

What Drives Post-disaster Traveling: The Interaction Effect of Time and Emotion

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Abstract. In this paper, we mainly concentrate on when and how temporal distance shapes individual's post-disaster willingness to travel. Through a text analysis from 13000 comments from a social platform, we found that people tend to publish their comments more emotionally and gradually to be transformed into rationally as time increases. Findings suggest that temporal distance can hurt peoples' emotional intensities. However, it also can increase willingness to visit because negative emotion is impaired more than positive emotion. In addition, we demonstrated the interaction effect of temporal distance and emotion-that is, invert-U and U shape function were found for people's willingness to visit.

Keywords: Temporal Construal; Emotion; Natural Disaster; Willingness to visit.

1. Introduction

Tourism destinations always are endowed with beautiful views and landscapes due to special geographical environments. However, special environments tend to make tourism destinations suffer from frequent and devastating natural disasters as well[1]. Natural disasters can largely repress the local economy for regions where people typically rely on the tourism industry to live. Unpredictable natural disasters and caused devastating damage to people force scholars and practitioners to explore how to strategically reduce or eliminate such threats for local residents and governments.[2] When the disaster occurred, marketers are required to put high effort into leveraging the brand and enhancing traveler's loyalty for post-disaster destinations by multiple strategies[3].

Temporal distance can change consumers' perceptions and behaviors.[4] More specifically, temporal shift significantly alters consumers' affective and cognitive information-processing type [5] and discounts the value of subjects [6]. Temporal distance tremendously shapes the government's policy-making and the announcement of safety when the disaster happened.

Understanding travelers' perception of post-disaster tourism destinations is critical to market recovery. In current research, from a temporal perspective, we seek to explore how individual willingness to visit changes as temporal distance varies and what the internal psychological mechanism is. Our findings indicate that (a) people who undergo a longer time delay would present more willingness to visit for tourism destinations; (b) temporal distance can reduce positive and negative emotion, whereas negative would be attenuated more (c) there exists an inverted-U shape (U-shape) curve between negative (positive) emotion and willingness to visit for far temporal distance group. Conclusions can help practitioners and governments to correctly formulate communication and announcement strategies.

2. Literature Review

2.1 Natural Disaster for Tourism Destination

Beautiful views are strongly based on natural resources. However, tourism destinations heavily suffer from natural disasters which can cause vital economic loss and critical repression local business growth.[7]Due to its high correlation to local business prosperity, economic recovery from a variety of natural disasters is becoming more and more crucial for scholars and practitioners.[8] Fortunately, little research shows that even if natural disasters may cause the giant loss for tourism destinations, there are opportunities to revive the local economy as long as to apply appropriate strategies.[9]

2.2 Temporal Construal and Affective Response

Basic temporal construal level theory indicates that farther the temporal distance is, the more likely events to be presented in terms of abstract features that convey the essence of events (high-level construal) rather than in terms of more concrete and incidental details of events (low-level construal).[10] In the consumer research domain, a large body of research finds that consumers' preferences and choices are tremendously affected by the temporal shift.[11]A variety of research few decades ago also demonstrated the “time discounting” effect and suggested that the value of outcome would be discounted as temporal distance increases.[10] Alien from cognitive aspect research for psychological distance, the evaluation for products would be improved when confronting with far distance[12], and abstract thinking will enhance positivity of thought. People who face abnormal but established facts (eg., natural disasters) would have counterfactual alternatives and more availability can elicit more affective response, ultimately near distance can strengthen consumer’s affect [11] Moreover, temporal distance can reduce the intensity of affects both negative and positive.

H1 People show more willingness to visit as temporal distance increases.

H2a Temporal distance impairs negative emotion that weakens peoples’ willingness to visit.

H2b Temporal distance impairs positive emotion that enhances peoples’ willingness to visit.

H2c Negative emotions are impaired more than positive emotion. As a result, people show more willingness to visit as temporal distance increases.

2.3 Emotion and Willingness to Visit

Emotion plays an important role in shaping consumers’ evaluation and attitude [13] and it could be changed by time variation. Moreover, consumers are more likely to prefer a moderate level of incongruent features when adopting new products [14], leading to an inverted-U relationship between arousal effects and evaluations for new products. In this research, we propose that the U (inverted-U) shape relation between negative (vs. positive)emotion is caused by the change of temporal distance. We assume that emotion would be depressed in distant condition, and it would lead to U and inverted-U shape function for peoples’ willingness to visit. We developed hypothesizes as following(see figure 1):

H3a When people state in the far distance, there would be a U-shape function between negative emotion and willingness to visit.

H3b When people state in the far distance, there would be an inverted-U-shape function between positive emotion and willingness to visit.

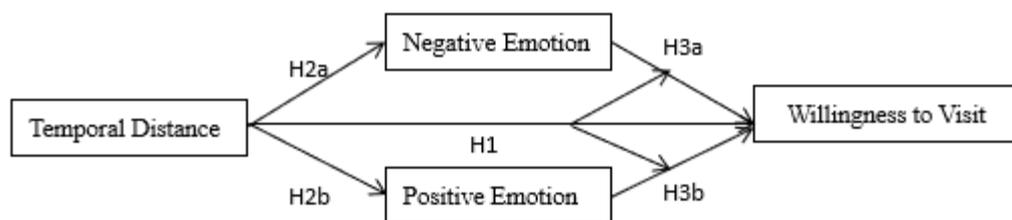


Figure 1. Conceptual Framework

3. Method

Jiu Zhai Gou, a famous tourist site in China, recently has undergone a gravel earthquake($M-S \geq 7.0$), lots of beautiful views were destroyed and the economic loss is more than 22.45 billion Yuan. For the sake of analyzing consumer’s perceptions and attitude shifts, we collected text data from Sina Weibo, including the contents of publication and follower’s reviews and their basic information (eg., age, gender, address). Prior research has suggested that consumers’ comments for target products are important and can be conducted with exploratory factor analysis for quantitative research[15]. We initially checked the Weibo index to select the hottest news and contents that users participate in the

discussion and totally collected about 13000 reviews and 15 article (6376 is effective), the temporal span of articles more than a month(August 8th, 2017 to September 10th,2017).

Separate from the middle of this time span, we selected the reviews before 20th August as near distance group, the remaining as far group. Then we started to encode the content of reviews. At first, we applied software to identify the valence (positive and negative) of consumer’s reviews, then we invited 3 official coders who were unknown for concrete intention and need to encode the emotional intensity they perceived [28], which ranges from 1-3 (low, moderate and high). Particularly, we exemplified some sentences which conclude key emotion and could give them some guidance to judge whether reviews are emotional or not. For emotional intensity, we asked officials questions like“how emotional do you think this review might be?”, please write down the emotional level you perceived(1=low,3=high). When finished the instruction to officials, pre-coding were applied to test the reliability of this processing methodology. The results suggest that all items show good reliability($\alpha > 0.7$, $n=500$). Particularly, we refined the number of key emotion words to be 6, respectively safety pray, beauty retrospection, life cherishing, regret, danger and grief. Then we continued to encode the remaining reviews, the aggregate sample is 6376, and spend 2 weeks to complete it.

4. Results

4.1 Validity and Reliability Check

At first, we tested the correlation for each key word (see table-2). The results suggest that only the comments about “pray for safety” are negatively related to willingness to visit($r = -.055$, $P < 0.01$), “beauty retrospection ”($r = .236$, $P < .01$), “life cherishing”($r = .067$, $P < .01$), “grief”($r = .039$, $P < .01$), “regret”($r = .106$, $P < .01$) are positively correlated to the willingness to visit, and “danger perception” is not significantly related to willingness to visit($r = .010$, $P = .412$). The exploratory factor analysis indicated that two valences of emotion are suitable for factor analysis($KMO > 0.7$, and Bartlett’s-Value < 0.01), and the principal component analysis results indicate that total variance extraction reach to 81.9% and all items’ average variance extraction(AVE) are higher than 0.50(0.78 for positive and 0.86 for negative emotion). Then we rotated the component matrix, the results show observable variables can be classified to 2 latent variables. We named the first three items as negative emotions ($\alpha = 0.818$) and last as positive emotion($\alpha = 0.895$).

Table 1. Correlation Matrix

	Safety	Beauty	Cherish	Grief	Regret	Danger	Willingness
Safety	1	.487**	.756**	-.431**	-.470**	-.479**	-.055**
Beauty	.487**	1	.756**	-.370**	-.413**	-.423**	.263**
Cherish	.756**	.756**	1	-.459**	-.513**	-.527**	.067**
Grief	-.431**	-.370**	-.459**	1	.714**	.814**	.039**
Regret	-.470**	-.413**	-.513**	.714**	1	.820**	.106**
Danger	-.479**	-.423**	-.527**	.814**	.820**	1	.010
Willingness	-.055**	.263**	.067**	.039**	.106**	.010	1

Note: **. Correlation is significant at the 0.01 level (2-tailed)

4.2 Temporal Distance, Emotion and Willingness to Visit

We checked the relationship between temporal distance for past and peoples’ willingness to visit. Consistent with our hypothesis, the result suggests that people in the far temporal distance ($M = 4.46$, $SD = 1.43$) show higher traveling willingness than near distance ($M = 3.97$, $SD = 1.39$) ($t = -12.958$, $P < .001$, Cohen’s $d = .35$). We tested the relation between temporal distance and individual emotion as well, the result indicates that they show more emotional responses when confronting with near temporal distance than far temporal distance. Specifically, more positive emotions ($M = 1.86$, $SD = .52$)

emerge in near distance and less in far distance ($M=1.55, SD=.59, t=21.02, P<.001, \text{Cohen's } d=-.70$). For negative emotion, as we assumed, people show more negative emotion ($M=2.28, SD=.67$) when state in the near distance and less in far distance ($M=2.06, SD=.51, t=-14.638, P<.001, \text{Cohen's } d=.37$). Therefore, H1 was supported.

4.3 Emotions as Mediators

To check the mediation effects, we firstly normalized our variables, and hierarchical regression and the bootstrapping method were applied to test mediation effects. The result shows negative emotion ($\beta=-.255, t=-21.02, p<.001$) reduce more sharply than positive emotion ($\beta=-.181, t=-14.639, p<.001$) partially substantiated our hypothesis H2c. Next, we added temporal distance as the singular predictor for willingness to visit, it suggests that temporal distance could significantly increase people's willingness to visit ($\beta=.162, t=12.958, p<.001$), when adding negative emotion, the coefficient for temporal distance significantly changed ($\beta=.147, t=11.431, p<.001$). As we predicted, negative emotion could influence the willingness to visit ($\beta=-.056, t=-4.357, p<.001$), the result suggests that negative emotion partially mediates temporal distance and willingness to visit, bootstrapping method showed the same result, $CI= (.0168,.0457)$. Hypothesis H2a was supported. Then we continued to add positive emotion as the independent variable, the coefficient for negative emotion is not significant again ($\beta=-.008, t=-0.494, P<.1$), and positive emotion is significantly reduced ($\beta=.087, t=5.773, p<.001$), which suggests that positive emotion mediates temporal distance and willingness to visit, bootstrapping method showed the same result, $CI=(-.0706,-.0356)$.

4.4 Temporal Distance as Moderator

To further specify the relationship between emotion and willingness to visit, we separately conducted 2(near vs. far distance) \times 3(low, moderate vs. high) ANOVA to test whether it shows an inverted-U and U shape curve for willingness to visit only occur in far temporal distance. The result similarly indicates that temporal distance and negative emotion are significantly interacted ($F(2,6271) = 17.711, p<.001, p=.006$, see figure-2), deconstructing simple effect, people present an U-shape curve only when state in far distance ($M_{low}=4.48, SD=1.46, M_{moderate}=4.38, SD=1.41, M_{high}=5.02, SD=1.11, F(2,2055) = 9.203, P<.001, p=.03$), and near distance does not emerge ($M_{low}=4.21, SD=1.46, M_{moderate}=3.93, SD=1.36, M_{high}=3.73, SD=1.40, F(2,4210)=2.472, p<.01, p=.02$). Then we checked the relationship between positive emotion and willingness to visit, the interaction between positive emotion and willingness to visit is significant ($F(2,6266)=16.608, P<.001, p=.005$). As we assumed, far distance group exists an inverted-U relation ($M_{low}=4.67, SD=1.32, M_{moderate}=5.02, SD=1.35, M_{high}=4.73, SD=1.25, F(2,2055) = 14.456, p<.01, p=.014$), and for near group, it did not emerge ($M_{low}=4.70, SD=1.21, M_{moderate}=4.75, SD=1.26, M_{high}=4.94, SD=1.99, F(2,4214) = 6.172, P=.002, p=.003$). The results demonstrated our hypothesis H3a and H3b.

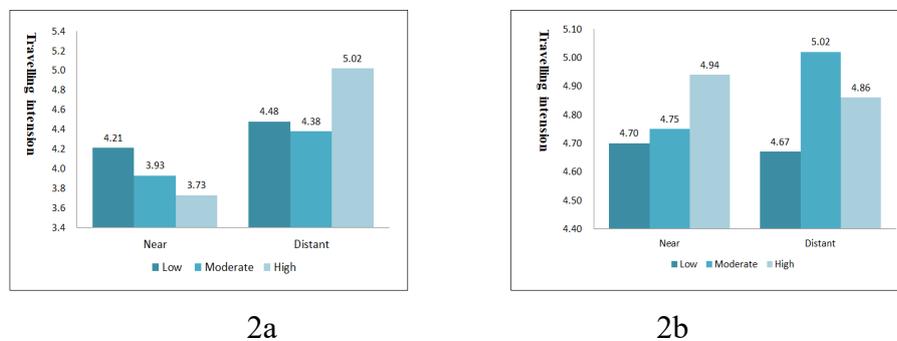


Figure 2. Interaction for Negative(2a) and Positive(2b) Emotion and Willingness to visit

5. Summary

We examined how temporal distance changes peoples' willingness to visit and emotional response. The empirical analysis indicates that individuals showed a higher willingness to visit and less emotion

as temporal distance increases. Moreover, we demonstrated that individual emotion elicited by temporal shifts could mediate the relationship between temporal distance and willingness to visit. Further speaking, when temporal distance for past natural disasters increases, peoples' both negative and positive emotion was repressed, but the negative part is impaired more than positive, as a result, enhancing their willingness to visit.

Similar with previous research, we also demonstrated the existence of inverted-U and U-shape relation (respectively between positive and negative emotions) and willingness to visit. However, what different is that we proved this relation derives from a new antecedent-that is, temporal distance.

From the practical perspective, our basic finding that far temporal distance promotes individual willingness to visit gives some guidance to authorities and it might recover travelers' consumption confidence over a long time. Results show that it would be more effective for governments to advertise consumers to visit by the moderate level of emotional advertising appeals. Because people tend to exhibit a higher willingness to visit as temporal distance increases, and the moderate level of positive emotion shapes their willingness to visit most.

References

- [1]. Chungung T, Chen C W. An earthquake disaster management mechanism based on risk assessment information for the tourism industry - a case study from the island of Taiwan.[J]. *Tourism Management*, 2010, 31(4):470-481.
- [2]. Ritchie, B. W. (2004). Chaos, crises, and disasters: A strategic approach to crisis management in the tourism industry. *Tourism Management*, 25(6), 669–683.
- [3]. Amujo, O. C., & Otubanjo, O. (2012). Leveraging rebranding of 'unattractive' nation brands to stimulate post-disaster tourism. *Tourist Studies*, 12(1), 87–105.doi:10.1177/1468797612444196.
- [4]. Trope Y, Liberman N. Temporal construal[J]. *Psychological Review*, 2003, 110(3):403.
- [5]. Loewenstein, G. F. (1996). Out of control: Visceral influences on behavior. *Organizational Behavior and Human Decision Processes*, 65, 272–292.
- [6]. Ainslie, G., & Haslam, N. (1992). Hyperbolic discounting. In G. Loewenstein & J. Elster (Eds.), *Choice over time* (pp. 57–92). New York: Russell Sage Foundation.
- [7]. Faulkner B, Wilks J, Page S J. Towards a framework for tourism disaster management. [J]. *Tourism Management*, 2001, 22(2):135-147.
- [8]. Dong, W. M. (1995). Catastrophe risk management -A rational approach to catastrophe insurance pricing. *RMS*.
- [9]. Susan M. Pottorff, Dr. David M. Neal. Marketing Implications for Post-Disaster Tourism Destinations[J]. *Journal of Travel & Tourism Marketing*, 1994, 3(1):115-122.
- [10]. Elster, J., & Loewenstein, G. (1992). Utility from memory and anticipation. In G. Loewenstein & J. Elster (Eds.), *Choice over time* (pp. 213–234). New York: Russell Sage Foundation.
- [11]. Williams L E, Stein R, Galguera L. The Distinct Affective Consequences of Psychological Distance and Construal Level[J]. *Journal of Consumer Research*, 2014, 40(6):1123-1138.
- [12]. Meyers J. When Timing Matters: The Influence of Temporal Distance on Consumers' Affective and Persuasive Responses[J]. *Journal of Consumer Research*, 1992, 19(3):424-33.
- [13]. Annie Lang, Yongkuk Chung, Seungwhan Lee, et al. It's the Product: Do Risky Products Compel Attention and Elicit Arousal in Media Users?[J]. *Health Communication*, 2005, 17(3):283-300.

- [14]. Noseworthy T J, Muro F D, Murray K B. The Role of Arousal in Congruity-Based Product Evaluation[J]. *Journal of Consumer Research*, 2014, 41(4):1108-1126.
- [15]. Berger J, Milkman K L. What Makes Online Content Viral?[J]. *Journal of Marketing Research*, 2009, 49(8):192-205.