



# The Impact of Mental Simulation on Willingness to Pay for Online Content from the Perspective of Service Engineering

Junfeng Liao<sup>1\*</sup>, Minru Yang<sup>2</sup>, Yiqing Zeng<sup>3</sup>

<sup>1</sup>School of Economics and Management, Kashi University, Kashi, China

<sup>1,2,3</sup>Department of E-Commerce, South China University of Technology, Guangzhou, China

<sup>1</sup>ljf@scut.edu.cn, <sup>2</sup>2645812555@qq.com, <sup>3</sup>807866070@qq.com

**Abstract.** This study builds a model by combining the variables such as the duration of mental simulation, content type and impulsive characteristics. On this basis, it uses empirical research methods such as scenario experiment and matched samples t-test to study the impact of mental simulation on the willingness to pay for online content in the context of digital commerce from the perspective of service engineering, and draws the following conclusions: mental simulation significantly improves users' willingness to pay for online content; For different content types, different simulation duration has different promotion effects; In the influence of mental simulation on willingness to pay, impulsive trait plays a significant role on moderation.

**Keywords:** Mental Simulation; Pay for Online Content; Scenario Experiment; Service Engineering; Digital Commerce

## 1 Introduction

In the context of digital commerce, the concept of content payment has received great attention in recent years, but most of the related researches focus on development review or case analysis. However, in the past mental simulation research, the impact of simulation duration on the results has not been considered. This paper focuses on the promotion effect of different simulation durations under different content contexts, and adds impulsive trait as an important moderator into the research model, thus improving the theoretical gap.

Mental simulation is the imitation performance of reproducing some events or series of events in the brain [1]. When people do online shopping, they cannot see and touch the goods, so there is information asymmetry in the shopping process, which makes customers prone to worry and doubt. Therefore, mental simulation is a good way for customers to master more product information before making decisions. In the purchasing behavior of consumers, impulsivity is an important factor, which can attract consumers to buy in the shortest time [2]. Impulsive buyers choose to enjoy the pleasure

of buying immediately, without considering the decisions and consequences after buying, and without considering the actual needs.

## 2 Research design

The core of this study is to explore the impact of mental simulation on users' willingness to pay in different situations. This study refers to existing research models and combines the core variables of this paper to deduce the research model of this paper.

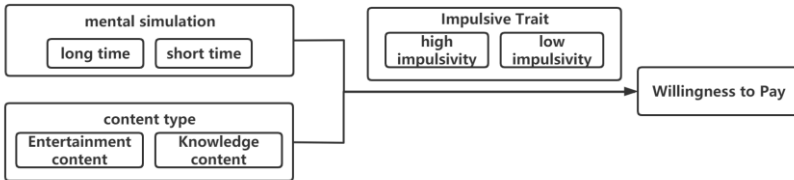


Fig. 1. Research Model [Owner-draw]

Some scholars believe that the concept of personality mainly lies in its role as a moderator [3]. The influence of mental simulation on purchase intention may vary due to the difference of impulsive trait [4], so it is introduced as a moderator. In this paper, the duration of mental simulation and the content type are taken as independent variables. The content type is divided into entertainment content and knowledge content, and the impulsive trait of consumers are added as moderator to explore the impact mechanism of the duration of mental simulation on consumers' willingness to pay.

### 2.1 Hypothesis development

Social psychological research has proved that mental simulation is an effective self-control mechanism, which can help individuals achieve their goals.

H1: Mental simulation can improve users' willingness to pay for online content.

There are obvious differences in time personality in different situations. For example, individuals may show a higher sense of planning and urgency in strong situations, while they are more relaxed and casual in weak situations [6]. This paper speculates that when the simulation time is short, the subjects are in a strong situation, are stimulated with a high degree of planning and time awareness, and are more likely to trigger utilitarian consumption; However, when the simulation time is long, the subjects are in a weak situation, and are more likely to be mobilized to emotional and aesthetic sensory experience, which leads to entertainment consumption.

H2: In the context of entertainment content, long time mental simulation has significantly enhanced users' willingness to pay.

H3: In the context of knowledge content, short time psychological simulation has significantly enhanced users' willingness to pay.

In the consumption situation, when exposed to the same external stimulus, consumers with high impulsivity will make more sensitive and strong responses [7], while

individuals with low impulsivity, because of their better self-control ability, are more able to suppress the impulse purchase desire even in the face of favorite products.

H4: After mental simulation under the same conditions, the increase of willingness to pay of high impulsive people is more significant.

## 2.2 Experimental design

Experiment 1 is a 2 (long-time mental simulation vs. short-time mental simulation) x 2 (knowledge content vs. entertainment content) experiment. The subjects were divided into 4 groups. First, the subjects were asked to describe their willingness to pay for knowledge or entertainment content with the seven level Likert scale. Then, the subjects were guided to conduct mental simulation for a specified time. The duration of mental simulation was guaranteed by setting the page stay time. Finally, the subjects were asked to use the scale again to describe their willingness to pay in the imagined situation. In order to check the manipulation of the mental simulation situation, the subjects were asked to describe the degree of mental simulation through the seven level Likert scale. After the experiment, they were also asked to briefly describe the imagined content and situation. The part of mental simulation in Experiment 2 is the same as that in Experiment 1, but the difference is that the measurement of impulsive trait of subjects is added before mental simulation.

## 3 Results

### 3.1 Mismatched samples t- test in experiment 1

The results of the t-test in experiment 1 are shown in Table 1:

**Table 1.** Results of matched samples t- test in experiment 1 [Owner-draw]

	Mean	S.Dev	Mean of SE	t-value	p-value
EN+ST	-0.571	1.28991	0.21803	2.621	0.013
EN+LT	-0.829	1.01419	0.17143	4.833	0.000
KL+ST	-0.429	0.85011	0.14370	2.983	0.005
KL+LT	-0.229	0.87735	0.14830	1.541	0.133

EN: Entertainment, ST: Short Time, LT: long time, KL: Knowledge

In table 1, the Mean column calculates the mean value of the difference between the willingness to pay for online content before and after the mental simulation. The values of each group is negative, which indicates that the willingness to pay has been significantly improved after the mental simulation. The p-value of the first three groups is less than 0.05. The p-value of the KL+LT group is not significant. On the whole, the willingness to pay before and after the mental simulation is relatively high. From the perspective of content type, in the context of entertainment content, mental simulation with long time significantly improves the willingness to pay more than the shorter time; In

the context of knowledge content, the short time simulation significantly improves the willingness to pay more than the longer time. H1, H2 and H3 are verified.

### 3.2 Matched samples t- test in experiment 2

In the process of experiment 2, the impulsive trait of the subjects were measured.

**Table 2.** Results of matched samples t- test in experiment 2[Owner-draw]

	Mean	t-value	p-value		Mean	t-value	p-value
ST×HI	-0.512	-2.986	0.005	EN×HI	0.682	3.170	0.003
ST×LI	-0.410	-2.581	0.014	EN×LI	0.622	2.698	0.011
LT×HI	-0.476	-2.231	0.031	KL×HI	0.333	2.179	0.036
LT×LI	-0.421	-1.845	0.073	KL×LI	0.275	1.718	0.094

EN: Entertainment, ST: short Time, LT: long time, KL: Knowledge, HI: high impulsivity, LI: low impulsivity

In the experimental group with the duration of mental simulation as the variable, two group of impulsive trait are significant in the short-time situation, and the high impulsivity group is significant in the long-time mental simulation situation. In the experimental group with the content type as the variable, in the context of entertainment content, two group of impulsive trait are both significant, and in the context of knowledge content, the high impulsive trait group is significant, indicating that the moderating effect of impulsive trait is significant. H4 is verified.

## 4 Conclusion

### 4.1 Conclusion

This paper selects the duration of mental simulation, content type, impulsive trait and willingness to pay as variables to build a research model. The following conclusions are obtained:

(1) Mental simulation has a significant positive effect on the increase of willingness to pay. (2) Mental simulation with different duration has different effects on the promotion of willingness to pay for different content types. In the context of entertainment content, simulation with long time has more obvious effect on the promotion of willingness to pay; In the context of knowledge content, the simulation with short time has more obvious improvement in the willingness to pay. (3) In the process of simulation affecting the willingness to pay for online content, the impulsive trait of the subjects has a significant moderating effect, and the improvement of the willingness to pay is more obvious in the group with high impulsivity.

## 4.2 Managerial implications

Based on the research conclusions, this study puts forward the following suggestions

### 1. Suggestions for online content providers

From the results of this study, mental simulation has a significant effect in improving the willingness to pay for online content. Online content provider can provide users with richer information in a short time and create a strong context for knowledge content; For entertainment content, it is necessary to mobilize the user's pleasure and appropriately extend the user's stay time.

### 2. Suggestions for online content consumers

First of all, extend the time of thinking before payment, and make good use of the self-control mechanism of mental simulation. Especially for entertainment products, do not only care about the short-term pleasure or satisfaction, but also consider the long-term value of products. And pay attention to identifying the leading words of the merchants.

## Acknowledgements

Thanks for the support from The National Social Science Fund of China (18BGL110).

## References

1. Shelley E. Taylor and Sherry K.Schneider. Coping and the Simulation of Events[J]. *Social Cognition*, 1989, 7(2): 174-194.
2. Weun, S; Jones, M A; Beatty, S E. Development and validation of the Impulse Buying Tendency Scale[J]. *Psychological reports*, 1998, 82 (3 Pt 2): 1123-33.
3. Sanna L J. Mental Simulation, affect and personality: a conceptual framework [J]. *Current Directions in Psychological Science*, 2000, 9(5):168-73.
4. Zhao M, Hoeffler S, Zauberma n G. Mental simulation and preference consistency overtime: the role of process-versus outcome-focused thoughts [J]. *Journal of Marketing Research*,2007,44(3):379 -388.
5. Zhao M, Hoeffler S, Zauberma n G. Mental simulation and product evaluation: the affective and cognitive dimensions of process versus outcome simulation [J]. *Journal of Marketing Research*, 2011,48(5):827 -839.
6. Petrova P K, Cialdini R B. Fluency of consumption imagery and the backfire effects of imagery appeals [J]. *Journal of Consumer Research*,2005,32(3):442 -452.
7. Youn, Seounmi, Ronald J.Faber, Impulse Buying: Its Relation to Personality Traits and Cues. *Advances in Consumer Research*, 2000, 27(1)

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

