The persuasive effect of humorous prompts on tourists’ heritage responsible behaviors

Jia-Cheng Ji, Yong-Quan Li, Wen-Qi Ruan, Shu-Ning Zhang and Fang Deng

Abstract

Purpose – This paper aims to elucidate how humorous prompts affect tourists’ heritage responsible behaviors (THRBs).

Design/methodology/approach – Three scenario-based experiments were conducted through Credamo (an online survey platform). Studies 1 and 2 used a single-factor (language style: humorous vs serious) between-subject design to test the direct and indirect effects of humorous prompts. Study 3 used a 2 (environmental quality: high vs low) × 2 (language style: humorous vs serious) between-subject design to further reveal the boundary condition (environmental quality) of the humor effect.

Findings – The results revealed that humorous (vs serious) prompts better persuade tourists to engage in heritage responsible behaviors (HRBs). Content liking mediates the relationship between humorous prompts and THRBs. Moreover, environmental quality significantly moderates the effect of humorous prompts on THRBs, whereby the persuasive effect of humorous prompts is greater in high environmental quality conditions than in low environmental quality conditions.

Practical implications – Destination management organizations can use humor to reduce tourists’ reactance against prompts for behavioral persuasion. Moreover, it is also important to adapt humorous prompts to changes in environmental quality in a timely manner.

Originality/value – Based on psychological reactance theory, the research confirmed the dominant effect of humorous prompts by using content liking as a mediating variable, providing a new research perspective for research on the regulation of THRBs. Moreover, the authors clarified a boundary condition for the persuasiveness of humorous prompts, which helps reinforce the comprehension of humor persuasion.

Keywords Tourists’ heritage responsible behaviors, Humorous prompts, Psychological reactance theory, Environmental quality

Paper type Research paper

幽默提示语对游客遗产责任行为的说服效应

摘要

目的：本研究旨在厘清幽默提示语如何影响游客遗产责任行为的差异效应与过程机制。

设计/方法/途径：本研究利用数平台开展了三个情景实验。实验1与实验2采用单因素（语言风格：幽默vs.严肃）组间实验设计，验证了幽默提示语对遗产责任行为的直接与间接效应。实验3采用×2（语言风格：幽默vs.严肃）×2（环境质量：高vs.低）组间实验设计进一步揭示环境质量对幽默提示语效果的调节效应。

研究发现：与严肃提示语相比，幽默提示语能更好地说服游客产生遗产责任行为。内容喜好在幽默提示语与遗产责任行为之间发挥中介作用。此外，环境质量调节了幽默提示语对遗产责任行为的影响，即幽默提示语（较严肃提示语）在环境质量较高的遗产地中具备优势。

其实意义：遗产地管理组织可使用幽默来降低游客对提示语的心理逆反程度，从而达到行为说服的目的。与此同时，管理者也要根据目的环境质量及调整幽默提示语的使用策略。

创新性/价值：基于心理逆反理论。本研究以内容喜好为中介变量，证实了幽默提示语的优势说服作用，为游客遗产责任行为管理的相关研究提供了一个新的理论视角。同时，本研究厘清了幽默提示语在遗产旅游地中的应用边界，并强化了对幽默提示语的理解。

关键词：游客遗产责任行为，幽默提示语，心理逆反理论，环境质量

文章类型：研究型论文

DOI 10.1108/TR-02-2023-0091 © Emerald Publishing Limited, ISSN 1660-5373

Tourism Review

Jia-heng Ji, Yong-Quan Li, Wen-Qi Ruan, Shu-Ning Zhang and Fang Deng are all based at the College of Tourism, Huaqiao University, Quanzhou, China.
El efecto persuasivo de la señalización humorística en el comportamiento responsable de los turistas respecto al patrimonio

Resumen

Propósito: Esta investigación pretende aclarar cómo afecta el humor al efecto persuasivo de la señalización sobre el comportamiento responsable de los turistas respecto al patrimonio.

 Diseño/metodología/enfoque: Se realizaron tres experimentos basados en escenarios a través de Credamo (una plataforma de encuestas en línea). En los estudios 1 y 2 se utilizó un diseño entre sujetos de un solo factor (estilo de lenguaje: humorístico frente a serio) para comprobar los efectos directos e indirectos de las señalizaciones humorísticas. El estudio 3 utilizó un diseño entre sujetos de 2 (calidad del entorno: alta frente a baja) x 2 (estilo lingüístico: humorístico frente a serio) para revelar con más detalle la condición límite (calidad del entorno) del efecto del humor.

Conclusiones: Los resultados revelaron que las señalizaciones humorísticas (frente a las serias) persuaden mejor a los turistas a participar en las HRB. El gusto por el contenido influye en la relación entre las señalizaciones humorísticas y las HRB. Además, la calidad del entorno modera de forma significativa el efecto de las señalizaciones humorísticas sobre los THRB, de modo que el efecto persuasivo de las señalizaciones humorísticas es mayor en condiciones de alta calidad del entorno que en condiciones de baja calidad del entorno.

Implicaciones prácticas: Las organizaciones de gestión de destinos pueden utilizar el humor para reducir la reacción de los turistas ante las señalizaciones a la persuasión conductual. Además, también es importante adaptar oportunamente las señalizaciones humorísticas a los cambios en la calidad del entorno.

Originalidad/valor: Basándonos en la teoría de la reactancia psicológica, nuestra investigación confirmó el efecto dominante de las señalizaciones humorísticas empleando el gusto por el contenido como variable mediadora, proporcionando una nueva perspectiva para la investigación sobre la regulación de las THRB. Además, aclaramos una condición límite para la persuasión de las señalizaciones humorísticas, lo que ayuda a reforzar la comprensión de la persuasión humorística.

Palabras clave: comportamiento responsable de los turistas, Señalización humorística, Reactancia psicológica, Calidad ambiental

Tipo de papel: Trabajo de investigación

1. Introduction

Scholars are paying increasing attention to heritage resource conservation (Gursoy et al., 2019). Tourists’ attitudes and behaviors have been proven to enhance environmental protection and heritage conservation (Gao et al., 2017). However, there are still many reports of tourists’ deviant behavior at heritage sites, such as graffitiing on Fanjing Mountain in China and vandalizing Stonehenge in the UK. Such tourists’ deviant behaviors may have irreversible negative impacts on heritage resources (Li and Chen, 2022). Conclusively, how to regulate tourists’ behavior has become a key issue for the sustainable development of heritage sites (Gao et al., 2017).

Several studies have been performed on tourists’ responsible behavior (TRB). Based on theoretical frameworks, such as norm-activation theory, value-belief-norm theory, planned behavior theory, etc., scholars explored the formation mechanisms of TRB (Li and Wu, 2019) and indicated that antecedents of TRB can be value, moral norms, consequence awareness, spatial stigma and so on (He et al., 2022; Ling et al., 2021; Panwanitdumrong and Chen, 2021). Moreover, scholars have analyzed both direct and indirect management methods of regulating TRB (Alazaizeh et al., 2016). And prompts, as visual (e.g. no smoking) or auditory (e.g. fasten seat belts) stimuli can persuade individuals to engage in target behaviors, have gained increasing academic attention (Newcomb and Newcomb, 2020). For example, some research has examined the effectiveness of prompts on consumers’ environmentally responsible behaviors in hotels (Goëssling et al., 2019; Reese et al., 2014). In heritage tourism, however, most scholars have concentrated more on the guiding roles of prompts (Imbert-Bouchard Ribera, 2021; Wan, 2022). Little is known about their persuasive effect on tourists’ heritage responsible behaviors (THRBs). Generally, persuasiveness can be attributed to the degree of individual psychological reactance to messages (Brehm and Brehm, 2013; Richter et al., 2018). Scholars have chosen to make efforts in language design to avoid the negative psychology of persuaded person (Kavouris et al., 2020). Thus, we believe that humor can assist. As Mackie and Worth (2020) suggested, humor awakens positive emotions, thus making individuals more receptive to others’...
opinions (Eisend, 2009). However, other scholars consider humor as a double-edged sword that also has some negative effects (Djambaska et al., 2015), such as distracting individuals from the actual content (Nabi et al., 2007). These arguments indicate that humor may have a positive but boundary effect on the persuasiveness of prompts. Urgently, an in-depth exploration of the relationship between humorous prompts and THRB is needed.

To bridge this gap, we conducted three situational experiments with the following aims:

1. to analyze the persuasive effect of humorous prompts on THRBs;
2. to clarify the process mechanism of humorous prompts affecting THRBs; and
3. to explore the boundary condition of the persuasive effect of humorous prompts on THRBs.

In theory, as a new attempt of exploring the strategies to promote THRBs, this study expanded the content framework and theoretical system of research on heritage conservation. Furthermore, we revealed the psychological mechanism by which humorous prompts affect THRBs as well as their boundary conditions. In practice, our findings provide some feasible strategies for prompt design, which assists sustainable development of heritage sites.

2. Literature review and hypothesis development
2.1 Tourist responsible behavior research

Tourist responsible behavior could benefit residents while promoting destination sustainability (Lin et al., 2022a; Su and Swanson, 2017). The academic community has studied TRBs and tourists' heritage responsibility and suggested that values, beliefs and moral norms are the common driving factors of tourists' behaviors (Lin et al., 2022b; Lin et al., 2022c). However, the normative role of daily ethics may be limited during traveling in a nonhabitual environment (Gao et al., 2017). The hedonistic nature of tourism makes tourists unilaterally pursue personal enjoyment but ignore the benefits associated with the destination (Dolnicar et al., 2019). Hence, it is significant to understand how to make tourists behave responsibly in heritage sites.

Generally, two types of behavior management approaches (direct and indirect) are used by destinations (Alazaizeh et al., 2016; Riungu et al., 2018). The direct management approach aims to restrict tourists' behaviors by establishing rules or regulations, while the indirect management approach aims to change tourists' behavioral intention by informing them about appropriate behavior through education and interpretation (Alazaizeh et al., 2019). Both tourists and managers prefer indirect management approaches for their effectiveness and low-cost (Bullock and Lawson, 2007). For instance, artificial intelligence service assistants (Yang et al., 2022), tour guides (Lin et al., 2022a), etc., are prevalent indirect management methods to influence tourists' behavioral intentions. In contemporary, prompts have gained increasing academic attention (Gössling et al., 2019; Reese et al., 2014). Nonetheless, in heritage sites, scholars tend to focus on the guiding function of prompts (or signages) (Imbert-Bouchard Ribera, 2021; Wan, 2022) and overlook their persuasive effect on tourists' behaviors. When prompts perform a persuasive function, they may threaten the individuals' freedom, and therefore, be resisted by them (Kang et al., 2021; Kavvouris et al., 2020). Therefore, it is necessary to investigate strategies to enhance the persuasiveness of prompts.

2.2 Psychological reactance theory

Psychological reactance refers to a motivational state that occurs when people's freedom is restricted or threatened (Brehm and Brehm, 2013). When psychological reactance occurs, the persuaded individual will take various actions to maintain or regain freedom, such as
ignoring or violating the content of persuasion (Kavvouris et al., 2020). Since psychological reactance requires little cognitive deliberation, it can cause individuals to engage in deviant behaviors (Zemack-Rugar et al., 2017).

Psychological reactance theory explains the effect of various persuasive information, such as advertisements (Shoenberger et al., 2021) and normative prompts (Kavvouris et al., 2020). Accordingly, prompts, as a behavioral norm measure, will release a kind of pressure to push tourists to obey, which may lead to tourists’ psychological reactance and further form counterproductive effects (Zemack-Rugar et al., 2017). For instance, Kang et al. (2021) found that when prompts are used inappropriately in restaurants, their normative effect is greatly diminished because they could reduce individuals’ perceived freedom. Moreover, some views support that gentle and soft expressions are more acceptable (Newcomb and Newcomb, 2020). As Beard (2005) mentioned, the appropriate implementation of humor can reduce consumers’ negative perceptions of advertising. Furthermore, Li et al. (2022) claimed that humor can stimulate tourists’ positive attitudes toward advertising and destinations, thus increasing their travel intentions. These findings suggest that the scientific validity of using psychological reversal theory to explain the persuasive effect of humorous prompts.

2.3 Humorous prompts and tourists’ heritage responsible behaviors

Humor, as a stimulus, can cause pleasure, laughter and entertainment (Warren et al., 2018). Humor has been linked to the sustainable development of destinations. For example, Lin et al. (2022a) found that tour guide humor can motivate tourists to engage in environmentally responsible behavior. In persuasive communication, humor is often seen as a method to enhance persuasiveness (Walter et al., 2018), as it can increase individuals’ willingness to accept advice by arousing their positive emotions and improving their understanding and positive cognitions toward prompt content (Eisend et al., 2014; Mackie and Worth, 2020). Moreover, in terms of psychological reactance, humorous messages are less free-threatening and thus less likely to be resisted by individuals than serious messages with more directive and controlling (Brehm and Brehm, 2013; Shen and Coles, 2015). Accordingly, we speculate that humorous prompts (vs serious prompts) can better stimulate THR. Therefore, H1 is proposed:

H1. Compared to serious prompts, humorous prompts are more persuasive and effective at persuading tourists to engage in HRB.

2.4 The mediating effect of content liking

Content liking refers to the overall positive response to an information stimulus (MacKenzie et al., 1986). Generally, humorous messages can better evoke individuals’ positive responses compared with nonhumorous messages (Woltman Elpers et al., 2004). For instance, ads, which are commonly thought of annoying, can be liked by consumers if they are designed with humor (Eisend, 2009). Therefore, we speculate that humor can also make prompts more approachable due to its function as a buffer against liberal threats (Kang et al., 2021; Kavvouris et al., 2020; Yoon and Tinkham, 2013). Therefore, tourists may prefer the content of humorous prompts to serious prompts. In communication research, liking has been proven to be the strongest factor linked to persuasion (Haley and Baldinger, 2000; Smit et al., 2006). As van Reijmersdal et al. (2017) found, ad liking can mediate the persuasive effect of customized advertising and positively influence consumers’ brand attitudes and purchase intention. Additionally, Dillard and Shen (2005) asserted that individuals’ decision in terms of complying with the persuasive message depends on their attitude toward it. For humorous prompts, they seek to inspire favorable feelings in the readers and thus foster a positive attitude toward the instructions (Smit et al., 2006; Svennevig, 2021). Therefore, as a positive response, content
liking may function as a mediator between humorous prompts and THRBs. $H2a$ and $H2b$ are proposed:

$H2a$. Compared to serious prompts, humorous prompts are more effective at arousing tourists' content liking of the prompts.

$H2b$. Content liking mediates the relationship between the language style of prompts and THRB.

### 2.5 The moderating effect of environmental quality

Humor can also backfire if it is misapplied (Yang et al., 2022). Additionally, the effect of prompts can vary with contextual conditions (Schultz, 2014). Therefore, the boundary effect of humorous prompts needs to be further analyzed.

Environmental quality is the quality of the natural features of the destinations (Mihalić, 2000). According to the broken window theory, a poor environment can convey a fake and negative implication (Lang et al., 2010; Liu et al., 2019), which will cause an increasing number of violations (Sampson and Raudenbush, 2004). In tourism, Liu et al. (2019) confirmed the positive correlation between tourists’ perceived environmental quality and environmentally responsible behavior. Moreover, Leoniak and Cwalina (2019) found that negative cues in the environment can interfere with the persuasive effect of prompts. Thus, we hypothesize that the effect of humorous prompts is moderated by the environmental quality of destinations. Benign violation theory provides further theoretical support that humor works only when some violation (any stimulus that can affect the well-being of an individual) is acceptable (Kant and Norman, 2019). Specifically, in a destination of high environmental quality, tourists are less affected by environmental issues and, thus, are more likely to positively rate humor (Warren et al., 2018; Yang et al., 2022). Conversely, when environmental quality is low, the usage of humor probably indicates a nonserious attitude toward environmental issues (Söderlund and Oikarinen, 2018). At this moment, humorous prompts may not trigger content liking, let alone their advantages in persuasion. Overall, the following hypotheses are proposed:

$H3a$. The effect of humorous prompts is moderated by environmental quality. Under high environmental quality conditions, humorous (vs serious) prompts are more effective at persuading THRBs. However, under low environmental quality conditions, humorous (vs serious) prompts do not have a significant advantage in persuading THRB.

$H3b$. The mediating effect of content liking between language style and THRB is moderated by environmental quality such that it only occurs under high (vs low) environmental quality conditions.

### 3. Overview of studies

Based on the above hypotheses, a conceptual model can be proposed in Figure 1. Three situational experiments were conducted to test the hypotheses (Table 1). Study 1 examined the main effect of the humorous prompts on THRBs. Study 2 repeatedly proved the main effect and verified the mediating role of content liking. In Study 3, the moderating role of environmental quality was investigated. To enhance the robustness of the results (Liu et al., 2023), different stimulus materials and multiple respondents were chosen for the three experiments. The participants were approached either at a University in Quanzhou, China or recruited on Credamo (a professional data platform in China).

### 4. Study 1

#### 4.1 Methodology

4.1.1 Stimuli and pretest. Regarding the manipulation of humorous prompts, we first collected ten serious prompts commonly used at heritage sites from the Baidu
platform (one of the main search engines in China). Next, according to the principles of using humor in tourism destinations (Pabel and Pearce, 2018), we rewrote them as humorous prompts with similar meanings. Third, an expert interview was conducted to determine the prompt combination (i.e. a humorous prompt and a serious prompt) used in Study 1 (Appendix 1).

In total, 61 subjects (33 females, $M_{\text{age}} = 22.44$) participated in the pretest, reporting their perceived humor (Nabi et al., 2007) after reading the prompts. One-way ANOVA indicated that subjects’ perceived humor was significantly higher for the humorous prompt than for the serious prompt [$M_{\text{humorous prompt}} = 5.20$, $M_{\text{serious prompt}} = 3.60$, $F(1,59) = 16.073$, $p < 0.001$; $\alpha = 0.959$]. Thus, the manipulation of the humorous prompt was effective.

### 4.1.2 Design and participants

We adopted a single-factor (language style: humorous vs serious) between-subject design. According to the results of a priori power analysis (effect size = 0.25, $\alpha = 0.05$, power = 0.80) (Kang, 2021), a sample size of 128 was sufficient for Study 1. We recruited 142 university students in Quanzhou (a cultural heritage city) as participants through convenience sampling. Nine invalid samples were eliminated by the attention test question (e.g. please select “strongly agree” for this question), and 133 valid questionnaires (74 females, $M_{\text{age}} = 22.44$) were obtained (valid rate: 93.7%).

---

**Table 1 Summary of the Study**

<table>
<thead>
<tr>
<th>Study</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>Test $H1$</td>
<td>Test $H2a$ and $H2b$</td>
<td>Test $H3a$ and $H3b$</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td>A single-factor between-subjects design</td>
<td>A single-factor between-subjects design</td>
<td>$2 \times 2$ between-subjects design</td>
</tr>
<tr>
<td><strong>Sample</strong></td>
<td>Participant were recruited from a University in Quanzhou, China ($n = 133$)</td>
<td>Participants were recruited through platform Credamo ($n = 142$)</td>
<td>Participants were recruited through platform Credamo ($n = 251$)</td>
</tr>
<tr>
<td><strong>Valid response rate</strong></td>
<td>88.7%</td>
<td>88.8%</td>
<td>80.4%</td>
</tr>
<tr>
<td><strong>Compensation for participants</strong></td>
<td>1 CNY</td>
<td>1 CNY</td>
<td>1 CNY</td>
</tr>
<tr>
<td><strong>IV</strong></td>
<td>Language style of the prompt</td>
<td>Language style of the prompt</td>
<td>Language style of the prompt</td>
</tr>
<tr>
<td><strong>DV</strong></td>
<td>Tourists’ heritage responsible behavior</td>
<td>Tourists’ heritage responsible behavior</td>
<td>Tourists’ heritage responsible behavior</td>
</tr>
<tr>
<td><strong>Mediator</strong></td>
<td>N.A.</td>
<td>Content liking</td>
<td>N.A.</td>
</tr>
<tr>
<td><strong>Moderator</strong></td>
<td>N.A.</td>
<td>N.A.</td>
<td>Environmental quality</td>
</tr>
<tr>
<td><strong>Data analysis</strong></td>
<td>ANOVA</td>
<td>ANOVA PROCESS Model 4</td>
<td>ANCOVA PROCESS Model 8</td>
</tr>
<tr>
<td><strong>Findings</strong></td>
<td>$H1$ supported</td>
<td>$H2a$ and $H2b$ supported</td>
<td>$H3a$ and $H3b$ supported</td>
</tr>
</tbody>
</table>

*Note: Table by authors*
4.1.3 Procedure and measures. Subjects first needed to report their emotional state (Yang et al., 2022). Then, they were randomly assigned to one of two groups and reported their perceived humor, perceived scenario authenticity, THRBs (Gursoy et al., 2019) and demographic information after reading the corresponding stimuli. Each participant received 1 CNY as a reward. All items can be seen in Appendix 4.

4.2 Results

4.2.1 Manipulation check of experimental stimuli. For scenario authenticity ($\alpha = 0.731$), one-way ANOVA showed that there was no significant difference between the two groups [$F(1, 131) = 1.682, p = 0.197$]. For perceived humor ($\alpha = 0.942$), the mean score of humorous prompts was significantly higher than that of serious prompts [$M_{\text{humorous prompt}} = 5.21$, $M_{\text{serious prompt}} = 3.20$, $F(1,131) = 87.015, p < 0.001$]. Thus, the manipulations of stimuli were effective.

4.2.2 The main effect analysis. One-way ANOVA showed that participants who read the humorous prompt were more willing to engage in heritage responsible behavior (HRB) than those who read the serious prompt [$M_{\text{humorous prompt}} = 5.57$, $M_{\text{serious prompt}} = 5.14$, $F(1,131) = 6.349, p = 0.013$] (Figure 2), thus supporting $H1$.

4.3 Discussion

Study 1 showed that humorous prompts (vs serious prompts) can better persuade tourists to engage in HRBs ($H1$ was confirmed). This conclusion suggested that the judicious use of humor in tourism contexts results in positive feedback (Pabel and Pearce, 2016). This finding was also consistent with the results of Walter’s (2018) meta-analysis regarding the positive effect of humor on persuasive messages. Furthermore, our research believed that the advantage of humor is also manifested at the psychological level of tourists, we thus further analyzed the potential mechanism by which humor affects THRBs in subsequent studies.

![Figure 2](image-url)
5. Study 2

5.1 Methodology

5.1.1 Stimuli and pretest. Similar to Study 1, Study 2 manipulated the prompt by adding humorous elements to the serious prompt (Appendix 2). In total, 72 subjects (39 females, \(M_{\text{age}} = 22.33\)) participated the pretest for the manipulation check. One-way ANOVA showed that the humorous prompt score significantly higher than the serious prompt \([M_{\text{humorous prompt}} = 5.11, M_{\text{serious prompt}} = 3.85, F(1,70) = 15.654, p < 0.001\]). Thus, the manipulation was successful.

5.1.2 Design and participants. We conducted a single-factor (language style: humorous vs serious) between-subjects design and collected 160 questionnaires through Credamo. After screening out invalid samples, 142 (valid rate: 88.8%) participants were successfully included in Study 2.

5.1.3 Procedure and measures. First, the participants were asked to rate their emotions. Next, they were randomly assigned to one of two scenarios. After reading the situational stimuli, they reported their perceived humor, perceived scenario authenticity, THRBs and content liking (Zemack-Rugar et al., 2017). Finally, they reported their demographic information (Table 2) and received the reward.

5.2 Results

5.2.1 Manipulation check of stimuli. First, one-way ANOVA showed that the participants’ perceived scenario authenticity \([F(1,140) = 1.063, p = 0.304\]) had no significant difference.
between the two groups, and the manipulations of the humorous prompt was successful
\[ M_{\text{humorous prompt}} = 4.84, M_{\text{serious prompt}} = 3.47, F(1,140) = 42.989, p < 0.001 \].

5.2.2 The main effect analysis. The one-way ANOVA indicated that humorous prompts (vs serious prompts) lead to higher THRBs \[ \alpha = 0.889; M_{\text{humorous prompt}} = 5.44, M_{\text{serious prompt}} = 5.03, F(1,140) = 6.339, p = 0.013 \]. Thus, \( H1 \) was again supported (Figure 3).

5.2.3 The mediating effect analysis. One-way ANOVA demonstrated that participants who read the humorous prompt expressed more content liking \[ \alpha = 0.887; M_{\text{humorous prompt}} = 5.19, M_{\text{serious prompt}} = 4.24, F(1,140) = 23.876, p < 0.001 \]. Thus, \( H2a \) was supported. Moreover, the bootstrap method was conducted to examine the mediating effect of content liking (Model 4, sample size 5,000, CI 95%) (Hayes et al., 2017). Controlling for emotional state, gender, age and education, the results indicated that the mediating effect of content liking is significant (indirect effect: \( \beta = 0.504, LLCI = 0.292, ULCI = 0.751 \); direct effect: \( LLCI = -0.418, ULCI = 0.083 \)). Therefore, content liking played a fully mediating role in the model, and \( H2b \) is verified (Table 3).

5.2.4 Exclusion of potential moderating effects of demographic variables. With controlling age, gender, education and occupation, one-way ANCOVA demonstrated that the main effect of humorous prompts on THRB was still significant \[ F(1,140) = 4.166, p = 0.043 \]. Moreover, age, gender and education did not influence THRB alone [Age: \( F(4,137) = 1.847, p = 0.123 \); Age \times Language style: \( F(4,133) = 2.343, p = 0.076 \); Gender: \( F(1,140) = 1.018, p = 0.315 \)] or in interaction with prompts style [Gender \times Language style: \( F(1,138) = 0.498, p = 0.481 \); Education: \( F(4,137) = 0.562, p = 0.691 \); Education \times Language style: \( F(4,132) = 2.254, p = 0.067 \)]. Although occupation influence THRB \( F(7,134) = 4.777, p < 0.001 \), it does not interact with language style to influence THRB \[ F(6,127) = 0.382, p = 0.889 \]. The results exclude the moderating effect of demographic variables, which will thus not be considered in the subsequent analysis.

5.3 Discussion

Study 2 demonstrates that humor can evoke tourists’ content liking (\( H2a \) was proven). Such a conclusion is in line with the findings on humor and tourism advertising (Li et al., 2022; Woltman Elpers et al., 2004), that is, humorous prompts may similarly arouse tourists’ positive attitudes toward messages. For prompts, increased content liking may also mean a...
decrease in tourists’ psychological reactance (Dillard and Shen, 2005; Zemack-Rugar et al., 2017). Accordingly, Study 2, therefore, revealed a fully mediating role of content liking (H2b was proven), implying that humorous prompts largely take advantage by evoking tourists’ preference. It follows that liking is still a powerful factor in persuasion (Haley and Baldinger, 2000; Smit et al., 2006), even for messages with greater liberal threat.

6. Study 3

6.1 Methodology

6.1.1 Stimuli and pretest. The manipulation of the prompt in Study 3 was the same as in Studies 1 and 2. Based on Mihalič’s (2000) study about the environmental quality of destinations, two fictional heritage tourism scenarios were used to manipulate the environmental quality.

A pretest was used to check the success of the above manipulations. In the pretest, each participant read a heritage site environmental description (high or low environmental quality) and a prompt (humorous or serious). After reading, they rated their perceived environmental quality (Liu et al., 2019) and perceived humor.

In total, 61 participants (32 females, M_age = 21.52) were involved in the pretest. One-way ANOVA showed that the manipulations of humorous prompts [$\alpha = 0.855; M_{high} = 5.40, M_{low} = 4.08, F(1,59) = 13.730, p < 0.001$] and environmental quality [$\alpha = 0.855; M_{humorous prompt} = 5.23, M_{serious prompt} = 2.96, F(1,59) = 48.341, p < 0.001$] were successful.

6.1.2 Design and participants. A 2 (Environmental quality: high vs low) × 2 (Language style: humorous vs serious) between-subject design was conducted. We distributed 300 questionnaires through Credamo, and 251 subjects (156 females, M_age = 30.49) completed Study 3 (valid rate: 83.7%). The sample size met the minimum requirements derived from the priori analysis of G*Power software (sample size = 231, $f = 0.25, \alpha = 0.05$, power = 0.90).

6.1.3 Procedure and measures. After reporting their emotions, each participant was randomized to one of the four experimental groups and read the corresponding experimental materials (Appendix 3), and completed the questionnaire that aimed to collect their perceived humor, perceived environmental quality, perceived scenario authenticity, content liking, THRBs and demographic information. Each participant received one CNY as a reward.

<table>
<thead>
<tr>
<th>Table 3 Coefficients for the mediation model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent variable</td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>Language style of prompt</td>
</tr>
<tr>
<td>Content liking</td>
</tr>
<tr>
<td>Covariate: Emotional state</td>
</tr>
<tr>
<td>Covariate: Gender</td>
</tr>
<tr>
<td>Covariate: Age</td>
</tr>
<tr>
<td>Covariate: Education</td>
</tr>
<tr>
<td>Total, direct and indirect effect</td>
</tr>
<tr>
<td>Total effect</td>
</tr>
<tr>
<td>Direct effect</td>
</tr>
<tr>
<td>Indirect effect</td>
</tr>
</tbody>
</table>

Notes: Coeff. = coefficient; SE = standard error; LLCI = lower limit of confidence interval; ULCI = upper limit of confidence interval; Table by authors.
6.2 Results

6.2.1 Manipulation check of experimental stimuli. For participants’ perceived humor ($\alpha = 0.876$), the mean score of the humorous prompt was significantly higher than that of the serious prompt [$M_{\text{humorous prompt}} = 4.96$, $M_{\text{serious prompt}} = 3.84$, $F(1,249) = 52.252$, $p < 0.001$]. Furthermore, an independent samples t-test showed significant differences in participants’ perception of environmental quality ($\alpha = 0.962$; $M_{\text{high}} = 5.88$, $M_{\text{low}} = 2.91$, $p < 0.001$) without assuming equal variance. Thus, the manipulations were successful.

6.2.2 The moderated effect analysis. Controlling for the emotional state, two-way ANCOVA revealed that the interaction effect between language style and environmental quality was significant [$F(1,247) = 3.978$, $p = 0.044$] (Figures 4 and 5). In the high environmental quality condition, the humorous prompts positively affected tourists’ content liking and HRB [Content liking: $M_{\text{humorous prompt}} = 5.45$, $M_{\text{serious prompt}} = 4.49$, $F(1,120) = 19.186$, $p < 0.001$; HRB: $M_{\text{humorous prompt}} = 5.93$, $M_{\text{serious prompt}} = 5.33$, $F(1,120) = 9.063$, $p = 0.003$]. In contrast, the effect was no longer significant in the low environmental quality condition [Content liking: $F(1,127) = 2.373$, $p = 0.126$; HRB: $F(1,127) = 0.026$, $p = 0.876$].

A bootstrapping method (Model 8, samples 5,000, 95% CI) (Hayes et al., 2017) was conducted to test the moderated effect of environmental quality. While controlling participants’ emotional state, the moderated mediating effect of the conceptual framework was significant ($\beta = 0.300$, $SE = 0.151$, $LLCI = 0.022$, $ULCI = 0.613$). H3a and H3b were supported.

6.3 Discussion

Study 3 suggests that the persuasive effect of the humorous prompts occurs only in high environmental quality contexts. When the environmental quality is poor, humorous (vs serious) prompts have no significant advantage on tourists’ content liking or HRBs. Obviously, poor environmental quality not only directly diminishes tourists’ pro-environmental intentions (Liu et al., 2019) but also negatively affects the persuasiveness of humorous prompts at heritage sites. This finding is in line with the broken window theory and benign violation theory that environmental cues in destinations influence tourists’

![Figure 4](Image)

**Figure 4** Interaction of language style and environmental quality on content liking

Source: Figure by authors
perceptions of environmental issues and perceived humor (Lang et al., 2010; Söderlund and Oikarinen, 2018). Study 3 also responds to the call for attention to explore the boundary effect of humor (Walter et al., 2018) and further deepen our knowledge of humorous prompts.

7. Discussion

7.1 Conclusion

7.1.1 Theoretical contribution. First, the present study expands the content framework of the research about heritage conservation from the perspective of prompts. Heritage sustainability has long been a vital research topic. Scholars have conducted plenty of research on the antecedents of TRB and proposed many approaches for regulation (Chen and Huang, 2022; Gao et al., 2017; Ling et al., 2021). However, the design techniques and effect of prompts have rarely been discussed, which contrasts sharply with the widespread use of prompts in heritage sites. To bridge this gap, we conducted three situational experiments, highlighting the feasibility and value of prompts and indicating that humor can increase prompts’ persuasiveness to tourists. In sum, our study not only adds a new theoretical perspective to heritage sustainability research but also enriches the literature on the application of humorous persuasion.

Second, we revealed the mediating role of content liking and provided a new path for comprehending the relationship between humorous prompts and THRB from the perspective of positive psychology. Previous studies have mostly used anger, the perceived threat of freedom, etc., to analyze the persuasive effects of messages (Kang et al., 2021; Brehm and Brehm, 2013), which hardly explain the advantages of humorous prompts. Thus, considering the relationship between liking and psychological reactance (Zemack-Rugar et al., 2017), we incorporated content liking into the research framework. The findings provide a theoretical reference for future studies on the potential mechanisms of the persuasive effect of messages.

Third, in response to Walter’s (2018) call for research on the boundary conditions of humor persuasion, we analyzed the differentiated effects of humorous prompts in different environmental contexts. Although environmental quality can directly influence TRB (Liu et al., 2019), whether it will moderate the persuasive effect of humorous prompts is unknown. Based on benign violation theory and related research (Söderlund and Oikarinen, 2018;
Warren et al., 2018; Yang et al., 2022), we have illustrated the moderating role of environmental quality, which, to some extent, clarifies the academic controversy of humor persuasion.

7.1.2 Managerial implications. Due to psychological reactance, prompts are not always effective to regulate individuals’ behavior (Kavvouris et al., 2020). Destination management organizations (DMOs) can make humorous prompts to reduce tourist rebellion against persuasion. Moreover, considering that there may be individual differences in the sense of humor, DMOs should proportionately compile a humor corpus and try to choose humorous expressions that are easy to understand, thus avoiding that it backfires due to complex expressions, inappropriate use, etc. (Djambaska et al., 2015).

Second, DMOs should actively adjust the use of humorous prompts since their persuasiveness was correlated with environmental quality. Several direct management approaches (e.g. reduction in ticket distribution) can be used to cover the shortage of humorous prompts under low environmental conditions (Alazaizeh et al., 2016). Furthermore, because of the critical role of content liking in the persuasive process of prompts, DMOs can use some visualization strategies (e.g. matching cartoon pictures) to enhance the acceptability of prompts.

7.2 Limitations and future research

First, the measurement of THRBs relied on participants’ self-assessments. Participants may exaggerate their willingness to engage in HRBs. Therefore, future research can use both scenario-based and field experiments to accurately reflect tourists’ behavioral intentions.

Second, whether other variables, such as conceptual level (Ye et al., 2021), moderate the role of humorous prompts remains unknown. Future research should, therefore, consider the interaction between various influences.

Third, all participants were recruited from mainland China. Considering the impact of cultural differences on individual perceptions of humor (Pabel and Pearce, 2018), cross-cultural research is an important direction for future study.

Finally, future research can take travel companions into account to explore the probably different effects of prompts on individual tourists and companioned tourists.

References


Further reading


Appendix 1. Scenario and stimuli of Study 1

Scenario: Recently, to appeal to tourists and permanent residents to protect the heritage resources and natural environment of the site, the DMOs of a heritage tourism site have adopted a series of conservation measures, including placing normative prompts at the tourism site. Please imagine that you see a normative prompt while you are visiting tourist site A.
Appendix 2. Scenario and stimuli of Study 2

Scenario: Recently, to appeal to tourists and permanent residents to protect the heritage resources and natural environment of the site, the destination management organizations of a heritage tourism site have adopted a series of conservation measures, including placing normative prompts at the tourism site. Please imagine that you see a normative prompt while you are visiting tourist site A.

Serious style prompt: It is glorious to protect heritage, but shameful to destroy it.
Humorous style prompt: How dare anyone not protect cultural heritage? Let him out!

Appendix 3. Scenario and stimuli of Study 3

Scenarios:

High environmental quality: Imagine that you are visiting Heritage Site A. You find that the environment of the destination is clean and that tourism activities cause minimal damage to natural features. The site’s heritage resources are well-preserved and have suffered little adverse impact. During your visit, you saw a normative prompt placed by local management organizations.
Low environmental quality: Imagine that you are visiting Heritage Site A. You find that the environment of the destination has been somewhat damaged due to the negligence of the relevant authorities. You see some garbage everywhere on the road, and even the heritage resources of the site have been damaged due to the vandalism of some tourists. During your visit, you saw a normative prompt placed by local management organizations.

Serious style prompt: To protect the world’s heritage, please do not carve and write graffiti!
Humorous style prompt: I love your gaze, but I cannot stand your knife that hurts my bones!

Source: Pictures by authors
<table>
<thead>
<tr>
<th>Variable</th>
<th>Items</th>
<th>Scale type</th>
<th>Study</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional state</td>
<td>1) Sad/Happy, 2) Bad mood/Good mood, 3) Irritable/Pleased, 4) Depressed/Cheerful</td>
<td>Study 1–3</td>
<td>Yang et al. (2022)</td>
<td></td>
</tr>
<tr>
<td>Content liking</td>
<td>1) Unattractive/Attractive, 2) Bad/Good, 3) Dislike/Like</td>
<td>Study 2–3</td>
<td>Zemack-Rugar et al. (2017)</td>
<td></td>
</tr>
<tr>
<td>Perceived scenario authenticity</td>
<td>1) I find this scenario to be realistic, 2) I think this could happen in real life, 3) It is easy to imagine myself in the condition described here</td>
<td>Seven-point Likert scale</td>
<td>Study 1–3</td>
<td>Gao et al. (2017)</td>
</tr>
<tr>
<td>Tourists' heritage responsible behavior</td>
<td>1) I will try to convince partners to protect the heritage, 2) I am willing to take part in protection activities, 3) I will stop somebody from destroying the heritage, 4) I will comply with the heritage protection and management regulations of the tourist site</td>
<td>Study 1–3</td>
<td>Gursoy et al. (2019)</td>
<td></td>
</tr>
<tr>
<td>Environmental quality</td>
<td>I think 1) The heritage destination is beautiful, 2) The heritage resources are well-protected, 3) The heritage destination is well-landscaped, 4) The destination’s heritage resources are in harmony with the environment</td>
<td>Study 3</td>
<td>Liu et al. (2019)</td>
<td></td>
</tr>
</tbody>
</table>
About the authors

Jia-Cheng Ji is a Master student of College of Tourism, Huaqiao University, China. His research interests include heritage tourism and tourism destination management.

Yong-Quan Li is a Professor at College of Tourism, Huaqiao University. His research interest focuses on the integration of culture and tourism, tourism innovation management, etc.

Wen-Qi Ruan is a Professor of College of Tourism, Huaqiao University, China. His academic research areas cover the integration of culture and tourism, tourism safety, tourism information dissemination and tourism destination management, etc.

Shu-Ning Zhang is a Lecturer at College of Tourism, Huaqiao University, China. Her research interests include tourism culture and innovation, tourism information dissemination and tourism destination management. Shu-Ning Zhang is the corresponding author and can be contacted at: snz1995@163.com

Fang Deng is a Master student in College of Tourism, Huaqiao University, China. Her research interests include in cultural tourism and creative management, tourism crisis management and tourism safety.