0.727			

Figure 5: Measurement Model for the Constructs

All remaining items showed loadings well above 0.70 on their respective constructs and were statistically significant ($p < 0.001$). CR values ranged from 0.85 to 0.92, exceeding the recommended threshold of 0.70, thus indicating high internal consistency. AVE for each construct ranged from 0.59 to 0.76, above the 0.50 cutoff, supporting convergent validity.

Discriminant validity was confirmed using the Fornell-Larcker criterion. The square root of the AVE for each construct exceeded its correlations with all other constructs. In addition, the HTMT values for all construct pairs were below 0.85, further verifying discriminant validity (Henseler et al., 2015; Fornell & Larcker, 1981).

4.3 Structural Model Assessment

Before conducting hypothesis testing, this study assessed the structural model for multicollinearity, explanatory power, and predictive relevance. See Figure 6, 7, and 8 for details. The VIF values for all predictor variables were well below 3.3. The highest VIF value for the interaction term was 1.85, indicating that no significant multicollinearity existed among the independent variables (Hair *et al.*, 2021).

	ATB	NCSM	NTM	OE	PBC	SN	TI
ATB	0.871						
NCSM	0.310	0.796					
NTM	-0.130	0.097	0.944				
OE	0.462	-0.268	-0.102	0.901			
PBC	0.590	0.123	-0.267	0.336	0.764		
SN	0.618	0.457	-0.035	0.028	0.412	0.775	
TI	0.501	0.494	-0.011	-0.024	0.220	0.359	0.717

Figure 6: Fornell and Lareker Criterion

	VIF
ATB -> TI	2.071
NCSM -> ATB	1.120
NCSM -> SN	1.110
NTM -> ATB	1.066
OE x NCSM -> ATB	1.333
OE x NCSM -> SN	1.269
OE x NTM -> ATB	1.650
PBC -> TI	1.543
SN -> TI	1.627

Figure 7: Collinearity VIF Value (inner model matrix)

	ATB	NCSM	NTM	OE	PBC	SN	TI
ATB							0.176
NCSM	0.672					0.328	
NTM	0.112						
OE	0.386					0.051	
PBC							0.013
SN							0.007
TI							

Figure 8: Effect Size f^2

The study further evaluated the effect sizes (f^2) of each path in the model to determine whether the independent variables had substantive predictive power over the endogenous constructs. As shown in the figure 8, NCSM played a noticeable role in shaping respondents' attitudes and perceived social evaluations. In the path analysis for TI, the effect PBC and SN on TI were 0.013 and 0.007 respectively. Although small, these effect sizes are consistent with many statistically significant path coefficients in social science research, which frequently fall within the range of 0.02 to 0.10 (Williams et al., 2015). Thus, SN have been adoption.

According to the guidance of Kenny and Judd (2014), even relatively small effect sizes can be considered practically meaningful. This is particularly relevant when exploring the complex psychological mechanisms behind consumer intentions. Therefore, an f^2 greater than 0.01 is regarded as having explanatory relevance. Based on this criterion, the effect of perceived behavioral control is practically meaningful.

As presented above, the model explained 31.1% of the variance in attitude ($R^2 = 0.311$) and 24.9 percent of the variance in subjective norm ($R^2 = 0.249$). For behavioral intention, the model yielded an R^2 of 0.265, which indicates a moderate level of explanatory power. PLS-Predict was used to assess the model's out-of-sample predictive performance. The Q^2 values for the intention indicators were all positive, like figure 9, and the PLS-SEM prediction errors were lower than those of the corresponding linear regression benchmarks. These results demonstrate that the model possesses acceptable predictive relevance (Shmueli et al., 2019).

Item	PLS-SEM_RMSE	LM_RMSE	PLS-LM	Q ² predict	Predictive Power
TI1	0.652	0.783	-0.131	0.322	Low Predictive Power
TI2	0.688	0.792	-0.104	0.294	
TI4	0.701	0.8	-0.099	0.311	

Figure 9: Predictive Power of the Items

Following the multicollinearity diagnostics, the study further examined the explanatory power of the structural model to evaluate the extent to which the endogenous variables were accounted for by their predictors.

Next, the study tested the mediating pathways. The pathway from NTM to ATB to TI was found to be significant. There was no direct effect from NTM to TI, which supports the presence of a full mediation effect. In contrast, for the pathway from NCSM and NTM through SN to TI, the path from SN to TI was not statistically significant. This result indicates that the mediating pathway through SN does not hold.

After introducing the moderating variable, openness to experience, the model's explanatory power improved substantially. Specifically, the R^2 value for ATB was 0.617. This indicates that the predictor variables in the model collectively explained approximately 61.7% of the variance in attitude, which meets the substantial explanatory power criterion defined by Hair et al. (2021). The R^2 value for SN was 0.249, suggesting that NCSM and openness to experience jointly explained 24.9% of the variance in SN. The R^2 value for TI was 0.265, which represents a moderate level of explanatory power.

4.4 Hypothesis testing

The final step in evaluating the structural model was hypothesis testing. To assess the significance of the factor loadings, weights, and path coefficients estimated by the PLS algorithm, SmartPLS employed the bootstrapping procedure. This study set the number of bootstrap subsamples at 10,000. According to the results shown in Table 3.

Table 3: Moderation Analysis Summary

Path	Path Coefficient (β)	T-value	P-value	f ²	Effect Size Interpretation	Result
H1: NTM -> ATB	-0.213	3.480	0.001	0.112	Small	Support
H2: NCSM -> ATB	0.537	10.769	0.000	0.672	Large	Support
H2a: NCSM -> SN	0.523	6.245	0.000	0.328	Medium	Support
H3: NTM -> ATB -> TI	0.518	4.430	0.000	0.176	Medium	Support
H4: NCSM+NTM -> SN -> TI	0.090	0.830	0.406	0.007	None	Not Support
H5: PBC -> TI	-0.123	1.469	0.142	0.013	None	Not Support
H6a: OE x NTM -> ATB	0.364	4.308	0.000	1.269	Large	Support
H6b: OE x NCSM -> ATB	0.410	7.350	0.000	1.269	Large	Support
H6c: OE x NCSM -> SN	-0.143	2.152	0.031	0.032	Small	Support

5. Discussion

The empirical results provided clear evidence supporting several key hypotheses related to Gen Z's decision-making in the context of educational tourism. Beginning with the main direct effects, H1 was supported, confirming that negative travel memories exert a significant negative impact on attitude. This aligns with foundational literature emphasizing the potency and persistence of negative cognitive and emotional experiences. Baumeister *et al.* (2001) highlighted that negative memories typically carry greater emotional intensity and are consequently more salient in cognitive evaluations. Such

memories often overshadow positive experiences, shaping subsequent judgments, attitudes, and values. Further, research by Sthapit et al. (2021) underscored this finding by demonstrating that negative travel incidents not only linger longer in individuals' memory but also disproportionately influence subsequent behavioral decision-making processes. The present study's empirical findings are consistent with these prior works, emphasizing the critical role that negative past travel experiences play in shaping Gen Z's attitudes toward educational tourism destinations.

H2a and H2b, which examined the impact of negative comments on social media on attitude and subjective norm respectively, were also supported. The confirmation of H2a, revealing a positive influence of negative social media comments on attitude, initially appears paradoxical. However, literature provides theoretical justification for this finding. Sparks and Browning (2011) posited that moderate negativity in reviews often enhances the perceived authenticity and trustworthiness of the information source. Rather than dissuading potential tourists, moderate negative comments can lead to deeper engagement and more nuanced destination evaluations. Filieri et al. (2015) similarly found that negative information could heighten user awareness and expectations about service quality or performance. This effect potentially motivates users to form a more considered, reflective attitude. The empirical results in the current study reinforce these theoretical assertions, suggesting that moderate negativity, rather than universally harming destination attitudes, may serve to bolster credibility and facilitate deeper cognitive engagement.

The support for H2b further enriches this discussion by highlighting the impact of negative comments on subjective norms. Mohd Azhar et al. (2022) argued that negative social media comments significantly amplify subjective norms, influencing individuals' perceptions of social expectations. Huang et al. (2020) similarly explained that negative reviews function as potent social cues that signal collective approval or disapproval, thereby reinforcing subjective normative beliefs. Empirical evidence from this study confirms these assertions, indicating that Gen Z members internalize prevalent negative online discourses, perceiving them as indicative of broader community opinions. Thus, pervasive negative comments effectively amplify normative pressure and social expectations, guiding individuals toward conforming behaviors or avoidance of behaviors perceived as socially discouraged.

Turning to mediation effects, H3, which examined the mediating role of attitude between negative travel memories and behavioral intentions toward educational tourism, was confirmed. This mediation effect aligns closely with existing literature emphasizing the crucial intermediary function of attitude in decision-making processes. Han et al. (2010) demonstrated that attitudes possess robust explanatory power, particularly in high-involvement tourism contexts. Attitude provides a stabilizing cognitive framework that can mitigate negative emotional spillovers by highlighting destination distinctions. Quintal et al. (2010) further reinforced this notion, demonstrating that attitudes maintain their positive influence on behavioral intention even amid perceived risks or uncertainties. The findings of the current study corroborate these insights, showing attitude as a resilient mediator bridging negative cognitive experiences and behavioral responses, reflecting Gen Z's emotional resilience and distinctive decision-making style.

However, H4 proposing subjective norm as a negative mediator between negative travel memories, negative comments on social media, and behavioral intentions, was not

supported. This outcome diverges from traditional assumptions of TPB. The divergence may stem from unique generational characteristics specific to Gen Z. Han et al. (2010) further contextualized this finding by noting that educational tourism decisions, characterized by highly individualized experiences, often rely more heavily on personal attitudes than subjective norms. Consequently, the anticipated mediation role of subjective norms was diminished in this study.

Similarly, H5, suggesting a positive relationship between perceived behavioral control and behavioral intention, was not supported. The structured and externally controlled nature of educational tourism may explain this result. According to Kuther (2002), structured activities reduce the necessity for individual control perceptions, limiting the influence of perceived behavioral control on behavioral intentions. Armitage and Conner (2001) echoed this perspective, suggesting that perceived behavioral control diminishes in influence when external conditions predominate decision-making processes. Consistent with Han et al. (2010), the structured nature of educational tourism places greater emphasis on attitudes and emotional motivations rather than individual control perceptions.

Regarding moderation effects, H6a, H6b, and H6c, examining openness to experience, were supported. H6a demonstrated a positive moderation effect, indicating that higher openness levels reduce the negative impact of negative travel memories on attitude. This aligns with DeYoung et al.'s (2014) characterization of open individuals as cognitively complex and capable of nuanced information processing, reducing negative emotional influences.

Conversely, H6b and H6c both demonstrated negative moderation effects, indicating that openness intensified the adverse impact of negative social media comments on attitude (H6b) while weakening their positive influence on subjective norms (H6c). Barford and Smillie (2016) elucidated this dynamic, suggesting that although open individuals adeptly process mixed emotions, they are more susceptible to intensified negative feelings in information-rich environments and simultaneously exhibit stronger resistance to conforming pressures from emotionally charged collective discourses. Therefore, despite encountering strong normative cues, highly open individuals maintain greater capacity for independent judgment, reducing the overall influence of negative social media comments on subjective norm perceptions.

This finding indicates that openness to experience moderates how travelers interpret negativity, encouraging reflective processing rather than avoidance. Highly open individuals tend to cognitively reframe unpleasant experiences, transforming emotional discomfort into opportunities for learning and personal growth. However, whether this buffering function of openness operates consistently across cultures remains an open question. Cross-cultural and educational comparisons could reveal variations in how openness mitigates emotional bias, providing valuable insights into the development of psychological resilience among Gen Z travelers in sustainable tourism contexts.

In the context of social media communication, reviews function as information cues in Social Information Processing Theory (SIPT), where even a few negative comments can influence trust and perceived credibility. Moderate negativity often enhances authenticity by signaling transparency, which reinforces positive attitudes toward both the information source and the destination. From an information processing

perspective, this moderate level of negativity increases message diagnosticity and promotes deeper cognitive engagement.

However, this credibility-enhancing effect has clear boundaries. When exposure to negative content becomes excessive, dissatisfaction may become normalized, gradually eroding the perceived destination image and diminishing travelers' confidence. The relationship thus appears curvilinear: limited negative feedback can sustain or even strengthen favorable attitudes by enhancing trust and authenticity, whereas excessive negativity ultimately reduces positive evaluations and behavioral intentions.

In digital sustainability practices, maintaining this balance is crucial. Transparency should foster authenticity and trust without undermining destination reputation. Future research could further examine how varying degrees of online negativity interact with perceived transparency, trust, and cultural differences to shape sustainable destination image, visitor loyalty, and Gen Z travelers' psychological resilience.

In sum, the empirical findings reveal nuanced relationships within Gen Z's decision-making framework, where negative experiences and comments shape attitudes and social perceptions through personal dispositions like openness to experience, providing insights for managing destination image and influencing behavioral intentions.

6. Result

6.1 Theoretical Contributions

This study makes several theoretical contributions to the literature on tourism psychology and information processing by extending current understandings of how compound negative information influences tourist decision-making. First, it enriches the theoretical discourse on the negative spillover effect by revealing how personal negative travel memories and negative social media comments interactively shape Gen Z's educational tourism intentions. Unlike prior research that typically isolates these information sources (Kim et al., 2022; Sparks & Browning, 2011), this study demonstrates their joint impact within a unified framework, thereby expanding the explanatory scope of negative spillover in tourism decision-making.

By integrating the Social Information Processing Theory (SIPT) and the Theory of Planned Behavior (TPB), this study develops a cross-theoretical model that simultaneously accounts for individual cognitive evaluations and socially constructed normative pressures. It advances TPB by illustrating how socially shared negative cues influence attitude formation and subjective norms in emotionally negative contexts, while extending SIPT by demonstrating how individuals cognitively negotiate between personally experienced and socially transmitted negative information.

This study introduces personality traits—specifically openness to experience—into the TPB–SIPT integrated model, highlighting the heterogeneity of Gen Z's responses to negative information. Whereas previous research has primarily associated openness with the processing of positive stimuli (Jach et al., 2022), the current findings show that openness buffers the detrimental effects of negative memories and online comments by facilitating cognitive reappraisal. This insight contributes to a more nuanced understanding of how personality traits moderate information processing in digitalized tourism environments. Collectively, these contributions broaden existing decision-making models

by revealing how individual psychological traits interact with complex negative information flows in shaping tourist behavioral intentions.

These findings nuance the conventional positivity bias model of tourism behavior. Whereas many studies assume that positive experiences dominate future intentions, the show that negative memories and critiques independently suppress sustainable tourism intentions. This partially aligns with Sparks & Browning (2011), who found that negative online reviews reduce revisit intentions. In the SIPT–TPB framework, negative social information has a stronger influence on Attitude than a simple positivity bias would suggest. In practice, this means that sustainable travel intentions among Gen Z are not determined by positive content alone; negative cues alter attitudes and intentions via social information pathways. Thus, instead of an optimistic bias, there is an asymmetry that positive feedback encourages intention, but negative feedback disproportionately hinders it, calling for TPB models to incorporate both valences of information.

6.2 Practical Contributions

This study also provides important practical implications for sustainable destination management and educational tourism marketing in the era of social media and user-generated content. First, by revealing the interactive effects of negative travel memories and online comments, it underscores the critical role of digital discourse management in maintaining destination sustainability. Social media narratives can rapidly amplify dissatisfaction and significantly influence destination choice. For example, Australian tourists' widespread characterization of Bali as a "traffic nightmare" on social platforms prompted many to shift their plans to Bangkok, resulting in a measurable decline in Bali's tourist arrivals (McIlveen, 2025). This case exemplifies how unmanaged negative narratives can directly undermine the social and economic sustainability of a destination.

Destination managers should therefore invest in advanced social listening systems and sentiment analytics to monitor public opinion and respond promptly with corrective information or service improvements. Proactive engagement not only mitigates reputational damage but also transforms negative feedback into opportunities for sustainable destination enhancement. As shown in Bali's case, persistent criticism ultimately spurred local authorities to reconsider infrastructure policies (Wang & Yan, 2022), illustrating how adaptive governance and feedback-driven reforms contribute to long-term destination resilience and sustainability.

Second, the findings provide guidance for tourism businesses, particularly educational travel providers targeting Generation Z. Moderate negative feedback, if handled transparently, can enhance perceived authenticity and social trust, as younger tourists tend to distrust overly polished or censored reviews. Consistent with Keelson *et al.* (2024), failure to acknowledge and address criticism diminishes service appeal and undermines consumer confidence. Businesses should therefore adopt a constructive and sustainable communication strategy—publicly addressing concerns, offering timely solutions, and demonstrating an enduring commitment to quality improvement.

To operationalize this, companies should establish clear complaint-handling protocols, train staff in empathetic communication, and encourage balanced feedback

rather than suppressing negative comments. When appropriately managed, such reviews can reinforce credibility, build trust, and cultivate long-term relationships with travelers, thereby contributing to the sustainable competitiveness of destinations and tourism enterprises.

6.3 Limitations and Future Research

Several limitations arise from this research sample. The surveyed only foreign Gen Z individuals interested in educational tourism in China, so the findings may not generalize to other age cohorts, domestic tourists, or different cultural groups. Gen Z in other countries or older travelers might have different attitudes, subjective norms, and perceived behavioral control regarding sustainable tourism. Moreover, this cross-sectional, self-selected sample limits causal inference and may introduce response bias. While PLS-SEM is robust for small and non-normal samples, the homogeneity of our participants constrains external validity. Future research should test the model with larger, more diverse samples for example multiple nationalities, wider age ranges, to determine whether the observed SIPT-TPB relationships hold broadly or are context-specific to this particular group.

The study focused on behavioral intention, which may not fully reflect actual behavior due to external constraints such as finances, visa policies, and family support. Future studies could incorporate follow-up tracking or collaborate with educational and tourism institutions to collect behavioral data, thereby improving the model's predictive accuracy and ecological validity.

Cross-sectional design cannot capture how memories and attitudes evolve over time. The recommend longitudinal or panel studies to examine temporal dynamics of negative spillover. For example, tracking tourists' Attitude and Intentions after their initial trip and again later could reveal whether the intensity of negative travel memories diminishes and how corresponding intentions change. A longitudinal SIPT-TPB approach would clarify causality and could reveal adaptation effects that perhaps repeated exposure to criticism lessens its impact. By observing participants over time, researchers can also test whether shifts in subjective norms alter the memory-intention relationship. Such designs would deepen understanding of the stability and causal direction of negative spillover effects on sustainable tourism intentions.

Future research could also explore cultural differences in emotional spillover, the impact of visual and audiovisual user-generated content, and the role of algorithmic recommendations in shaping memory-driven attitudes (Wu et al., 2024; Cinelli et al., 2021). Overall, these limitations offer clear directions for advancing interdisciplinary research in tourism psychology and digital communication.

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