Reflective versus Brooding Rumination: Impact on Tour Guides' Emotional and Career Outcomes

Yongguang Zou[a], Haoying Zhong[a], Fei Hao[b]*, Wailing Ng[c]

[a] College of Tourism Management, Huaqiao University, Quanzhou, Fujian Province, China.
[b] School of Hotel and Tourism Management, The Hong Kong Polytechnic University, 17 Science Museum Road, TST East, Kowloon, Hong Kong SAR, China.
[c] Department of Computing, The Hong Kong Polytechnic University, Hong Kong, China.

*Corresponding author:
Email: ffaye.hao@polyu.edu.hk.
Telephone no: +852 3400-2291
Fax number with country and area code: +852 2362-9362

ABSTRACT: This study examines how two cognitive responses to stress—reflective and brooding rumination—affect tour guides' psychological flexibility and career resilience, defined as the ability to adapt positively to career challenges and maintain professional growth. Across four scenario-based experiments (N=962), we investigate the distinct impacts of these rumination styles under diverse stress contexts. Experiments 1 and 2 reveal that reflective rumination promotes emotion regulation and reduces emotional exhaustion, thereby enhancing psychological flexibility and resilience, while brooding rumination worsens exhaustion and undermines resilience. Experiments 3 and 4 highlight that in-group support strengthens the positive effects of reflective rumination, whereas in-group disregard amplifies brooding rumination's detrimental impacts. Theoretical implications emphasize the role of emotion regulation as a mediating mechanism linking adaptive rumination to resilience, while practically, findings suggest that fostering reflective thinking and supportive team dynamics could improve tour guides' capacity to manage stress and sustain their career well-being.

KEYWORDS*:* Tour guide stress management, Reflective rumination, Brooding rumination, Psychological flexibility, Career resilience, Social support

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AUTHOR BIOGRAPHY

- Yongguang Zou, Ph.D., is a Professor in School of Tourism Management at Huaqiao University. He is generally interested in the tourist's sense of safety of a destination; Rural tourism; Cultural tourism. (E-mail: ygzou2015@hqu.edu.cn)
- Haoying Zhong is a Postgraduate student, School of Tourism Management at Huaqiao University. She is generally interested in tourist's safety behavior; Cultural tourism. (E-mail: zhying2001@163.com)

- Fei Hao, Ph.D., is Assistant Professor in the School of Hotel and Tourism Management, The Hong Kong Polytechnic University, Hong Kong, China. (E-mail: ffaye.hao@polyu.edu.hk) https//orcid.org/0000-0002-2295-7255
- Wailing Ng is MPhil student in the Department of Computing, The Hong Kong Polytechnic University, Hong Kong SAR, China. (E-mail: wai-ling.ng@connect.polyu.hk) https://orcid.org/my-orcid?orcid=0000-0002-4932-7499

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1. Introduction

Tour guides face significant stress due to the high demands of their role, including leading groups, coordinating logistics, sharing cultural knowledge, ensuring safety, and creating memorable experiences—all while balancing various stakeholders' expectations (Akkuş & Arslan, 2023). These responsibilities, combined with long hours, emotional labor, and job insecurity, can lead to anxiety, burnout, and depression, negatively impacting job satisfaction and increasing turnover (Akgunduz & Eser, 2022; WTTC, 2020). According to the U.S. Bureau of Labor Statistics, tour guides earn a median annual income of $40,280, with job growth projected at 10% from 2022 to 2032, yet this does not account for unpredictable schedules, seasonal employment, and mental strain inherent in their work (U.S. Bureau of Labor Statistics, 2023). The COVID-19 pandemic underscored these challenges, as tour guides were among the hardest-hit workers, facing widespread job losses and heightened stress (WTTC, 2020). To address these issues, industry and government bodies recognize the need for mental health support, fair compensation, and professional development tailored to tour guides' unique pressures (Carrillo et al., 2020).

Reflective rumination and brooding rumination are two distinct cognitive responses to stress that impact career resilience. Reflective rumination involves constructive self-reflection to gain insight and solve problems (Eikey et al., 2021), enhancing emotion regulation, reducing emotional exhaustion, and fostering psychological flexibility and career resilience (Burwell & Shirk, 2007). In contrast, brooding rumination involves a passive focus on negative emotions, characterized by repetitive fixation on distressing thoughts without resolution (Kim & Newman, 2023). This maladaptive cycle worsens emotional exhaustion and negative mood states, impacting mental health (Watkins & Nolen-Hoeksema, 2014). Understanding these differences is essential for developing interventions that encourage healthier coping mechanisms.

Emotion regulation and emotional exhaustion mediate the link between rumination styles and career resilience. Effective emotion regulation, often driven by reflective rumination, enhances psychological flexibility—the capacity to adapt to changing circumstances (Bond et al., 2013)—and supports resilience by promoting positive career outlooks. Conversely, emotional exhaustion, often resulting from brooding rumination, depletes resources, impairing flexibility and hindering resilience (Koch & Adler, 2018). Career resilience involves maintaining a constructive outlook and overcoming challenges (Hur et al., 2016). Examining these pathways reveals how rumination styles influence resilience.

Social support, particularly from in-group members like colleagues and supervisors, moderates stress effects on tour guides (Wu et al., 2021). In-group support fosters a positive work environment, amplifying reflective rumination's benefits on emotion regulation and resilience (Shi & Wang, 2021; Su, Kong, & Garg, 2020). In contrast, in-group disregard, marked by unfair treatment or exclusion, exacerbates brooding rumination's negative effects, increasing exhaustion and weakening flexibility (Bateman, 2009). Understanding how in-group support and disregard moderate these relationships is essential for strategies to enhance career resilience.

This study addresses a significant gap in the literature by exploring the following research questions: (1) How do reflective and brooding rumination influence tour guides' emotion regulation and emotional exhaustion? (2) How does reflective rumination in response to job stress affect tour guides' career resilience? (3) How do in-group support and in-group disregard moderate these relationships? To answer these questions, we conduct four scenario-based experiments using diverse stimuli to test our hypotheses. This study contributes to occupational health psychology by enhancing understanding of how distinct rumination styles affect career resilience in high-stress tour guiding, uncovering a unique serial mediation mechanism linking emotion regulation, emotional exhaustion, and psychological flexibility, clarifying the moderating role of in-group support and disregard, and providing actionable insights for targeted interventions to improve mental well-being and professional growth.

2. Literature review and hypotheses development

2.1. Job stress among tour guides

Tour guides face unique challenges inherent to their profession. They act as primary contact points in the tourism industry, introduce tourists to new surroundings, and ensure tourists' safety and enjoyment (Al-Okaily et al., 2024; Alrawadieh et al., 2020). Responsibilities catering to public needs and addressing individual requirements heighten stress (Mackenzie & Kerr, 2020). The profession involves extensive duties from tour onset (Weiler & Black, 2014), reliance on external factors for success, seasonal employment (Davys & Beddoe, 2020), work overload, prolonged and erratic hours (Carrillo et al., 2020), and continuous communication and travel (Arslantürk, 2016). These conditions result in irregular job opportunities, income instability, job insecurity (Arslantürk, 2016), difficulties in work–life balance, and increased accident risks (Nermin & Demir, 2019).

Research highlights adverse outcomes of job stress, including anxiety, depression, and suicide (Grant et al., 2024). Stress, a central focus in workplace studies (Kim et al., 2020; Popa & Madera, 2023), has typically been examined for its negative effects (Arslantürk, 2016), such as role ambiguity and excessive workloads. Our study instead examines strategies for managing work-related stress and the positive outcomes of adaptive coping mechanisms (Mohd-Shamsudin et al., 2024), addressing a gap in job stress literature by exploring how response styles to stress influence career resilience.

2.2. Reflective versus brooding rumination

The response styles theory of depression, developed by Nolen-Hoeksema (1991), posits that individuals' responses to negative moods significantly influence whether the mood is prolonged, worsened, or alleviated. This theory explores the impact of various coping mechanisms on psychological well-being, contrasting rumination—a cognitive response characterized by passive brooding over one's mood—with coping strategies that are more active such as distraction and problem-solving (Lazarus & Folkman, 1984). Research has further differentiated facets of rumination, indicating that the brooding component (i.e.,

passive dwelling on negative emotions without actively seeking solutions; Burwell & Shirk, 2007) is more closely linked to depressive symptoms than the reflective component (i.e., purposeful and introspective contemplation regarding one's thoughts, emotions, and experiences to gain understanding and insight; Burwell & Shirk, 2007). Brooding rumination tends to exacerbate depressive symptoms (Watkins & Nolen-Hoeksema, 2014), whereas reflective rumination appears to facilitate problem-solving and adaptive emotional processing (Nolen-Hoeksema et al., 2008).

Stress can heighten rumination (Shaw et al., 2019). Conceptual frameworks on rumination origins suggest that stressful situations generate disparities between desired outcomes and current circumstances (Martin & Tesser, 2013). These disparities evoke negative cognitive patterns and intensify negative emotions, prompting individuals to ruminate to manage distress. This "distress pathway" illustrates how stress-induced rumination leads to adverse mental health outcomes. Understanding the nuanced impacts of rumination types is crucial for developing interventions that foster adaptive coping, mitigate negative mental health effects, and enhance psychological resilience and well-being.

2.3. Emotional outcomes: emotion regulation and emotional exhaustion

Control theory suggests that when individuals perceive a discrepancy between their goals and actual outcomes, they engage in a cognitive response aimed at either reducing this gap or making sense of the situation (Watkins & Nolen-Hoeksema, 2014). Within this framework, rumination acts as a form of reflective or brooding analysis. Reflective rumination is goal-oriented and constructive, facilitating adaptive strategies like problem-solving and emotional adjustment. In contrast, brooding rumination represents a passive, maladaptive cycle of repetitive thoughts, often worsening negative affect and limiting effective coping responses (Shaw et al., 2019).

Emotion regulation, a critical factor in managing stress, enables individuals to modulate emotional responses in line with situational demands, fostering greater resilience in the face of challenges (Mestre et al., 2017). Response Styles Theory posits that reflective rumination is an adaptive form of stress response that involves analyzing one's experiences to gain insight and control over emotional responses (Nolen-Hoeksema, 1991). In the context of high-stress professions like tour guiding, reflective rumination can promote effective emotion regulation by helping individuals cognitively reappraise stressful experiences, fostering calm and constructive responses. This aligns with findings from Burwell & Shirk (2007), which emphasize reflective rumination's potential to enhance emotional stability, suggesting that tour guides who engage in reflective rumination may better manage their stress, leading to higher emotion regulation levels.

H1a: Reflective rumination enhances emotion regulation in tour guides.
H1b: Brooding rumination enhances emotional exhaustion in tour guides.

2.4. Career outcomes: psychological flexibility and career resilience

The emotion regulation stemming from reflective rumination can initiate psychological mechanisms that enhance flexibility and foster career resilience (Hawkes & Neale, 2020). Based on stress coping theory (Lazarus & Folkman, 1984) and response styles theory (Nolen-Hoeksema, 1991), effective stress management leads to transformative outcomes, including improved psychological and physical health, enhanced resilience, and superior problem-solving abilities. Psychological flexibility, a key outcome of stress management, predicts various work-related outcomes such as mental health, job performance, and absenteeism

(Bond et al., 2013). Career resilience, defined as the ability to navigate change, is shaped by past job stress experiences, emotion regulation, and adaptability traits (Mishra & McDonald, 2017).

Resilience has been explored in health and recovery contexts, denoting an adaptive mechanism aiding individuals in adversity (Prayag et al., 2024). However, few studies examine resilience from a career-oriented perspective (Peeters et al., 2022), essential for fostering growth following significant career events (Vough & Caza, 2017). Career resilience involves resilient responses to shifts and challenges, creating opportunities for advancement (Caza & Milton, 2012). It is "a developmental process of persisting, adapting, and flourishing in one's career despite challenges, changing events, and disruptions over time" (Mishra & McDonald, 2017, p. 216). The nature and characteristics of these challenges are pivotal in shaping resilience and career development (Mulcahy et al., 2024). Thus, we propose:

H2a: Reflective rumination improves career resilience through the serial mediation of emotion regulation and psychological flexibility.

Conversely, emotional exhaustion can diminish an individual's psychological flexibility by impairing their capacity to engage in proficient problem-solving and decision-making activities (Koch & Adler, 2018). Emotional exhaustion may also induce cognitive inflexibility, making it difficult for tour guides to entertain alternative viewpoints or adjust their cognitive frameworks (Hur et al., 2016). When tour guides resort to brooding rumination as a coping mechanism for job-related stress, they may encounter heightened emotional exhaustion owing to repetitive and passive fixation on negative thoughts and emotions (Watkins & Nolen-Hoeksema, 2014). This intensifies distress, worsens symptoms of anxiety (Tahtinen et al., 2021), and diminishes psychological flexibility, ultimately impeding career resilience. Thus, we propose:

H2b: Brooding rumination diminishes career resilience through the serial mediation of emotional exhaustion and psychological inflexibility.

2.5. Moderators: in-group support and in-group disregard

In-group support refers to the emotional and practical assistance provided by colleagues and supervisors within an individual's social group, fostering a sense of belonging (Tajfel & Turner, 1986). For tour guides, in-group support plays a significant role in mitigating stress by offering empathy, validation, and assistance during challenging circumstances, which can positively impact their emotional responses and overall well-being (Kong & Garg, 2020; Park et al., 2020). Stress coping theory suggests that social environments influence emotional reactions to stress, and positive in-group dynamics can facilitate more adaptive coping styles (Lazarus & Folkman, 1984). For example, tour guides using reflective rumination may benefit from in-group support, as validation from peers and supervisors encourages collaborative problem-solving and reinforces their capacity for emotion regulation (Shi & Wang, 2021; De Clercq et al., 2020). Thus, in-group support is expected to amplify the benefits of reflective rumination, making it a valuable moderator in enhancing emotion regulation under stressful conditions.

H3a: In-group support strengthens the positive effect of reflective rumination on emotion regulation.

Conversely, a lack of in-group support, or in-group disregard, may heighten stress responses and feelings of isolation, reducing the individual's ability to cope effectively (Molenberghs, 2013). In-group disregard, marked by exclusion or lack of empathy, can worsen negative emotions and lead to heightened emotional exhaustion, particularly for those engaging in brooding rumination. When a tour guide facing job-related stress engages in brooding rumination, in-group disregard can intensify feelings of helplessness, worsening emotional exhaustion and further inhibiting their ability to adaptively respond to stress (Wang et al., 2014). Without the buffering effect of social support, brooding rumination becomes more detrimental, as the lack of validation exacerbates emotional depletion and limits positive coping mechanisms (Cohen & Wills, 1985). In this context, in-group disregard can significantly amplify the negative impacts of brooding rumination on emotional exhaustion.

> **H3b:** In-group disregard intensifies the negative effect of brooding rumination on emotional exhaustion.

When tour guides engage in reflective rumination, they gain a constructive perspective on job-related stress, fostering emotion regulation through self-affirmation and positive reappraisal of challenging experiences (Frenzel et al., 2024). This adaptive rumination style enables tour guides to manage negative emotions effectively, enhancing their psychological flexibility, which is essential for navigating dynamic work environments and sustaining career resilience. In-group support significantly amplifies this effect by providing validation, empathy, and encouragement. When tour guides feel supported by their in-group, they are more likely to process their experiences positively and sustain a resilient mindset. This collective affirmation creates a feedback loop that strengthens emotion regulation, psychological flexibility, and resilience, helping them face future career challenges with a positive outlook.

> **H4a**: In-group support enhances the pathway by which reflective rumination positively impacts career resilience.

In contrast, tour guides who engage in brooding rumination—focusing on negative aspects of their work without constructive resolution—may experience heightened emotional exhaustion, as this form of rumination involves passive, repetitive focus on distress (Watkins & Nolen-Hoeksema, 2014). In situations where brooding rumination is met with in-group disregard, such as feelings of exclusion or lack of support, emotional exhaustion intensifies. This lack of validation from the in-group exacerbates the negative effects of brooding rumination, as individuals feel unsupported in coping with stress. The absence of in-group support compounds the psychological toll of brooding rumination, depleting resources necessary for problem-solving and ultimately compromising career resilience (Cohen & Wills, 1985; Wang et al., 2014).

> **H4b**: In-group disregard strengthens the pathway by which brooding rumination negatively impacts career resilience.

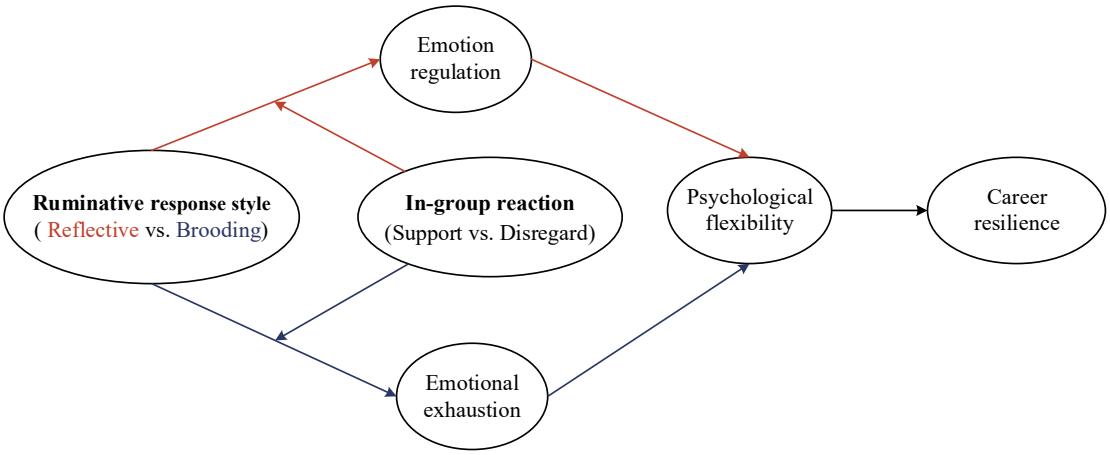

Figure 1 The model of the influence of ruminative response style on tour guides' career resilience.

3. Method

3.1. Overview of all the studies

We first conducted a pilot study to select appropriate stimulus materials. Then we tested the hypotheses in four studies using different experimental stimuli and samples to enhance the robustness of the results and reduce common method disregard. Participants must be currently employed as a tour guide, older than 21 years, have worked at least one year, and willing to provide insights into their job stressors. Study 1 participants were selected from a pool of 525 local tour guides in Fujian Province, China. Study 2–4 participants were selected from a pool of 1,711 national tour guides throughout China. To build a geographically balanced pool of participant candidates, convenience and snowball sampling methods were employed through network and online advertisement. Each participant was allowed to take part in only one experiment.

Four experiments were designed to test the proposed hypotheses, as outlined in Table 1. Study 1 used a one-factor experiment to examine the direct effects (H1) and serial mediating effects (H2) of emotion regulation (versus emotional exhaustion) and psychological flexibility between tour guides' ruminative response style and career resilience. Study 2 used different experimental materials to retest these effects (H1–H2). A 2 × 2 factorial experiment was conducted in Study 3 to investigate the moderating effect of in-group reaction (H3–H4). Study 4 also explores the boundary condition of in-group reaction using stimulus materials different from Study 3 in a field experiment (H3–H4).

Table 1 Study overview.

Study	Manipulations	Tour guide type	Hypotheses tested	Material scenario

1	2 (reflective, brooding)	Local	H1a–H2b	Work overload
2	2 (reflective, brooding)	National	H1a–H2b	Irregular income
3	2 (reflective, brooding) × 2 (support, disregard)	National	H3a–H4b	Work overload
4	2 (reflective, brooding) × 2 (support, disregard)	Local, National and Scenic	H3a–H4b	Occupational stigma

3.2. Scenario materials

In the pilot study, we identified key job stressors for tour guides such as role ambiguity, challenging interpersonal dynamics, excessive workloads, and burdens at tour onset (Weiler & Black, 2014). Other stressors include seasonal work patterns, fluctuating hours, irregular income, job security (Arslantürk, 2016; Carrillo et al., 2020), achievement of work–life balance, risk of accidents, and the job's evolving nature (Arslantürk, 2016; Nermin & Demir, 2019).

Seven prevalent stressors—work overload, irregular income, occupational stigma, seasonal employment, accident risk, role uncertainty, and poor work relationships—were finally selected for measurement. The pilot study comprised 145 participants recruited from a pool of 525 local tour guides in Fujian Province, China. Participants were asked to identify the three most relatable job stressors from a list of seven, based on personal empathy. The top-three stressors were included in the scenario materials (see Table 2).

Table 2 Summary of tour guides' job stressors in pilot study.

Job stressor		**Frequency**
1.	Work overload	102
2.	Irregular income	85
3.	Occupational stigma	79
4.	Seasonal employment	69
5.	Accident risk	43
6.	Poor work relationships	30
7.	Role uncertainty	27

3.3. Ethical considerations

In conducting our study, we have meticulously ensured alignment with the highest ethical standards and reporting guidelines. Ethical considerations included voluntary participation, informed consent, and confidentiality. Participation was completely voluntary without coercion, allowing participants to withdraw at any time without consequences. Informed consent was obtained, ensuring participants were fully aware of the study's purpose,

procedures, and potential impacts. Additionally, data were anonymized to protect participant privacy, with personal identifiers excluded from all analyses and reports.

4. Study 1

Study 1 explored the direct effect of tour guides' ruminative response style on their emotion regulation and emotional exhaustion, and the serial mediation effects of tour guides' emotional processing and psychological flexibility in the interaction between ruminative response style and professional resilience, to test H1–H2. The experiment used a one-factor between-subjects design, distinguishing between two conditions: reflective and brooding rumination.

4.1. Pretest

4.1.1. Stimuli materials

Study 1 used stimuli based on work overload stress, presented in a scenario including corresponding ruminative response styles (see Appendix C).

4.1.2. Procedure

We recruited 43 participants (60.5% female; 58.1% 26–35 years old) from the pool of local tour guides. Participants were randomly assigned to two ruminative conditions and asked to evaluate the authenticity of the scenario using two seven-point scales (e.g., "I can imagine myself as the tour guide in the scenario"; "I find the given situation easy to understand") (Xu & Liu, 2022). For ruminative manipulation check, participants assessed the statement "In the scenario described above, in response to job stress I engage in rumination that is (1 = very brooding, 7 =very reflective)." Participants also provided demographic details.

4.1.3. Results

Participants found the scenario both realistic ($M = 5.98$, $SD = 1.12$, $t = 11.54$, $p < 0.001$) and easy to understand ($M = 5.86$, $SD = 1.04$, $t = 11.77$, $p < 0.001$). An independent sample t-test indicated that participants can differentiate the reflective and brooding ruminative response styles ($M_{reflective} = 5.99$, $SD = 1.20$ versus $M_{brooding} = 3.06$, $SD = 1.04$; $t = 17.37$, $p < 0.001$), signifying successful manipulation.

4.2. Main experiment

4.2.1. Procedure and measures

The sample comprised 155 participants ($N_{reflective} = 77$ versus $N_{brooding} = 78$; 52.9% female, 55.5% 26–35 years old) from the pool of local tour guides. To control for potential confounding effects, participants' emotional states and physical health were initially assessed (Lee et al., 2017) and they were included as two covariates in the hypothesis testing. Following this, they were instructed to read the stimulus materials and complete a survey questionnaire. The key construct measures were adapted from established studies (see Appendix B). Specifically, emotion regulation was examined using three items from Preece et al. (2023; $\alpha = 0.94$); emotional exhaustion, with four items based on Said and Tanova (2021; $\alpha = 0.94$); psychological flexibility, with five items from Bond et al. (2013; $\alpha = 0.89$); and career resilience, with five items from London (1993; $\alpha = 0.86$).

4.2.2. Results

Manipulation checks. Participants found the scenarios both realistic ($M = 5.90$, $SD = 1.12$, $t = 21.20$, $p < 0.001$) and understandable ($M = 5.62$, $SD = 1.11$, $t = 18.21$, $p < 0.001$). The manipulation of ruminative response style was successful, as evidenced by a significant

difference between the reflective and brooding rumination ($M_{reflective}$ = 5.56, SD = 0.85 versus $M_{brooding}$ = 3.03, SD = 0.95; t = 17.61, $p < 0.001$).

Direct effects. A one-way Analysis of Covariance (ANCOVA) was utilized to assess the direct effects, with ruminative response style (reflective rumination = 1, brooding rumination = 0) serving as the independent variable. The dependent variables were emotion regulation and emotional exhaustion. Tour guides employing reflective rumination exhibited higher levels of emotion regulation than those employing brooding rumination: F (1,151) = 219.66, $p < 0.001$, $\eta_p^2 = 0.59$; $M_{reflective}$ = 5.33, SD = 0.96; $M_{brooding}$ = 2.87, SD = 1.10. Conversely, those employing brooding rumination showed higher levels of emotional exhaustion than those employing reflective rumination: F (1,151) = 148.80, $p < 0.001$, η_p^2 = 0.50; $M_{reflective}$ = 3.09, SD =1.34; $M_{brooding}$ = 5.45, SD = 1.00. H1a and H1b are supported by these findings (see Figure 2).

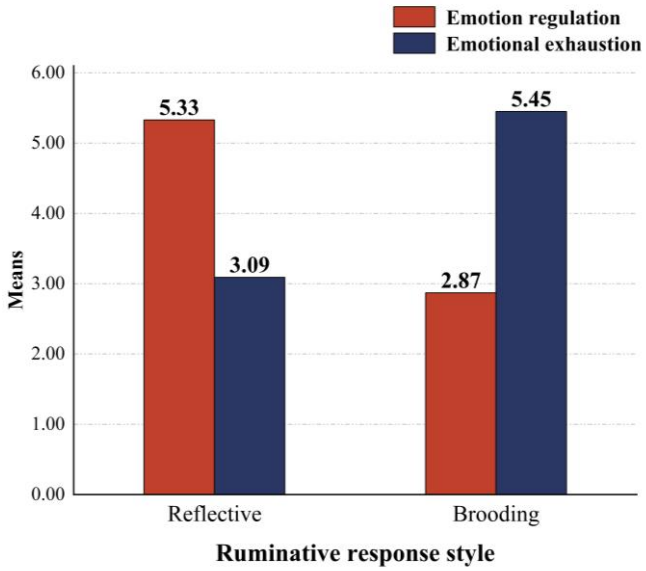

Figure 2 Th motion regulation

Serial mediation effects. A serial mediation analysis was performed utilizing SPSS PROCESS (Model 80; Hayes, 2013). The analysis, which treated ruminative response style (reflective versus brooding) as the independent variable and career resilience as the dependent variable, identified emotion regulation, emotional exhaustion, and psychological flexibility as mediators. Significant serial mediation effects were found for two pathways: (1) ruminative response style→ emotion regulation→ psychological flexibility→ career resilience (Effect = 0.57, SE = 0.09, LLCI = 0.40, ULCI = 0.75) and (2) ruminative response style→ emotional exhaustion→ psychological flexibility→ career resilience (Effect = 0.17, SE = 0.07, LLCI = 0.06, ULCI = 0.32). The results confirm the hypothesized serial mediation model, substantiating H2a and H2b (see Figure 3).

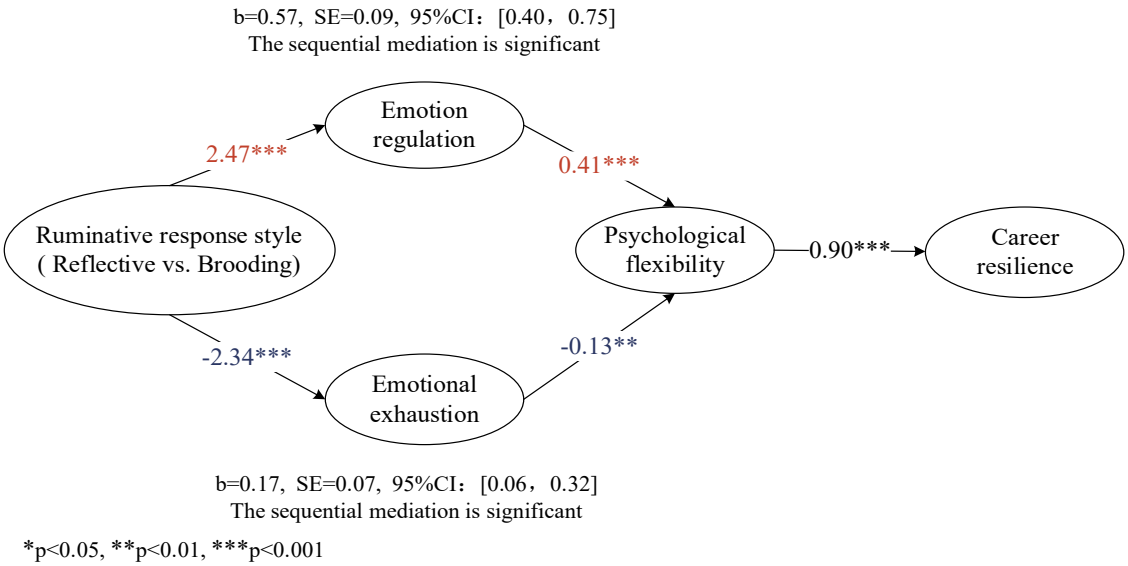

Figure 3 Study 1 serial mediating analysis results.

5. Study 2

To enhance the generalizability and external validity of the findings from Study 1, Study 2 employed different experimental stimuli and a varied sample, while maintaining the same procedural framework.

5.1. Pretest

5.1.1. Stimuli materials

Study 2 used a fresh set of experimental scenarios concentrating on stress caused by irregular income. Similar to Study 1, the scenario materials incorporated specific styles of ruminative response (see Appendix D).

5.1.2. Procedure

We randomly assigned 40 participants (57.5% females, 45.0% 26–35 years old), recruited from the pool of 1,711 national tour guides, into two groups (reflective and brooding). Participants responded to questions similar to those in the Study 1 pretest, regarding manipulation checks and demographic information.

5.1.3. Results

The authenticity ($M = 5.85$, $SD = 1.19$, $t = 9.84$, $p < 0.001$) and comprehensibility ($M = 5.80$, $SD = 1.04$, $t = 10.92$, $p < 0.001$) of the newly introduced scenario were validated. The effectiveness of the ruminative response manipulation was confirmed through an independent t-test, which revealed a statistically significant divergence in the response styles ($M_{reflective} = 5.45$, $SD = 1.00$ versus $M_{brooding} = 2.90$, $SD = 0.97$; $t = 17.37$, $p < 0.001$).

5.2. Main experiment

5.2.1. Procedure and measures

Participants totaling 116 ($N_{reflective} = 59$ versus $N_{brooding} = 57$; 57.8% female, 51.7% 26–35 years old) were recruited from the pool of 1,711 national tour guides. The study initially

evaluated emotional state and physical health of participants before exposing them to the scenario materials and soliciting their responses via a questionnaire. The measurement scales for emotion regulation (α = 0.88), emotional exhaustion (α = 0.89), psychological flexibility (α = 0.94), and career resilience (α = 0.94) were the same as in Study 1.

5.2.2. Results

Manipulation checks. Participants' evaluation of the scenario's authenticity (M = 6.06, SD = 1.17, t = 18.90, p < 0.001) and comprehensibility (M = 5.53, SD = 0.98, t = 16.73, p < 0.001). The manipulation of ruminative response style was also successful ($M_{reflective}$ = 5.57, SD = 0.88, t = 27.32, p < 0.001 versus $M_{brooding}$ = 2.96, SD = 0.94, t = 15.46, p < 0.001).

Direct effects. Similar to Study 1, an ANCOVA was conducted to test the direct effects. The results revealed a notable disparity in how the two ruminative response styles affect tour guides' emotion regulation ($M_{reflective}$ = 5.47, SD = 1.03 versus $M_{brooding}$ = 3.06, SD = 1.15; F(1,112) = 138.81, p < 0.001, η_p^2 = 0.55) and emotional exhaustion ($M_{reflective}$ = 2.82, SD = 1.11 versus $M_{brooding}$ = 5.47, SD = 0.92; F(1,112) = 188.81, p < 0.001, η_p^2 = 0.63). Therefore, H1a and H1b were again supported (see Figure 4).

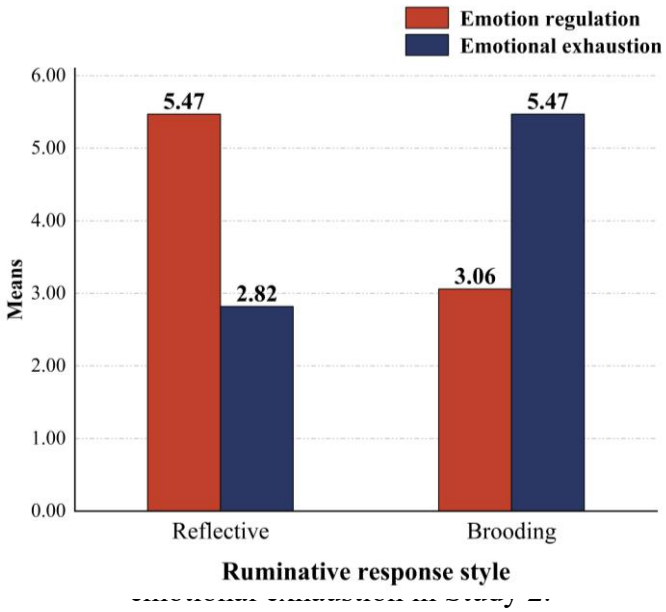

Figure 4 T n regulation and

Serial mediation effects. A serial mediation analysis was performed utilizing SPSS PROCESS (Model 80; Hayes, 2013). The analysis confirmed significant mediation of the two pathways: (1) ruminative response style→ emotion regulation→ psychological flexibility→ career resilience (Effect = 0.48, SE = 0. 10, LLCI = 0.30, ULCI = 0.68) and (2) ruminative response style→ emotional exhaustion→ psychological flexibility→ career resilience (Effect = 0.20, SE = 0.11, LLCI = 0.02, ULCI = 0.45), supporting H2a and H2b (see Table 3).

Table 3 Study 2 serial mediating analysis results.

Emotion regulation	Emotional exhaustion	Psychological flexibility	Career resilience

	b	*SE*	*LLCI*	*ULCI*	*b*	*SE*	*LLCI*	*ULCI*	*b*	*SE*	*LLCI*	*ULCI*	*b*	*SE*	*LLCI*	*ULCI*
Constant	3.00	0.37	2.27	3.73	5.17	0.34	4.49	5.85	2.44	0.42	1.60	3.27	0.93	0.31	0.31	1.53
Ruminative response style	2.42	0.21	2.01	3.73	−2.62	0.19	−3.00	−2.24	1.37	0.25	0.87	1.87	0.55	0.18	0.19	0.91
Emotion regulation	–	–	–	–	–	–	–	–	0.36	0.06	0.25	0.48	−0.07	0.04	−0.15	0.02
Emotional exhaustion	–	–	–	–	–	–	–	–	−0.14	0.06	−0.26	−0.02	−0.04	0.04	−0.12	0.04
Psychological flexibility	–	–	–	–	–	–	–	–	–	–	–	–	0.85	0.06	0.73	0.97
R^2	0.56				0.64				0.82				0.93			
F	46.58				65.22				98.79				237.86			
p	0				0				0				0			

Indirect effect	*Effect*	*SE*	*LLCI*	*ULCI*
Ruminative response style→ Emotion regulation→ Psychological flexibility→ Career resilience	0.48	0.10	0.30	0.68
Ruminative response style→ Emotional exhaustion →Psychological flexibility→ Career resilience	0.20	0.11	0.02	0.45

6. Study 3

Study 3 explored how in-group reactions moderate the relationship between tour guides' ruminative responses and their emotion regulation or exhaustion, testing H3a–H4b. It also assessed potential moderated mediation effects with a 2 × 2 factorial design, contrasting reflective and brooding rumination with support and disregard in in-group reactions.

6.1. Pretest

6.1.1. Stimuli materials

The same work overload scenario from Study 1 was used in Study 3, incorporating in-group reactions based on Shi and Wang (2021; see Appendix E).

6.1.2. Procedure

We recruited 62 participants (58.1% female, 51.6% 26–35 years old) from a pool of 1,711 national tour guides throughout China and randomly allocated them into four groups according to ruminative response style and in-group reaction. Participants assessed scenario authenticity and completed the manipulation check for ruminative response style.

6.1.3. Results

Despite the inclusion of in-group reactions, most participants rated the information as both accurate ($M = 5.61$, $SD = 1.16$, $t = 10.\ 91$, $p < 0.001$) and understandable ($M = 5.87$, $SD = 1.14$, $t = 12.95$, $p < 0.001$). Participants correctly differentiated between different ruminative response styles ($M_{reflective} = 5.87$, $SD = 0.88$ versus $M_{brooding} = 2.39$, $SD = 0.92$; $t = 15.20$, $p < 0.001$) and in-group reactions ($M_{support} = 5.43$, $SD = 1.10$ versus $M_{disregard} = 2.69$, $SD = 1.10$, $t = 9.01$, $p < 0.001$), signifying successful manipulation.

6.2. Main experiment

6.2.1. Procedure and measures

We recruited 205 participants from a pool of 1,711 Chinese tour guides ($N_{reflective\ and\ support} = 50$ versus $N_{reflective\ and\ disregard} = 56$ versus $N_{brooding\ and\ support} = 50$ versus $N_{brooding\ and\ disregard} = 49$; 62.0% females, 50.7% 26–35 years old). Participants were randomly assigned to one of four conditions, with their emotional state and physical health assessed and included as covariates in the subsequent hypothesis testing. The same measurement scales from Study 1

were used to assess emotion regulation (α = 0.92), emotional exhaustion (α = 0.86), psychological flexibility (α = 0.94), and career resilience (α = 0.95).

6.2.2. Results

Manipulation checks. Participants reported that the scenarios were both realistic (M = 5.22, SD = 1.15, t = 15.20, p < 0.001) and understandable (M = 5.37, SD = 1.04, t = 18.85, p < 0.001). The manipulation of the ruminative response style ($M_{reflective}$ = 5.70, SD = 0.79; $M_{brooding}$ = 2.66, SD = 0.83, t = 26.72, p < 0.001) and in-group reaction ($M_{support}$ = 4.81, SD = 0.94; $M_{disregard}$ = 2.90, SD = 1.02, t = 13.973, p < 0.001) were deemed successful.

Moderating effects. A 2 × 2 ANCOVA was conducted to test the moderation effect of in-group reactions. The results indicated a significant interaction effect between the ruminative response style and in-group reaction on emotion regulation: F(1, 199) = 7.14, p = 0.008 < 0.01, η_p^2 = 0.04. Planned contrasts revealed that tour guides' reflective (versus brooding) rumination evoked higher emotion regulation given the in-group reaction of support ($M_{reflective}$ = 5.81, SD = 0.74 versus $M_{brooding}$ = 3.71, SD = 1.24, F(1, 201) = 111.12, p < 0.001, η_p^2 = 0.36) and disregard ($M_{reflective}$ = 3.94, SD = 1.04 versus $M_{brooding}$ = 2.52, SD = 0.89, F(1, 201) = 46.53, p < 0.001, η_p^2 = 0.19). However, for the reflective rumination, in-group support (versus disregard) reaction evoked higher emotion regulation ($M_{support}$ = 5.66, SD = 0.80 versus $M_{disregard}$ = 3.78, SD = 1.04, F(1, 201) = 98.68, p < 0.001, η_p^2 = 0.33). The results also showed a significant interaction effect between ruminative response style and in-group reaction on emotional exhaustion: F(1, 199) = 41.38, p < 0.001, η_p^2 = 0.17. The simple effects analyses indicated that when the in-group reaction was disregard, tour guides' brooding (versus reflective) response evoked higher emotional exhaustion ($M_{reflective}$ = 3.32, SD = 1.13 versus $M_{brooding}$ = 5.28, SD = 0.89, F(1, 201) = 101.50, p < 0.001, η_p^2 = 0.34). When the in-group reaction was support, the impact of ruminative response style on emotional exhaustion did not significantly differ ($M_{reflective}$ = 2.69, SD = 0.71 versus $M_{brooding}$ = 2.81, SD = 1.15, F(1, 201) = 0.37, p = 0.546 > 0.05, η_p^2 = 0.002). Thus, H3a and H3b are supported (see Figure 5).

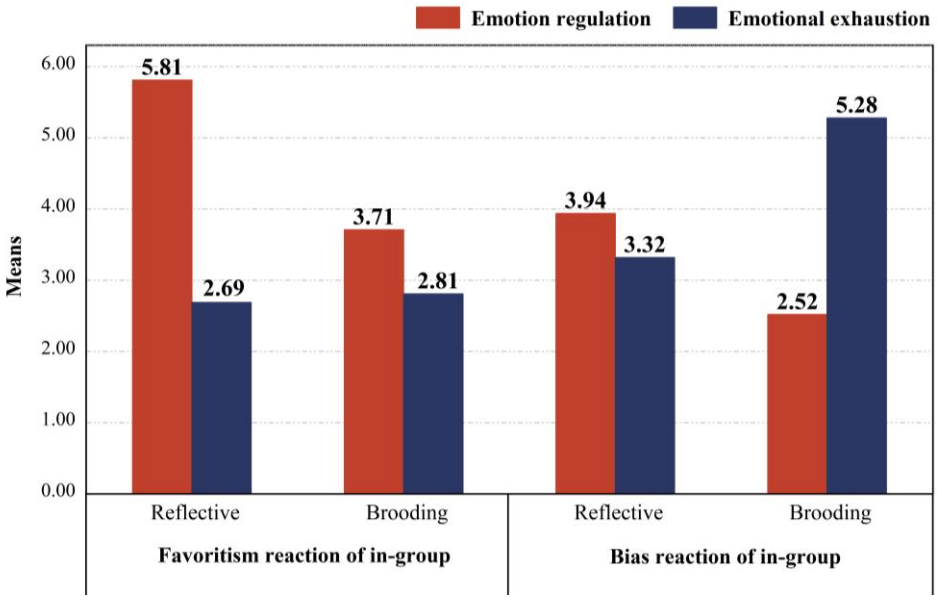

Figure 5 Study 3 moderating effect of in-group reaction.

Moderated serial mediation effects. The study utilized SPSS PROCESS (Model 83; Hayes, 2013) to validate the serial mediating effect with moderation. The results indicated significant effects moderated by in-group reactions along pathway 1 (ruminative response style→ emotion regulation→ psychological flexibility→ career resilience; index of moderated serial mediation = 0.13, SE = 0.06, LLCI = 0.03, ULCI = 0.26) and pathway 2 (ruminative response style→ emotional exhaustion→ psychological flexibility→ career resilience; index of moderated serial mediation = −0.74, SE = 0.15, LLCI = −1.04, ULCI = −0.46). Specifically, for the in-group support reaction, the relationship between ruminative response style, emotion regulation, psychological flexibility, and career resilience was significant (Effect = 0.36, SE = 0.09, LLCI = 0.19, ULCI = 0.55). For the in-group disregard reaction, the pathway (ruminative response style→ emotional exhaustion→ psychological flexibility→ career resilience) was significant (Effect = 0.78, SE = 0.12, LLCI = 0.55, ULCI = 1.02). Therefore, H4a and H4b were supported (see Figure 6).

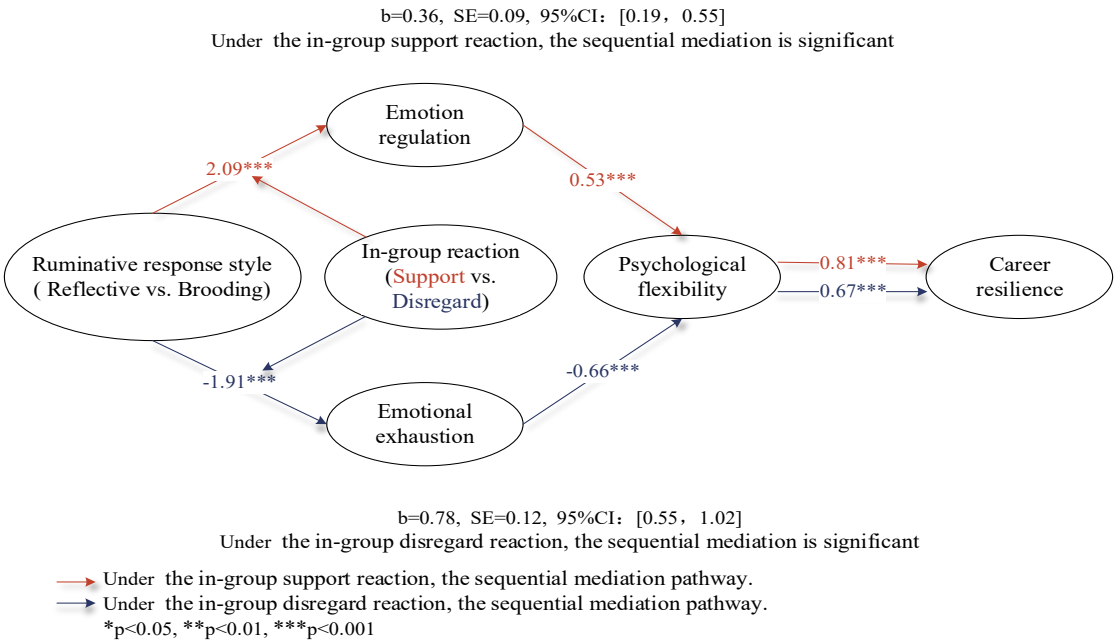

Figure 6 Study 3 moderated serial mediating analysis result.

7. Study 4

To enhance external validity, Study 4 replicated the procedure of Study 3, using new materials and engaging actual tour guides from various sites in a field experiment.

7.1. Pretest

7.1.1. Stimuli materials

Study 4 used a novel set of experimental scenarios targeting the occupational stigma stress on tour guides. To manipulate in-group support and disregard, the scenarios incorporated specific in-group reactions (see Appendix F).

7.1.2. Procedure

We enrolled 54 participants (59.3% females, 48.1% 26–35 years old) from Qingyuan Mountain in Quanzhou, China and randomly distributed them into four groups according to ruminative response style and in-group reaction. Participants evaluated the scenarios' authenticity and answered manipulation check questions for ruminative response style and in-group reaction.

7.1.3. Results

Inclusion of the in-group reaction description did not diminish participants' perception of the information's accuracy ($M = 5.54$, $SD = 1.28$, $t = 8.79$, $p < 0.001$) and comprehensibility ($M = 5.50$, $SD = 1.13$, $t = 9.77$, $p < 0.001$). Participants accurately identified different ruminative responses ($M_{reflective} = 5.67$, $SD = 0.78$ versus $M_{brooding} = 2.81$, $SD = 0.79$; $t = 13.34$, $p < 0.001$) and in-group reactions ($M_{support} = 5.14$, $SD = 1.06$; $M_{disregard} = 2.96$, $SD = 0.98$, $t = 7.85$, $p < 0.001$), confirming successful manipulation.

7.2. Main experiment

7.2.1. Procedure and measures

We executed the main experiment at prominent tourist spots in the cities of Quanzhou and Xiamen, China, including Qingyuan Mountain, Kaiyuan Temple, and Kulangsu Island. Data were collected by a three-member team from April 29 to May 3, 2024. Participants comprised local guides, national guides, and scenic staff, all of whom conducted tours within designated areas. In total, 142 valid participants (59.9% females, 59.2% 26–35 years old) were recruited, and the sample size for each group was as follows: $N_{reflective\ and\ support} = 35$, $N_{reflective\ and\ disregard} = 34$, $N_{brooding\ and\ support} = 37$, $N_{brooding\ and\ disregard} = 36$. As in Study 3, the tour guides' emotional state and physical health were assessed before evaluating the scenario's authenticity. The measurement scales for the relevant constructs were identical to those in Study 1, including emotion regulation ($\alpha = 0.95$), emotional exhaustion ($\alpha = 0.93$), psychological flexibility ($\alpha = 0.94$), and career resilience ($\alpha = 0.93$).

7.2.2. Results

Manipulation checks. Participants reported that the scenarios were both realistic ($M = 5.26$, $SD = 1.16$, $t = 12.89$, $p < 0.001$) and understandable ($M = 5.32$, $SD = 1.05$, $t = 15.04$, $p < 0.001$). The manipulation checks of the ruminative response style ($M_{reflective} = 5.61$, $SD = 0.88$ versus $M_{brooding} = 2.66$, $SD = 0.82$; $t = 20.71$, $p < 0.001$) and in-group reaction ($M_{support} = 4.87$, $SD = 0.98$ versus $M_{disregard} = 2.89$, $SD = 1.04$, $t = 11.73$, $p < 0.001$) also indicated successful manipulation.

Moderating effects. Similar to Study 3, we performed a 2 × 2 ANCOVA to test moderating effects. The results showed a significant interaction effect between ruminative response style and in-group reaction on emotion regulation: $F(1, 136) = 8.16$, $p = 0.005 < 0.01$, $\eta_p^2 = 0.06$. Planned contrasts revealed that tour guides' reflective (versus brooding) rumination evoked higher emotion regulation given in-group reaction of support ($M_{reflective} = 5.66$, $SD = 0.79$ versus $M_{brooding} = 3.59$, $SD = 1.10$, $F(1, 138) = 83.07$, $p < 0.001$, $\eta_p^2 = 0.38$) and disregard ($M_{reflective} = 3.78$, $SD = 1.04$ versus $M_{brooding} = 2.61$, $SD = 0.86$, $F(1, 138) = 26.13$, $p < 0.001$, $\eta_p^2 = 0.38$). However, for reflective rumination, in-group support (versus disregard) reaction evoked higher emotion regulation ($M_{support} = 5.66$, $SD = 0.80$ versus $M_{disregard} = 3.78$, $SD = 1.04$, $F(1, 138) = 65.49$, $p < 0.001$, $\eta_p^2 = 0.32$). The results also indicated a significant interaction effect between ruminative response style and in-group reaction on emotional exhaustion ($F(1, 136) = 23.86$, $p < 0.001$, $\eta_p^2 = 0.15$). The simple effects analyses indicated that when the in-group reaction was disregard, tour guides' brooding (versus

reflective) rumination evoked higher emotional exhaustion ($M_{reflective}$ = 3.21, SD = 1.12 versus $M_{brooding}$ = 5.31, SD = 0.94, F(1, 138) = 57.75, $p < 0.001$, $\eta_p^2 = 0.32$). When the in-group reaction was support, the impact of ruminative response style on emotional exhaustion did not significantly differ ($M_{reflective}$ = 2.54, SD = 1.15 versus $M_{brooding}$ = 2.88, SD = 1.07, F(1, 138) = 1.81, $p = 0.181 > 0.05$, $\eta_p^2 = 0.013$). Thus, H3a and H3b are reaffirmed (see Figure 7).

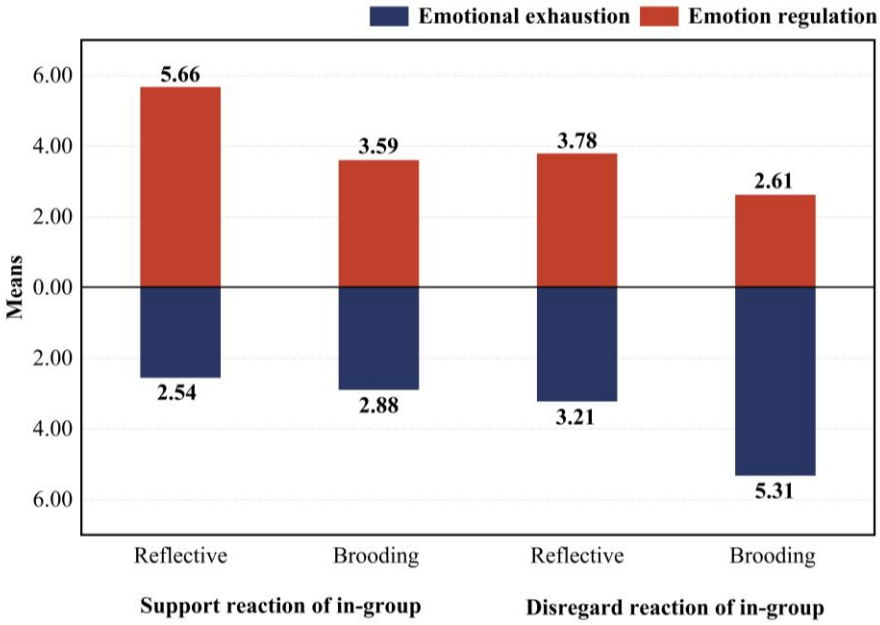

Figure 7 Study 4 moderating effect of in-group reaction.

Moderated serial mediation effects. The study utilized SPSS PROCESS (Model 83; Hayes, 2013) to validate the serial mediating effect with moderation, uncovering significant effects with the in-group reaction's moderating pathway 1 (ruminative response style→ emotion regulation→ psychological flexibility→ career resilience; index of moderated serial mediation = 0.18, SE = 0.08, LLCI = 0.05, ULCI = 0.34) and pathway 2 (ruminative response style→ emotional exhaustion→ psychological flexibility→ career resilience; index of moderated serial mediation = −0.91, SE = 0.20, LLCI = −1.33, ULCI = −0.53). Specifically, when the in-group reaction was support, the relationship between ruminative response style, emotion regulation, psychological flexibility, and career resilience was significant (Effect = 1.08, SE = 0.17, LLCI = 0.75, ULCI = 1.42). When the in-group reaction was disregard, pathway 2 (ruminative response style→ emotional exhaustion→ psychological flexibility→ career resilience) was significant (Effect = 1.10, SE = 0.16, LLCI = 0.80, ULCI = 1.43). Therefore, H4a and H4b were again supported (Table 4).

Table 4 The moderated serial mediation analysis results from Study 4.

8. General discussion and conclusions

8.1. General discussion

This study comprehensively examines how tour guides' ruminative response styles to job stress affect their emotion regulation, emotional exhaustion, psychological flexibility, and career resilience. The results highlight the key role of reflective and brooding rumination in shaping the outcomes, and offer practical implications for enhancing the well-being and professional growth of tour guides.

Our research confirms that reflective rumination leads to better emotion regulation, which in turn enhances psychological flexibility and career resilience. This finding aligns

Serial mediation pathway: Ruminative response style→ Emotion regulation→ Psychological flexibility→ Career resilience												
	Emotion regulation				Psychological flexibility				Career resilience			
	b	*SE*	*LLCI*	*ULCI*	*b*	*SE*	*LLCI*	*ULCI*	*b*	*SE*	*LLCI*	*ULCI*
Constant	2.60	0.31	1.99	3.22	1.99	0.36	1.28	2.71	0.49	0.21	0.08	0.90
Ruminative response style	1.16	0.23	0.71	1.61	0.87	0.20	0.48	1.27	0.02	0.14	−0.26	0.30
In-group reaction	0.95	0.22	0.51	1.40	–	–	–	–	–	–	–	–
Ruminative response style × In-group reaction	0.96	0.32	0.33	1.60	–	–	–	–	–	–	–	–
Emotion regulation	–	–	–	–	0.58	0.07	0.45	0.72	0.05	0.04	−0.03	0.14
Psychological flexibility	–	–	–	–	–	–	–	–	0.86	0.04	0.78	0.95
R^2	0.59				0.60				0.89			
F	38.52				51.24				218.06			
p	0				0				0			
Indirect effect									*Effect*	*SE*	*LLCI*	*ULCI*
Support reaction: Ruminative response style→ Emotion regulation→ Psychological flexibility→ Career resilience									1.08	0.17	0.75	1.42
Disregard reaction: Ruminative response style→ Emotion regulation → Psychological flexibility→ Career resilience									0.59	0.15	0.32	0.92
Serial mediation pathway: Ruminative response style→ Emotional exhaustion→ Psychological flexibility→ Career resilience												
	Emotional exhaustion				Psychological flexibility				Career resilience			
	b	*SE*	*LLCI*	*ULCI*	*b*	*SE*	*LLCI*	*ULCI*	*b*	*SE*	*LLCI*	*ULCI*
Constant	5.25	0.35	4.56	5.95	6.40	0.30	5.81	6.98	1.26	0.38	0.51	2.01
Ruminative response style	−2.10	0.26	−2.60	−1.59	1.03	0.14	0.74	1.31	−0.03	0.10	−0.24	0.17
In-group reaction	−2.41	0.25	−2.91	−1.91	–	–	–	–	–	–	–	–
Ruminative response style × In-group reaction	1.71	0.36	1.00	2.43	–	–	–	–	–	–	–	–
Emotional exhaustion	–	–	–	–	−0.66	0.05	−0.75	−0.56	−0.10	0.05	−0.19	−0.01
Psychological flexibility	–	–	–	–	–	–	–	–	0.81	0.05	0.70	0.91
R^2	0.52				0.74				0.89			
F	29.34				98.22				224.11			
p	0				0				0			
Indirect effect									*Effect*	*SE*	*LLCI*	*ULCI*
Support reaction: Ruminative response style→ Emotional exhaustion → Psychological flexibility→ Career resilience									0.20	0.14	−0.07	0.47
Disregard reaction: Ruminative response style→ Emotional exhaustion→ Psychological flexibility→ Career resilience									1.11	0.16	0.80	1.43

with those of Burwell and Shirk (2007), who identified reflective rumination as beneficial for adaptive emotional processing and problem-solving. Our results also suggest that brooding rumination exacerbates emotional exhaustion and impairs psychological flexibility,

ultimately diminishing career resilience. This finding aligns with those of Watkins and Nolen-Hoeksema (2014), and Kim and Newman (2023).

Moreover, our study elucidates the serial mediation mechanism whereby emotion regulation and emotional exhaustion sequentially mediate the relationship between rumination styles and psychological flexibility. This expands upon the theoretical frameworks proposed by Bond et al. (2013), thus emphasizing the critical role of emotion regulation in fostering psychological flexibility and career resilience.

Furthermore, the results show a moderating role of in-group social support, particularly in-group support and disregard, suggesting that in-group support enhances the positive effects of reflective rumination on emotion regulation and further bolsters psychological flexibility and career resilience. This finding coincides with those of Su et al. (2020) and Shi and Wang (2021). Additionally, in-group disregard exacerbates the negative effects of brooding rumination, leading to increased emotional exhaustion and reduced psychological flexibility. These findings highlight the importance of social dynamics in stress responses.

8.2. Theoretical implications

This study's contributions are fourfold. First, it sheds light on how tour guides' ruminative response styles to job stress affect their career resilience by exploring how cognitive processes influence long-term progression. It highlights the critical role of reflective rumination in enhancing emotion regulation, psychological flexibility, and career resilience (Burwell & Shirk, 2007; Nolen-Hoeksema et al., 2008), while showing how brooding rumination leads to emotional exhaustion, reducing flexibility and undermining resilience (Watkins & Nolen-Hoeksema, 2014; Kim & Newman, 2023).

Second, this study expands understanding of how different rumination types affect tour guides' well-being, influencing professional growth and stability. Reflective rumination promotes adaptive emotion regulation and flexibility (Bond et al., 2013), whereas brooding rumination increases exhaustion and reduces resilience (Koch & Adler, 2018).

Third, unlike prior research focusing on job stress's adverse consequences (Yetgin & Benligiray, 2019; Kim et al., 2020; Mackenzie & Raymond, 2020; Popa & Madera, 2023), this study highlights the potential favorable impacts of adaptive ruminative responses. Its findings broaden the job stress literature, emphasizing that stress can lead to advantageous outcomes (Ornek & Esin, 2020; Nolen-Hoeksema et al., 2008).

Lastly, it highlights the crucial role of in-group members in moderating the impacts of ruminative responses. While prior studies (Jung et al., 2021; Park et al., 2020) often overlook the influence of in-group reactions, this study shows that support strengthens reflective rumination's positive effects, while in-group disregard weakens it (Su et al., 2020; Shi & Wang, 2021). By emphasizing social dynamics, this study underscores the importance of supportive environments to enhance tour guides' career resilience.

8.3. Practical implications

This study's findings have practical implications for enhancing tour guides' well-being and career resilience. First, organizations and training programs should foster reflective rumination among staff. Reflective rumination helps tour guides regulate emotions, reduce exhaustion, and enhance psychological flexibility and resilience. Training in mindfulness, cognitive restructuring, and reflective practices equips tour guides to engage in beneficial rumination. For example, mindfulness-based stress reduction programs, shown to improve emotion regulation and reduce stress, can be adapted to tour guide.

Second, organizations should implement support systems to mitigate brooding rumination's negative impacts. This includes providing access to mental health resources like counseling and stress management workshops to help reframe negative thoughts. Creating a supportive environment where tour guides feel comfortable seeking help is crucial. Regular mental health check-ins and anonymous support channels further encourage assistance-seeking.

Social support from colleagues and supervisors also plays a vital role. Organizations should cultivate a culture of in-group support through team-building, mentorship programs, and collaborative work environments. Strong social bonds reduce brooding rumination's effects while amplifying reflective rumination's benefits.

Additionally, organizations must prevent in-group disregard by promoting fairness and inclusivity. Ensuring all tour guides feel valued and supported requires diversity policies, inclusivity training, and strategies to address unconscious bias.

Finally, interventions to enhance tour guides' resilience should address individual strategies alongside organizational and social support mechanisms. A holistic approach targeting cognitive and social aspects of job stress will improve well-being and resilience.

8.4. Limitations and future research

This study's reliance on scenario-based experiments may constrain its external validity. Consequently, future research should explore the use of quasi-experimental designs (Liu & Mair, 2023; Ma & Li, 2022). The exclusive focus on ruminative response styles was also limiting. Other alternative response strategies such as distraction and problem-solving should be explored. Moreover, the implementation of long-term longitudinal tracking can reveal patterns of ruminative responses and their subsequent outcomes over an extended period (Su et al., 2022). Lastly, the influence of cultural background should be considered by investigating diverse cultural contexts.

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