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ECOTOURISM EXPERIENCE AND PRO- ENVIRONMENTAL BEHAVIOUR: THE ROLES OF ECOLOGICAL VALUES AND ETHICS IN A TAIWANESE WETLAND

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Abstract:

Enjoyable visits to protected areas do not automatically lead to stronger conservation behaviours. The specific mechanisms connecting on-site ecotourism experiences to pro-environmental intentions remain unclear. This study surveyed 390 visitors at Gaomei Wetland in Taiwan. Using structural equation modelling, we investigated how three key dimensions of the on-site experience—educational and aesthetic appreciation, perceived gains in well-being and knowledge, and recreation-oriented motivation—influenced visitors' broader ecological values and reported ethical awareness. We further examined how these psychological factors related to two distinct behavioural intentions: voluntary stewardship actions and compliance with site regulations. Results demonstrated that Educational/Aesthetic Experience and Well-being & Learning Benefits positively predicted proactive stewardship intentions through both direct and indirect pathways (partially mediated by ecological values). In contrast, regulatory compliance was primarily driven by environmental ethics and conservation awareness, with Tourism-First Perspective showing both direct and indirect positive effects. By proposing and testing the Experience-Driven Behavioural Transformation Model (EDBTM), this study integrates Experience Economy Theory, Experiential Learning Theory, and the Theory of Planned Behaviour, revealing differential pathways from on-site experiences to distinct behavioural outcomes. Overall, enjoyable experiences alone do not reliably produce consistent conservation-oriented intentions. What ultimately matters is whether the visit is perceived as strengthening visitors' ecological values and contributing to a genuine sense of ethical responsibility toward the site. These findings provide practical insights for designing interpretive programs and visitor management strategies in wetlands and other protected natural areas.

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Keywords:

Ecological Values; Environmental Ethics; Outdoor Recreation;
Pro-Environmental Intentions; Wetland Tourism; Experience-
Driven Behavioural Transformation Model



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Introduction

Observations at Gaomei Wetland often showed an interesting mix of visitor reactions. While most people clearly enjoyed walking the boardwalks and looking out over the mudflats, their responses to the place were far from uniform. Some would stop after reading signs about fragile habitats and quietly worry about disturbing crabs or other wildlife with their footsteps. Others, focused on getting good photos, sometimes stepped off the paths. These small but common behaviours raised a basic question that much of the existing literature has not fully answered: why do enjoyable on-site experiences in ecotourism not always lead to consistent pro-environmental actions?

Previous studies have established that visits to natural areas can increase environmental knowledge and awareness (Lee & Moscardo, 2005; Ballantyne et al., 2011). Yet most of this work has concentrated on what visitors learn or how their general attitudes change, with less emphasis on the moral reflections they make during the visit. At Gaomei, broad ecological values and situation-specific ethical awareness frequently seemed to follow different paths. Some visitors who cared deeply about wetlands in general would still bend minor rules for convenience, while others developed a strong but temporary sense of responsibility that guided their actions even when no staff were present. Recreation-focused visitors often picked up litter they noticed, but were also more willing to overlook regulations when unsupervised. Those who spent time engaging with educational signs about birds and tidal ecosystems, however, tended to express stronger intentions to follow the rules, even when it was inconvenient.

Such differences may be especially important in managed wetland environments like Gaomei, where visitor movement is largely confined to boardwalks and subject to seasonal restrictions (Tang et al., 2025). This structured setting differs from more open natural areas and could influence how experiences connect with values and ethics. Current theories, however, have not fully explained these connections. Value-Belief-Norm theory (Stern, 2000) helps explain the role of moral obligation, but says little about how a short recreational visit might activate or reshape deeper ecological values. Extensions of the Theory of Planned Behaviour have added moral elements (Han, 2015), yet on-site experiences are often left on the periphery of the model. Although some recent work suggests direct nature contact can shape longer-term thinking (Zhang et al., 2023), researchers still lack a clear framework for tracing different types of experiences through to both value change and ethical awareness, and then to distinct behavioural intentions.

This study addresses these gaps by proposing the Experience-Driven Behavioural Transformation Model (EDBTM). The model integrates ideas from Experience Economy Theory (Pine & Gilmore, 1999), Kolb's experiential learning cycle (Kolb, 1984), and the Theory of Planned Behaviour (Ajzen, 1991), while keeping actual on-site experiences at the centre. It suggests that educational-aesthetic, well-being and knowledge-related, and recreation-oriented aspects of the visit influence visitors' broader ecological values and reported ethical awareness in different ways, ultimately leading to two separate types of pro-environmental intentions: voluntary stewardship and regulatory compliance.

Gaomei Wetland was chosen as the study site because its well-defined rules and restricted access make it a good setting for examining these processes under real management conditions. Due to access restrictions during the study period, an online questionnaire targeting recent visitors was employed. In many protected areas, managers must balance public enjoyment with conservation goals. Clarifying the distinct pathways from experience to behaviour can therefore provide both theoretical refinement and useful guidance for practice.

Literature Review

Experiential Engagement in Wetland Tourism

In this study, experiential engagement refers to visitors' active involvement with the educational content and aesthetic qualities of the wetland. Such engagement is expected to help build ecological values, which may then strengthen personal environmental ethics and a sense of responsibility toward conservation. These constructs are kept distinct in the model to better understand how direct on-site experiences can shift visitors from more self-centred views toward conservation priorities.

Experience Economy and Experiential Learning Theories

Tourism at Gaomei Wetland involves more than just scenic views or practical benefits. A large part of its value comes from direct, unmediated contact with the natural landscape. This idea fits well with Pine and Gilmore's (1999) Experience Economy Theory, which emphasises how educational and aesthetic dimensions shape people's thoughts and feelings. Kolb's (1984) Experiential Learning Theory adds an important dynamic by describing learning as a continuous cycle — from concrete experience through reflection and conceptualisation to active experimentation. In this view, every visit becomes another step in an ongoing process of environmental re-evaluation.

Although both theories are frequently used in tourism research, they are rarely combined. Experience Economy Theory typically explains the sensory and memorable side of visits, while Experiential Learning Theory focuses on how reflection leads to changes in perspective. At Gaomei, where visitors are largely restricted to boardwalks, integrating these two perspectives offers a useful way to examine how designed experiences may encourage deeper reflection and value change (Tang et al., 2025).

Worldviews and Situational Ethics

Environmental attitudes have long been viewed as key predictors of pro-environmental behaviour. The New Ecological Paradigm (NEP) scale (Dunlap et al., 2000) remains one of the

most widely used measures of general human–nature orientations. Studies such as Chiu et al. (2014) have found that stronger NEP endorsement is generally linked to higher intentions to act responsibly among tourists. However, an important gap persists: we still know relatively little about how actual tourism encounters can shape or recalibrate these deeper worldviews. It is also unclear whether broad ecological values and immediate, situation-specific ethical awareness operate through the same pathways. The present model therefore treats General Ecological Values (EV) and Contextual Environmental Ethics and Conservation Awareness (EECA) as related but distinct constructs. EV represents relatively stable, cross-situational beliefs about the human–nature relationship. EECA, by contrast, captures a more immediate, site-specific sense of moral obligation arising during the visit. This distinction matters because the two do not always converge in predicting behaviour: holding strong ecological values does not guarantee rule-following at a given site unless the visit activates a context-specific ethical response (Zhang et al., 2023). A related point concerns TFP. It is not simply an absence of environmental concern, but a motivational priority where hedonic enjoyment takes precedence during the visit. Importantly, TFP does not preclude the development of site-specific ethics; as the model later hypothesises, it may even positively influence regulatory compliance when conservation awareness is effectively triggered.

Extending the Theory of Planned Behaviour

Ajzen's (1991) Theory of Planned Behaviour has been widely applied in tourism and environmental studies (Han, 2015). However, it provides limited explanation of how the immediate sensory experience of being in a natural setting can reshape the beliefs that underlie behavioural intentions. Previous work has shown that immersive experiences can influence both the perceived feasibility and desirability of pro-environmental actions (Bamberg & Möser, 2007). The EDBTM therefore positions on-site experiential dimensions as central antecedents rather than peripheral factors, offering a more complete account of how managed natural environments can foster conservation intentions.

Theoretical Integration: The Logic of the EDBTM

The EDBTM arranges three theories along a sequential causal chain. The model begins with on-site experiential dimensions, grounded in Pine and Gilmore's (1999) Experience Economy framework. EAE and WLB correspond to the educational and escapist realms; TFP aligns with the entertainment dimension. These experiential inputs then feed into Kolb's (1984) experiential learning cycle. EAE and WLB initiate concrete experiences that prompt reflection and abstraction about human–nature relationships—a process captured by EV. TFP, however, does not readily lead to such abstraction; its influence is more direct. Finally, the model extends Ajzen's (1991) Theory of Planned Behaviour by treating EV as behavioural beliefs that shape general dispositions, while EECA functions as a situational moral norm. These two mediators then lead to distinct behavioural intentions: PES and RC, respectively. The theoretical linkages are illustrated in Figure 1.

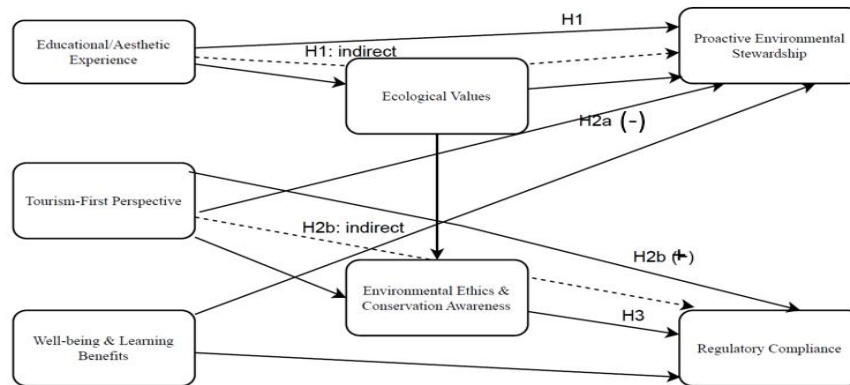


Figure 1: The Experience-Driven Behavioural Transformation Model (EDBTM) and the Proposed Hypotheses.

Shaded blocks indicate theoretical provenance: Experience Economy (EAE, WLB, TFP); Experiential Learning (EAE → EV); extended TPB (EV → PES; EECA → RC). Solid lines = direct paths; dashed lines = mediated paths.

Toward an Integrated Model: The Experience-Driven Behavioural Transformation Model (EDBTM)

The EDBTM integrates Pine and Gilmore's (1999) experience economy perspective, Kolb's (1984) experiential learning cycle, and Ajzen's (1991) Theory of Planned Behaviour into a single causal chain. Rather than treating experiential dimensions as direct predictors of behaviour, we position them as antecedents that activate visitors' subsequent cognitive and affective processing. Educational and aesthetic experiences can trigger moral reflection, whereas recreation-oriented elements primarily shape the affective tone of the visit.

Drawing on Kolb's cycle, we suggest that ecological values and environmental ethics develop when visitors actively reflect on what they encounter on site. Encounters with striking natural landscapes can lead them to reconsider human–nature relationships and develop a stronger sense of responsibility. By embedding experiential engagement within the TPB framework—not as an external variable but as a factor that can recalibrate beliefs—the EDBTM offers a more layered account of how managed natural settings can give rise to conservation intentions.

The model also deliberately separates self-initiated stewardship from rule-based compliance, recognising that these two forms of behaviour often stem from different motivational sources. This distinction is supported by Buta et al. (2014) and more recent work by Wang et al. (2025), which shows that context-dependent ethical awakening plays a particularly important role in encouraging rule-following behaviour in fragile habitats.

Research Gaps and Hypotheses Development

Despite growing interest in ecotourism behaviour, several important gaps remain. Much existing work still treats experiential quality, learning processes and behavioural intentions as separate pieces rather than as interconnected parts of one process. We also know relatively little about whether broad ecological values and the more immediate, situation-specific ethical awareness that arises during a visit operate through the same or different pathways. In addition,

pro-environmental behaviour is frequently treated as a single outcome, even though voluntary stewardship and rule compliance may be driven by quite different motivations—especially in highly structured wetland settings such as Gaomei.

To address these gaps, the present study proposes the Experience-Driven Behavioural Transformation Model (EDBTM). The model draws together Pine and Gilmore's (1999) Experience Economy Theory, Kolb's (1984) Experiential Learning Theory and Ajzen's (1991) Theory of Planned Behaviour. It places on-site experiential dimensions at the centre, treating them as key antecedents that can activate both broader ecological values and reported ethical awareness, which then lead to two distinct behavioural intentions.

The following hypotheses are advanced:

H1: Educational/Aesthetic Experience (EAE) and Well-being & Learning Benefits (WLB) are positively associated with Proactive Environmental Stewardship (PES); WLB is also positively associated with Regulatory Compliance (RC). Specifically, Ecological Values (EV) partially mediate the relationship between EAE and PES.

H2a: Tourism-First Perspective (TFP) negatively affects Proactive Environmental Stewardship (PES).

H2b: Tourism-First Perspective (TFP) positively affects Regulatory Compliance (RC), partially mediated by Environmental Ethics and Conservation Awareness (EECA).

H3: Environmental Ethics and Conservation Awareness (EECA) positively predicts Regulatory Compliance (RC).

The hypothesised relationships are summarised in Figure 1 above.

Methodology

Research Design and Sampling

We chose Gaomei Wetland in Taichung as our study site. It is a protected wetland with restricted access, tidal-dependent opening hours, and a three-zone management system backed by enforceable penalties. With clear on-site regulations and interpretive signage, Gaomei provided an ideal context for testing the Experience-Driven Behavioural Transformation Model (EDBTM). Because on-site data collection was not practical, we distributed an anonymous online questionnaire through social media and personal networks. Respondents were screened to ensure they had visited Gaomei within the past six months. From 400 returned questionnaires, 390 were retained as valid. To check data quality, we compared the age and gender distribution of our sample with official visitor statistics for the same period; no significant differences were found. We also ran Harman's single-factor test; the first unrotated factor explained 32.4% of the total variance, which is well below the level that would raise serious concern about common method bias.

All participation was voluntary and no identifying information was collected. The measurement items were taken from established scales and lightly adapted to fit the wetland context. Experiential components were measured using items based on Pine and Gilmore's (1999) Experience Economy framework, following the approach suggested by Lee and Jan (2015). Ecological value orientations were assessed with items from the New Ecological Paradigm (NEP) scale (Dunlap et al., 2000). To reduce the risk of common method variance, we guaranteed respondent anonymity, conducted a pilot test before the main survey, and rotated the order of items across different sections of the questionnaire.

Measurement and Operationalization

A five-point Likert scale (1 = strongly disagree to 5 = strongly agree) was used for all constructs. The scales were adapted from established sources and tailored to the wetland context. Educational/Aesthetic Experience (EAE) and Well-being & Learning Benefits (WLB) were based on Pine and Gilmore's (1999) Experience Economy framework, following the approach of Lee and Jan (2015). Tourism-First Perspective (TFP) measured the extent to which leisure enjoyment and hedonic motives dominated the visit. Ecological Values (EV) were assessed using four items from the core worldview dimension of the New Ecological Paradigm (NEP) scale (Dunlap et al., 2000). Environmental Ethics and Conservation Awareness (EECA) included five items capturing both moral obligation toward conservation and awareness of the wetland's specific protection needs. Proactive Environmental Stewardship (PES) referred to willingness to engage in conservation actions beyond regulatory requirements. Regulatory Compliance (RC) measured intentions to follow the site's rules and policies. These scales have proven effective in boardwalk-based wetland settings when focusing on place attachment and conservation awareness (Tang et al., 2025). Measurement properties are reported in the Findings section (see Table 1).

Table 1: Measurement Model Results

Construct	Item	Loading	CR	AVE
Tourism-First Perspective (TFP)	TFP1	0.79	0.85	0.58
	TFP2	0.82		
	TFP3	0.76		
	TFP4	0.71		
Educational/Aesthetic Experience (EAE)	EAE1	0.74	0.82	0.53
	EAE2	0.72		
	EAE3	0.75		
	EAE4	0.70		
Well-being & Learning Benefits (WLB)	WLB1	0.73	0.80	0.51
	WLB2	0.71		
	WLB3	0.70		
	WLB4	0.74		
Ecological Values (EV)	EV1	0.75	0.78	0.52
	EV2	0.72		
	EV3	0.70		
	EV4	0.71		
Environmental Ethics & Conservation Awareness (EECA)	EECA1	0.81	0.88	0.64
	EECA2	0.79		
	EECA3	0.83		
	EECA4	0.80		
	EECA5	0.76		

Construct	Item	Loading	CR	AVE
Proactive Environmental Stewardship (PES)	PES1	0.77	0.84	0.57
	PES2	0.75		
	PES3	0.73		
	PES4	0.78		
Regulatory Compliance (RC)	RC1	0.74	0.81	0.52
	RC2	0.72		
	RC3	0.70		
	RC4	0.73		

Note. All factor loadings are standardised and significant at $p < .001$. CR = composite reliability; AVE = average variance extracted.

Estimation Techniques and Statistical Diagnostics

We used structural equation modelling (SEM) in Mplus 8.3 with a robust maximum likelihood (MLR) estimator to test the EDBTM. This approach allowed us to estimate both direct and mediated relationships within a single framework. Model fit was evaluated using conventional criteria: χ^2/df below 3.00, CFI and TLI above 0.90, and RMSEA and SRMR below 0.08. Indirect effects were tested using bias-corrected bootstrapping with 5,000 resamples (Hayes, 2017; Preacher & Hayes, 2008). An indirect effect was considered significant when its 95% confidence interval did not include zero.

To check for common method variance, we ran two tests (Podsakoff et al., 2003). Harman's single-factor test gave us 32.4%—below the 50% cut-off. We also added a common latent factor to the measurement model; the path coefficients changed very little ($\Delta\beta < 0.05$). Alongside these tests, we kept responses anonymous, rotated item order, and ran a pilot study to reduce bias.

Findings

Model Fit and Measurement Validation

The structural equation model showed acceptable overall fit to the data: $\chi^2/df = 2.15$, RMSEA = 0.06 (90% CI [0.04, 0.08]), CFI = 0.93, TLI = 0.90, and SRMR = 0.05. Although TLI equalled the conventional cut-off, this is acceptable given the model's complexity and sample size (Hair et al., 2010); the other indices were all within satisfactory ranges.

The measurement model also performed well. All factor loadings exceeded 0.70. Composite reliability (CR) ranged from 0.78 to 0.88, and average variance extracted (AVE) from 0.52 to 0.64, meeting recommended thresholds (Hair et al., 2010). Discriminant validity was supported by both the Fornell–Larcker criterion and HTMT ratios (all < 0.85 ; Henseler et al., 2015). Detailed results are presented in Table 2.

Table 2: Structural Model Fit Indices

Fit Indices	Value	Recommended Threshold
χ^2/df	2.15	< 3.00
RMSEA (90% CI)	0.06 (0.04–0.08)	< 0.08
CFI	0.93	> 0.90
TLI	0.90	> 0.90
SRMR	0.05	< 0.08

Note. All fit indices meet the recommended thresholds for acceptable model fit.

Dual Behavioural Pathways

The structural results offered partial to full support for the proposed hypotheses (see Figure 2). Educational/Aesthetic Experience was positively associated with Ecological Values ($\beta = .24^*$) and Proactive Environmental Stewardship ($\beta = .24^*$). Well-being & Learning Benefits positively predicted Proactive Environmental Stewardship ($\beta = .16^{**}$) and Regulatory Compliance ($\beta = .18^*$). The path from Ecological Values to Proactive Environmental Stewardship was marginally significant ($\beta = .10^\dagger$). Tourism-First Perspective had a negative effect on Proactive Environmental Stewardship ($\beta = -.15^*$) but positive effects on Environmental Ethics and Conservation Awareness ($\beta = .28^{***}$) and Regulatory Compliance ($\beta = .32^{***}$). Environmental Ethics and Conservation Awareness was the strongest predictor of Regulatory Compliance ($\beta = .32^{***}$). Environmental Ethics and Conservation Awareness was the strongest predictor of Regulatory Compliance ($\beta = .32^{***}$).

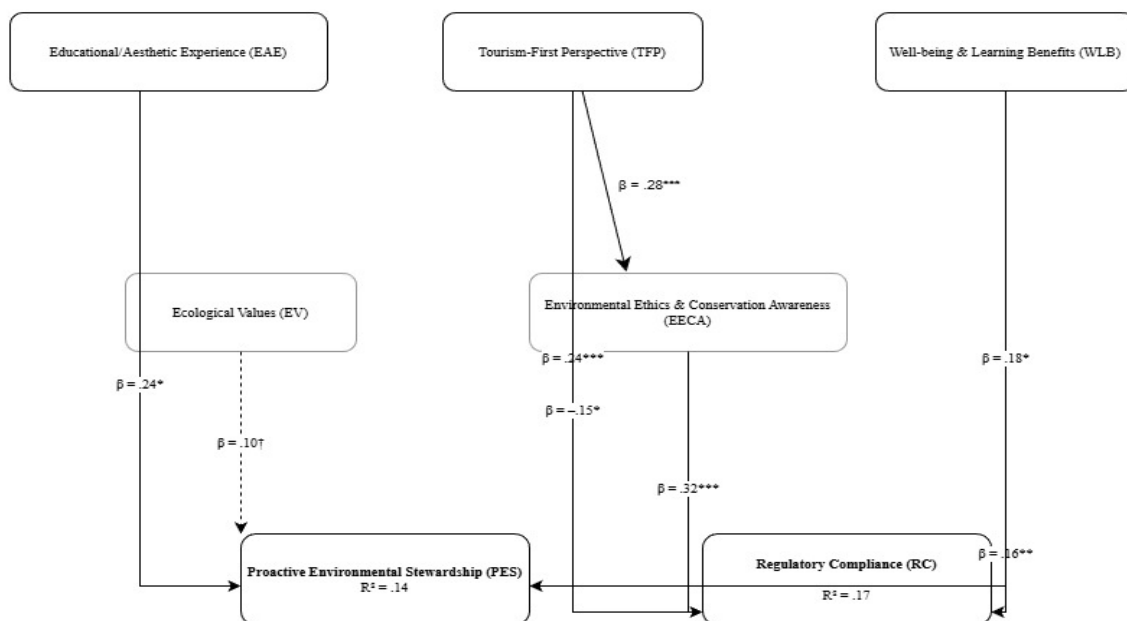


Figure 2: Standardised Path Coefficients for the Structural Equation Model (EDBTM)

Note. All coefficients are standardised (β). Solid lines indicate significant paths ($*p < .05$, $*p < .01$, $***p < .001$); dashed lines indicate marginally significant paths ($^\dagger p < .10$). R^2 values are shown next to each endogenous variable.

Mediation Mechanisms

Bias-corrected bootstrapping confirmed two significant indirect effects (see Table 3). Although the direct path from Ecological Values to Proactive Environmental Stewardship was only

marginally significant, the indirect effect via this mediator remained significant, indicating partial mediation. Educational/Aesthetic Experience had an indirect effect on Proactive Environmental Stewardship via Ecological Values (indirect effect = 0.14, 95% CI [0.08, 0.20]). Tourism-First Perspective had a positive indirect effect on Regulatory Compliance via Environmental Ethics and Conservation Awareness (indirect effect = 0.08, 95% CI [0.03, 0.12]). This positive indirect effect complemented the positive direct effect, indicating complementary mediation.

Table 3: Mediation Results

Mediated Pathway	Indirect Effect	95% CI	Sobel z-score	p-value
EAE → EV → PES	0.14	[0.08, 0.20]	3.21	< .001
TFP → EECA → RC	0.08	[0.03, 0.12]	2.89	.004

Note. All indirect effects were evaluated with 95% bias-corrected bootstrap confidence intervals. Sobel tests are reported as supplementary evidence. EAE = Educational/Aesthetic Experience; EV = Ecological Values; PES = Proactive Environmental Stewardship; TFP = Tourism-First Perspective; EECA = Environmental Ethics and Conservation Awareness; RC = Regulatory Compliance.

Explanatory Power and Synthesis of Key Findings

The model explained 14% of the variance in Proactive Environmental Stewardship and 17% in Regulatory Compliance (Figure 2). These R^2 values are modest, though comparable to those found in similar visitor studies using self-report data (Lee & Moscardo, 2005; Zhang et al., 2023). Still, even small gains in these intentions—if achieved through well-targeted interpretation—could matter over time, especially at high-use sites like Gaomei. The remaining variance suggests that other factors, such as social norms, place attachment, or trust in management, also play a role—an issue we return to in the limitations.

Discussion

Key Findings and Theoretical Integration

The EDBTM makes three contributions. First, it distinguishes ecological values from situational ethics as separate mediators, showing that these two moral constructs predict different behavioural outcomes through distinct pathways. Second, it validates the model in a highly regulated wetland setting—Gaomei—where previous research has rarely been conducted. Third, it demonstrates that recreation-oriented visitors are not inherently resistant to conservation messaging; their regulatory compliance can be enhanced when situational ethics are effectively activated.

Together, these contributions move beyond the unidimensional "experience → attitude → behaviour" framework by demonstrating that ecotourism experiences translate into conservation action through two parallel yet distinct pathways—one value-driven, the other ethics-driven.

The results also position on-site experiences as central antecedents within an extended Theory of Planned Behaviour framework, and treat voluntary stewardship and regulatory compliance as distinct outcomes driven by different mechanisms—an advance over studies that conflate pro-environmental behaviour into a single construct.

Results revealed that both Educational/Aesthetic Experience and Well-being & Learning Benefits significantly contributed to Proactive Environmental Stewardship, while Well-being & Learning Benefits also positively influenced Regulatory Compliance. These findings show that different dimensions of on-site experience work through both shared and distinct pathways. Ecological values partly mediated the effect on stewardship intentions, although their direct influence was only marginally significant. In contrast, situational environmental ethics and conservation awareness emerged as the strongest predictor of regulatory compliance. Recreation-focused visitors showed a positive direct link to rule-following behaviour, which was further strengthened when the visit enhanced their ethical awareness.

Taken together, these results challenge the common belief in ecotourism research that positive experiences automatically lead to responsible behaviour. Instead, the EDBTM shows that the link from experience to action is conditional and follows different pathways.

Theoretical Implications

These results add to the literature in several important ways. First, they indicate that the connection between tourism experiences and pro-environmental intentions is more conditional—and works through more varied mechanisms—than many earlier studies assumed. The empirical distinction between EV and EECA is not merely statistical but conceptually meaningful. EV captures visitors' pre-existing, generalised worldviews, whereas EECA reflects a context-sensitive ethical awakening that emerges during the visit. Their differential predictive power—EV for PES, EECA for RC—suggests that conservation practitioners should not assume that deep-seated ecological values automatically translate into on-site rule adherence, nor that situational ethics are too ephemeral to matter. This conceptual separation provides a more nuanced lens for understanding visitor behaviour in protected areas.

Second, it makes theoretical sense to treat voluntary stewardship and regulatory compliance as separate outcomes, because they often stem from different motivations, even for the same person at the same site. Keeping this distinction in mind should help future research gain a clearer understanding of visitor behaviour.

Third, the study shows that situational environmental ethics is not a fixed characteristic. It can be strengthened during a visit through well-crafted experiences and interpretation, particularly among visitors who come mainly for leisure. This finding supports recent calls to give experiential factors a more central place in Value-Belief-Norm theory and the Theory of Planned Behaviour.

Practical Implications

For managers of protected areas such as Gaomei Wetland, the practical message is clear: offering enjoyable experiences or relying on rules and enforcement alone is not enough. The results point to a more segmented approach, where interventions are tailored to visitors' dominant experiential orientation rather than applied uniformly.

At Gaomei, boardwalk signs could point to visible wildlife—crab burrows, feeding birds—and explain how on-path rules and seasonal access protect them. Short, visual reminders work well for leisure visitors; deeper stories suit those who stop to read. For recreation-oriented visitors, who are primarily drawn by photography and leisure, short visually driven prompts are more

effective than extended texts. QR-code-linked videos at popular photo points, each under a minute and showing how a single step off the boardwalk can collapse nearby crab burrows, make the otherwise invisible ecological cost of rule-breaking tangible. An accompanying aesthetic reminder—"Take the view, leave the ground"—connects the beauty they seek with the fragility that sustains it, without resorting to prohibitive language.

For visitors showing stronger educational or aesthetic engagement, voluntary ecological logbooks or reflection cards at the entrance can invite them to record wildlife observations or personal reactions during their walk. More motivated visitors could be directed to an online stewardship pledge system offering seasonal conservation opportunities—such as beach clean-ups or citizen science monitoring—turning a one-off visit into an ongoing commitment. For rule compliance, particularly at junctions where visitors are most tempted to leave the boardwalk, visual nudges that pair specific behaviours with visible consequences should replace generic prohibitions. An illustrated comparison—"On the path: burrows intact; off the path: burrows collapsed within hours"—makes habitat protection concrete and locally relevant. In structured wetland settings where boardwalks and access limits reduce direct contact with nature, interpretive programs that successfully link the pleasure of the landscape with the rationale for its protection offer one of the better ways to encourage both voluntary stewardship and adherence to site rules (Tang et al., 2025).

Limitations and Future Directions

Several limitations should be noted. Because the data are cross sectional, we cannot draw strong causal conclusions about the direction of the relationships. Longitudinal designs would be needed to examine whether these patterns hold over time and translate into actual on-site behaviour. The model left substantial variance unexplained. Factors not included—habitual behaviour, trust in management, social influence from companions, or demographics—may also play a role. We re-ran the analysis with age, education, and past environmental behaviour as covariates; none significantly altered the results. Future research could incorporate these variables more systematically. The use of convenience sampling through online channels limits how far the findings can be generalised.

The sample's age and gender distribution matched official records, but probability sampling would have strengthened generalisability. Common method bias did not appear problematic, though time-lagged designs or observed behaviour would add rigour. Data from a single wetland site limit generalisability—replication in other settings would clarify whether our findings are specific to structured wetlands or more broadly applicable. Finally, visitors were asked to recall visits from up to six months earlier, which may have affected reports of transient experiences such as ethical reflection. While we restricted the sample to recent visitors and cross-checked demographic data, future studies should shorten the recall period to two to four weeks or use on-site intercept surveys to capture real-time responses.

Conclusion

This study suggests that a pleasant visit to a wetland like Gaomei does not necessarily turn visitors into active conservation supporters. The key is whether the experience helps them develop stronger ecological values or a genuine sense of ethical responsibility while they are there. These two processes appear to drive different kinds of behaviour: ecological values

encourage voluntary actions such as picking up litter, while ethical awareness is more important for following the site's rules.

While the cross-sectional and retrospective design limits causal claims, the core patterns remain theoretically informative and practically relevant. By proposing the Experience-Driven Behavioural Transformation Model and testing it with real visitors, this research offers a clearer picture of how on-site experiences work in managed natural areas. It shows that the link between enjoyment and responsible behaviour is more complicated than often assumed, and that voluntary stewardship and rule compliance should be considered separately. For managers, the implication is practical and important: good scenery and basic facilities are not enough. Interpretive programs need to actively nurture ecological values and ethical responsibility if they want to promote both self-initiated care and respect for regulations.

Future studies could build on this by tracking visitors over time, testing the model in other settings, or exploring additional influences such as social norms and trust in management. In the end, helping visitors care for protected places requires experiences that go beyond enjoyment and help them feel personally connected to — and responsible for — the environment they are visiting.

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Author Contribution Statement:	The author was responsible for all aspects of this research, including conceptualisation, study design, data collection, analysis, interpretation, and manuscript preparation. The final version of the manuscript was reviewed and approved by the author.

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