

## The impact of emotionally negative online reviews on consumer purchase intentions

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### ABSTRACT

Online reviews are an important factor influencing consumers' purchasing decisions. However, there is no literature to explore the mechanism of emotional negative online reviews on consumer purchasing behavior. The research results enrich the theory of user information behavior, and have practical significance for merchants' precision marketing and customer relationship management. Based on ELM theory and regulation focus theory, using the method of situational experiment, from the two paths of peripheral situation perception and core cognitive processing, explore the influence of regulation focus on consumer purchase intention under the stimulation of emotional negative online reviews effect. The research results show that: under the stimulus of negative emotional online reviews, prevention of targeted consumers is mainly affected by the emotional arousal of the edge path, and positively affects purchase intention through emotional response; promotion of targeted consumers is mainly affected by the perception of the central path. The influence of effort positively affects purchase intention through cognitive response; among them, emotional response has a greater leading role in purchase intention.

*Keywords:* Emotional online reviews, ELM theory, regulation focus, purchase intention.

### INTRODUCTION

Online reviews can be classified as positive reviews and negative reviews. According to the existing research, negative reviews tend to exert more significant influence on consumers' behavior. Nowadays, with daunting amount of automatic default praises or fabricated praises from 'click farm', the favorable rate of E-commerce sites has been constantly holding up, which threatens to interfere the purchasing decision of consumers to a large degree. As a result, there has been a tendency that consumers afford more trust to the commodities which involve negative reviews than to those without negative reviews. Negative reviews can be classified as two categories. One is objective negative reviews, which contain little emotional tone; the other is the contrary, namely the emotional negative reviews, which involves expression such as 'That's ridiculous', 'Bah! It's terrible' or 'Not satisfied'. Without being instructed about how to write comments, reviewers prefer to share their sentiment concerning commodities. According to Sweeney, negative reviews contain 63.6% emotional factors and 15.9% cognitive factors. Thus, it has become an important research direction to explore the impact of emotional negative online comments on consumer psychology and information behavior in order to better grasp the laws of consumer behavior.

When processing information, consumers will be affected by personality traits, and their behavior depends on the individual's information processing methods, as a result of which different consumers will choose their preferred strategies when making decisions. There are two issues escaping from the attention of researchers: 1. in the context of e-commerce shopping, do consumers with different personality traits have different information processing paths after reading emotional negative comments? 2. what is the underlying cause of discrepancies of information processing behavior and how it influences consumers' purchasing intention. With use of situational experiment, our research explores the different influence paths of cognitive effort and emotional arousal on the purchasing intention of promotion focused and prevention focused consumers respectively, breaking through the rational person hypothesis and considering the influence of limited rationality and cognitive bias. The research not only promises to enrich the theoretical system of information users and consumer behavior, but also of great practical significance to the precision marketing of merchants.

### LITERATURE REVIEWS & THEORETICAL BASIS

#### Emotional negative online reviews

Researches concerning online reviews mainly focus on two aspects, the usefulness of online reviews and the influencing factors behind consumers' behavior. The former identifies the usefulness and its influence on purchase intention based on objective features, such as the number of reviews, star ratings, the length of reviews, timeliness of reviews and quality of reviews, et al. E.g., Mudambi and Schuff constructed a measurement model of the usefulness of online reviews by comment extremes and comment lengths based on the decision uncertainty framework, defining the concept of online review usefulness. The latter explores the attitude and behavior of consumers in sentimental scenario of bounded rationality which involves sentimental polarity and intensity. The online review written by consumers after purchasing often contain different emotions such as happiness, love, sadness or disappointment, which will be perceived by potential consumers to varying degrees,

correspondingly affecting their purchase intention. Thus, discrete emotions have been pivotal factors worthy of attention. Some studies have shown that the perceived usefulness obtained from online reviews will positively affect consumers' attitudes towards decision-making. In particular, comments with emotional expressions are more persuasive to consumers with emotional appeals. Negative emotions can significantly promote sharing behavior of negative IWOM, among which the anger of consumers pose a positive impact on information sharing behavior.

In scenario of informatics, existing researches concerning sentimental information behavior mainly focus on two aspects: 1. Exploring the relationship between audience behavior and emotion, where emotion serves as the argument. E.g., Tu Hongwei explored the impact of consumer anger on travel intention and negative word-of-mouth communication by constructing a model mediated by trust, discovering that self-efficacy has a moderating effect between emotion and trust. 2. Exploring the mediatorial role of emotion in the process of audience behavior, where the features of information, such as credibility, usefulness and quality, et al., serve as the argument. After being processed by consumers, information will affect the behavior of users via communication of emotion. In previous studies, scholars generally recognized that information is the stimulus of emotion, but ignored the fact that information can also be the carrier of emotion. In particular, the research on how emotional online comments affect consumer behavior is rather insufficient.

The existing research focuses more on the discussion of the usefulness of online reviews, while they rarely explore the influence of negative reviews on persuasion and consumption decisions based on the emotional arousal in negative reviews. E.g., from the perspective of usefulness, Yin et al. found that online reviews with negative emotions of worry and anxiety required more cognitive effort than online comments with negative emotions of anger, which made consumers perceive more usefulness and increased persuasive effect. The perception of the usefulness of comments can enable consumers to identify information that is helpful to them from tons of comments. However, the perceived usefulness is only a pre factor of attitude and behavior intention. The relevant literature does not pay attention to the relationship between emotion and behavior intention. There is a lack of systematic thinking on the mechanism and influence process of emotional negative reviews in consumer behavior through both cognitive and emotional paths. It's insufficient to classify online reviews as positive ones and negative ones as existing researches do. Since emotion is usually associated with two or more major evaluation dimensions and the same type of emotion will have the same potency on attitude, some scholars analyze negative comments of different dimensions according to the difference of emotion intensity. E.g., based on emotion ontology, Zheng Lijuan et al. used context to analyze the emotional polarity and intensity of online reviews, and extracted the characteristic words "very bad" and "a little bad" as the classification criteria for the emotional degree of negative reviews, so as to explore the impact of emotional negative reviews on consumers' behavior, which provides us with reference of methods.

Existing researches concerning information behavior of consumers illustrate that emotional reviews of online word of mouth can speed up the dissemination and sharing of information. The emotion of reviewers can affect the emotion of potential consumers through emotional infection, thus affecting their behavior. However, the existing research has not clarified the relationship between emotion and behavior in negative reviews. E.g., Xu Ying et al explored the different effects of content presentation characteristics on information penetration behavior from the two action paths of emotion and cognition, and found that the information penetration under the cognitive path has a significant impact on behavior; Jin Xiaoling et al constructed a path model of emotion to impulsive sharing behavior in social media and found that the emotional valence dimension affects impulsive sharing behavior of online audiences. In addition to the audience's own cognitive evaluation, scholars have found that emotional arousal in the concept of emotion has a significant impact on the audience's behavior. E.g., Berger believes that it is not comprehensive to consider only the emotional valence dimension when analyzing audience behavior, and the content of emotions with high wake-up characteristics is more convincing and credible. However, studies on online reviews only consider the impact of positive and negative emotions on consumer behavior in scenario of emotional valence, while the impact of emotional arousal dimension still escape from attention.

According to different goal pursuit and risk preference, different personality traits of consumers lead to different self-focus strategies of individuals, resulting in different psychological perception and behavior choices. Liu Luchuan et al found that negative reviews with different emotional intensity have different effects on consumer attitudes, which is regulated by individual characteristics of consumers. It is manifest that emotional reviews can affect consumers' attitudes and behaviors, which are affected by different personality traits, and their internal behavior path selection remains the focus of future research. However, the impact of consumers' personality traits and psychological needs on their information behavior is subjective and can hardly be changed easily, while consumer perception, such as emotion and cognition, can regulate and change this impact. In order to deeply study the impact of consumer perception and personality traits on behavior, we try to obtain the perception factors from emotional negative reviews, divide the consumer population and analyze the path function of individual information processing and the impact of consumer perception on consumer purchase intention

Existing researches concerning emotional information put more emphasis on the phenomenon of emotional communication of informatio, exploring the contributing factors and influence of emotional information and summarizes the rules of emotional communication through text mining or modeling work. However, these studies have not explored the impact mechanism of emotional information on consumers' purchasing behavior, and lack of empirical research on the explanation for the more persuasiveness of emotional information and the factors affecting emotional persuasive effect. The existing research lacks in-depth discussion on the emotional and cognitive changes of consumers under the stimulation of specific situations and the

choice of information paths under the influence of personality traits. As a result, in order to grasp the dynamic changes of the influence of the external environment on information behavior through consumer psychology, our research adopts the method of situational experiment. According to the ELM framework in the process of information reception and considering the characteristics of consumers, we explore the mechanism of the information processing process of consumers of different regulatory focus types under the stimulation of emotional negative comments from the central path and the marginal path respectively, revealing the effects of emotional arousal and cognitive effort on consumers' emotional and cognitive responses, and the boundary conditions of the two factors on the final purchase intention. The research not only promises to enrich the theoretical system of information users and consumer behavior, but also of great practical significance to the precision marketing of merchants.

### **Elaboration Likelihood Model**

Elaboration Likelihood Model (ELM) has been widely used in research fields of attitude, social communication and consumer behavior to explain the forming process of attitude and strategies of processing information. According to ELM theory, there are two basic paths of persuasion: central pathway and peripheral path. When the individual has high motivation and ability, they tend to resort to the central path of rational cognitive factors. Most of them evaluate and receive information by examining the information source, relevant experience and evaluation, and then change their attitude; When one of the motivation and ability is insufficient, they tend to resort to the marginal path of peripheral factors, respond to the stimulation according to the association and emotional experience caused by the information demand, and process the information through intuitive judgment. Pallak believes that the content of external information is closely related to the path choice of potential consumers: the central path is activated when consumer process cognitive information, and the marginal path is activated when consumer process emotional information. However, during consumers process online comment information, the influence of external information on behavior through consumer psychology and the influence of consumer psychological characteristics on information behavior may change with the change of different factors, and user characteristics, such as consumer personality traits, may also affect or change their consumption decisions. Li Zhong et al found that not all consumers process information carefully. Under certain circumstances, consumers will unconsciously choose the information processing path they recognize according to their own judgment. Petty and Cacioppo also found that the information processing methods of the central path and the edge path can be transformed, but whether they prefer the central path or the edge path, the resulting attitude change will ultimately affect consumers' purchasing behavior. Therefore, when processing emotional information, different information receivers will produce different information processing paths: different individuals tend to perceive the factors of individual preference from the information framework, which will be the logical basis for the final decision.

For the persuasive information of online comments, consumers who are the objects of persuasion will have two types of reactions: cognitive response and emotional response. The former tends to perceive rational factors from the information and use objective cognition and knowledge reserve to process the content of comments, while the latter tends to perceive perceptual factors from the information and mainly processes persuasion information through emotional arousal, situational perception or personal value mobilization. Based on ELM theory, Gong Yanping discusses the impact of negative online reviews on consumers' adoption intention from the central path and the marginal path, discovering that the impact of online reviews on consumers plays a role only through the central path. Lee et al used ELM theory to explain the impact of the quality and quantity of negative online reviews on consumer behavior, and explored the moderating effect on consumer of different involvement degree. Gan Zhen found that the central path and the peripheral path can affect consumers' intention to use online travel websites, and the involvement degree plays an important moderating role in consumers' choice of website information processing methods. Through two-stage experimental research, Shan Chunling et al found that consumers with high contradictions change their attitudes along the central path, and the degree of inclination to follow the opinions of commentators will be determined according to the quality of comments, while those with low contradictions change their attitudes along the peripheral path, which is significantly affected by the number of comments. However, there has been no study revealing the specific path between psychological perception and emotion, cognition and behavior of consumers with different regulatory focus types under the influence of emotional online reviews. Therefore, based on elaboration likelihood model, we divided the influence process of emotional negative reviews information on potential consumers' purchase intention into the peripheral context perception path and the central cognitive processing path, exploring the different influence paths of cognitive efforts and emotional arousal on the purchase intention of promotion focused and prevention focused consumers.

## **RESEARCH HYPOTHESIS AND MODEL**

### **Emotional arousal degree and perceived cognitive effort**

There have been a plethora of researches revealing that the emotional dimension mainly involves valence (i.e., pleasure) and arousal (i.e., the degree of emotional activation). Relevant studies also focus on the "Valence-Arousal" two-dimensional model. Although emotional valence has an important impact on decision-making, some studies have found that the decision-making results are inconsistent even when the potency is consistent. Stefanucci et al found through a series of experiments that emotional arousal can regulate individuals' high perception compared to valence. Subsequently, arousal was widely studied as an important dimension of emotion. E.g., Yuen and Lee studied the influence of different emotional arousal levels on risk-taking tendency, where they found that high emotional arousal people tend to hold a more cautious attitude towards risk than those with low emotional arousal. Studies have found that high-intensity emotions narrow the scope of cognitive processing, interfere with information processing and self-control, etc., in particular, the arousal of negative emotions is more likely to make such information penetrate our memory system, thus strengthening the final behavior. In addition, different levels of

perceived emotional arousal will affect individual preferred decision-making and behavior. E.g., Wang Lei et al believe that reviews with high arousal level tend to exude high certainty and confidence, which is more likely to repeatedly strengthening psychological cues for consumers in complex information. Existing studies show that the expression of online reviews can affect consumers' emotional response by triggering interaction with consumers. Due to the lack of language, facial expression and other clues, online reviews can merely rely on emotional words, content quality and other necessary factors to promote emotional response. Lee believes that consumers will process information by emotion to a greater extent, if the emotional arousal level of consumers is affected by emotional expression in online reviews. Because emotional reviews can usually be used as an information clue to directly affect decision-making and judgment, when expressing positive and negative attitudes, the expression of high arousal level makes the audience feel stronger attitude proclivity, and the information audience will observe and experience the emotions consistent with the communicators vicariously and stimulate their emotional reactions. In the light of these statements, we propose the hypothesis as follows:

*H1: Emotional arousal positively affects emotional response.*

Cognitive effort is the energy and time cost paid by reviewers when writing reviews and cognitive response is the idea generated by consumers after processing information. Information obtained from information sources will measure the level of cognitive effort by diverting attention and reallocating cognitive resources, and change attitudes through consumer response. Consumers will choose the relevant evaluation information of products as the main information source when shopping online. After browsing the online comments, potential consumers will make subjective judgments and generate purchase intention through cognitive processing at the psychological level. For the two different kinds of review information mentioned above, the cognitive effort perceived by potential consumers will also be different. Traditional studies believe that emotion is an obstacle to rational thinking. However, emotion plays an important role in information transmission, so their impact on cognitive tasks is also variable. That is to say, the different degree of emotion will affect consumers' perception of reviewers' cognitive efforts. E.g., Yin et al believe that anxious reviewers spend more energy and time, and pay more cognitive efforts, while angry ones do not think carefully, put less energy into writing comments, and pay less cognitive efforts. Moreover, potential consumers will naturally believe that the experience description built with more effort is more complete, more authentic and more likely to change their attitude. Therefore, based on the different perceptions of potential consumers on cognitive efforts, reviews with higher levels of cognitive efforts are accepted as involving more comprehensive, detailed and effective information and are more logical, thus exerting more persuasive influence on potential consumers. In the light of these statements, we propose the hypothesis as follows:

*H2: Cognitive effort positively affects cognitive response.*

### **Consumer cognitive and emotional reaction and purchasing intention**

Existing research holds the view that attitude includes three dimensions: cognition, emotion and behavior. Consumer attitude is a cognitive and emotional response produced by the consumer exposed to various external stimuli. The behavioral intention component represents the possibility and inclination of an individual to take a certain behavior to express his attitude towards a certain product. In marketing, it usually refers to the purchase intention; cognitive response usually refers to the thoughts, opinions, knowledge and beliefs generated by positive thinking during or after the thinking process; emotional response refers to an individual's emotional attitude produced by external stimulation. In this paper, cognitive response refers to the feeling, memory, thinking and perception of understanding and reasoning generated by consumers after browsing online reviews with different emotional levels, such as the judgment of product quality; emotional response refers to the emotional response formed by an individual based on previous experience and judgment of emotional perception of content after browsing reviews, such as the degree of love for products.

Emotional information is more likely to be perceived by consumers, contributing to their attitude change. In scenario of consumer behavior, some studies have found that the cognitive component of individuals and the emotional component of tactile stimulation are the basis of consumers' purchase intention. Some studies have also found that when consumers are faced with a large amount of uncertain information, they tend to use emotional cues to search for available information, and ease uncertainty and anxiety under information overload through emotional perception of information transmission. Therefore, consumers will process emotional negative comments through motivation attribution, which will produce different cognitive and emotional responses. For example, impulsive purchase behavior is a typical consumer information processing method dominated by emotional responses, and this emotional response of marketing stimulation will promote consumers' spontaneous purchase intention. Some scholars have developed and empirically established a model combining emotional response with the cognitive dimension of commodity evaluation, and found that in addition to cognitive factors, emotional responses through sensory cues also affect their quality perception. Gao Lin et al also confirmed that the argument strength and validity of online reviews will positively affect consumers' emotional response, and the ability, reliability and activity of information sources will positively affect consumers' cognitive response, while consumers' emotional and cognitive responses will promote consumers' purchase intention. Therefore, the different reactions of consumers will ultimately affect their purchasing intention. In the light of these statements, we propose the hypotheses as follows:

*H3a: Consumer's cognitive reaction positively affects their purchasing intention;*

*H3b: Consumers' emotional reaction positively affects their purchasing intention.*

### **Moderating effect of regulatory focus**

Previous studies have found that consumers' purchasing intention is not only related to the usefulness and quantity of online reviews, but also moderated by individual characteristics, such as cognitive ability, product involvement, and personality traits, et al. Due to the difference of consumers' personal preference, information sensitivity, cognitive level and professional knowledge, consumers' information interpretation ability and processing ability are also different. This heterogeneity will affect consumers' perception of risk and their attitude to information retrieval, thus affecting consumers' perception. Higgins put forward the regulatory focus theory, which divides the consumer groups into two types: promotion focus and prevention focus. He believes that promotion focused consumers are optimistic and positive, habitually adopt the strategy of 'desire-approach', pay more attention to the positive results of things, and are willing to change. They will exude low risk aversion in behavior and improve their decision-making; preventive consumers are prudent and cautious, habitually adopt the strategy of 'vigilance-avoidance', pay attention to the negative results of things, do not like changes, pay attention to safety, show high risk aversion in behavior, and pay attention to defense in decision-making.

Regulatory focus can be used as a universal motivation principle to explain the differences in individual's psychological processes such as cognitive evaluation, behavioral strategies, and processing methods, regardless of being short-term or long-term. In many fields, regulatory focus has been applied to explore the motivational origin and behavioral outcomes of individual goals and their effects. At the same time, existing research has shown that regulatory focus has a close relationship with individual emotions. promotion focused individuals are more inclined to produce subjective feelings of joy and frustration, while preventive ones are more likely to produce subjective feelings of relaxation and anger. When facing negative online reviews of different moods, different individuals can more easily capture the corresponding emotions. Moreover, researchers found that when the form of information presentation is consistent with the regulatory focus individual, the strong sense of correctness generated by the individual would interfere with the purchasing intention. This means that the regulatory focus has a guiding effect on individual behavior. This regulatory matching will make consumers produce different information processing processes, and thus better reconciling the relationship between consumer reaction and behavior from the perspective of thinking mode and information processing.

The diverse thinking mode of consumers with different focused types will lead to some different behavior changes after negative experiences. Consumers in the negative experience situation will have different cognitive and emotional reactions to the negative experience. Under the auxiliary judgment of the product, they search and compare the information stored in the brain, and form the final evaluation of the product through their own cognitive processing process. In other words, consumers will have different reaction after receiving information, but when it comes to specific personal behaviors, consumers will make decisions again through the information processing process. For example, there are often such individual experience in daily life that even when consumers receive similar information, they may not have a consistent purchasing intention. Thus, emotional information is processed using peripheral paths is not applicable to all consumers. In the past, the general explanation for the greater impact of emotion (or cognition) on consumer behavior ignores the differences of individual characteristics of consumers, which may be personality, living habits, etc. Therefore, this will have a certain impact on the final decision-making of consumers. As the promotion focused consumers have higher cognitive needs, they are good at capturing the deep abstract information between things, while the prevention focused consumers are good at handling specific information and making decisions by capturing the corresponding deterministic emotions. Moreover, we believe that the information preference of different consumers will be more manifest, and the boundary of route selection will also be strengthened under the negative reviews containing emotions. Therefore, according to the ELM theory, compared with the promoting consumers, the preventive consumers are more inclined to the peripheral information processing mode: process information by perceiving the emotional intensity in the reviews, which will significantly strengthen the negative behavior on the basis of the emotional response; Compared with preventive consumers, promotion focused consumers tend to use higher cognitive ability, adopt the central information processing method, use independent thinking ability to judge logic and persuasion: process information through cognitive efforts in perceived reviews, which will significantly strengthen negative behaviors on the basis of cognitive response. In the light of these statements, we propose the hypotheses as follows:

*H4: Different types of regulatory focus have different effects on consumer reaction and purchasing intention.*

*H4a: When reading emotional negative reviews, the more remarkable the characteristics of preventive individuals, the stronger the influence of emotional response on purchasing intention;*

*H4b: When reading emotional negative comments, the more remarkable the characteristic of promotion focused individuals, the stronger the influence of cognitive response on purchase intention*

Based on the above assumptions, we establish the model according to the center and peripheral paths, as shows in Figure 1.

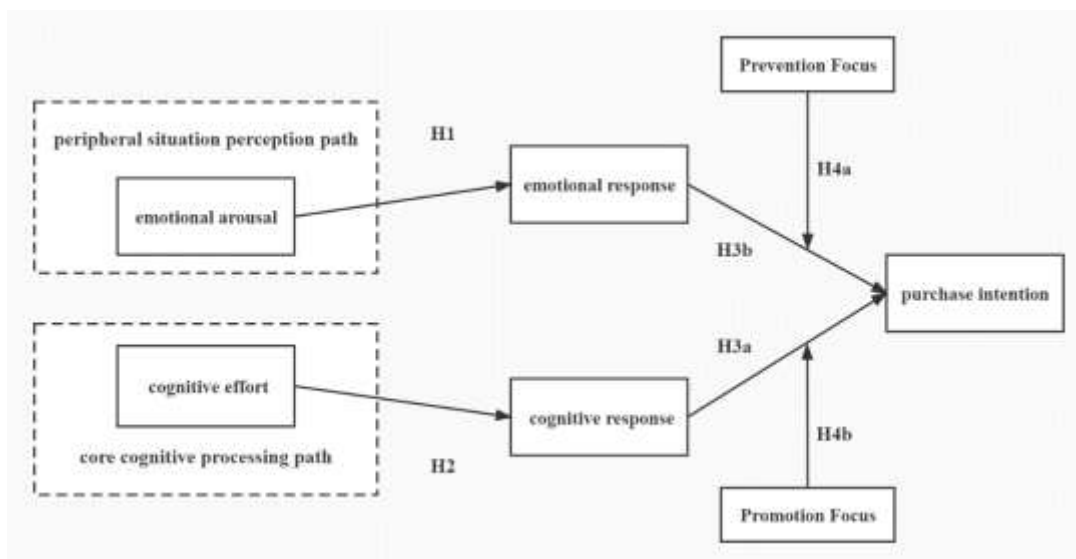


Figure 1: Theoretical research model.

## RESEARCH METHOD

In order to verify the real reaction of consumers browsing emotional negative reviews, we use scenario situational experiment to collect data and verify hypotheses. The stimulus material was adapted from the negative reviews on Taobao website. The experiment was divided into four stages, including scenario simulation, questionnaire design, pre-test, and data collection.

### Experimental purpose

The main purpose of the experiment is to verify the impact of emotional arousal and cognitive effort on consumer response facing emotional negative reviews, and to explore whether different consumers are more likely to rely on emotion or cognitive response to make final behavioral decisions. In order to control the subjects' attitude change caused by negative reviews, the experimental process is divided into pre-test and post-test, and the difference between the two experiments is taken as the data source for processing.

### Experimental design

As college students are the main force of online shopping and have strong homogeneity, we chose college students with online shopping experience as the experimental subjects. In this experiment, 4G mobile phones are selected as the experimental target. As search products, 4G mobile phone enable consumers to know the quality and performance through search and query before purchase. Meanwhile, college students are highly engaged with mobile phones and will not be disturbed by product knowledge factors and involvement.

There are a variety of emotional words in online reviews. Our research refers to the classification method of emotional words by Zheng Lijuan et al. At the same time, in order to ensure that the subjects have different degrees of emotional arousal and perceptual cognitive efforts, negative comments with strong and medium emotional intensity were designed as stimulus materials for emotional negative online reviews. In the real setting of online shopping, there is often a mixture of positive and negative information in the commodity reviews. In order to further restore the authenticity of the online shopping and avoid the strong stimulation of the negative reviews on the subjects, two groups of stimulation materials were set up in the experiment, with six reviews in each group. We put manipulated reviews (ones with strong emotional intensity and ones with moderate emotional intensity) in positions 2, 4 and 6 in each group. In other words, in each group, the three positions show the same type of reviews, and each sentence is fixed at 112 words. Filler comments are regular positive reviews positioned in 1, 3, 5 in each group, and each sentence is fixed at 30 words. E.g., 'I like their website', 'There are many items all of which has a good description', 'I received exactly what I ordered online'.

The first step is to compile the negative reviews. Since the negative reviews involve a lot of content, we compile them based on the real reviews from users of Taobao and Jingdong. After the statistics of the negative reviews on Taobao and Jingdong, it is found that the negative comments are mainly concentrated on products, services and logistics. Product quality problems mainly involve mobile phone touch effect, battery life, black screen, laggings; the service problems mainly involve poor service attitude of the shopkeeper, improper after-sales treatment, and failure to solve problems in a timely and effective manner; Logistics problems mainly involve slow delivery speed, slow logistics speed, damaged goods, poor attitude of courier. Since different people attach different degree of attention to products, services and logistics, in order to control the experimental variables, each group of reviews only involves the product quality. We chose and sort out 58 negative reviews including mobile phone touch effect, system installation, black screen, laggings and battery life, deleting extremely short or long reviews. After that, we interviewed 20 participants and found that the emotional words such as 'bah', 'ridiculous', 'terrible', will contribute to different emotion intensity perception. Therefore, when compiling the reviews, we use the words containing "anger", "terrible" and other relevant words as the source of the sentence structure of negative emotional reviews. In

order to mute the influence of other variables on the persuasiveness of selected comments, the usefulness and quality of reviews should be regulated during the preparation

### Workflow

Before analysis, we conducted a manipulation test on the stimulus materials to ensure that the subjects can identify the emotional intensity of negative reviews, so as to generate different levels of consumer perception (emotional arousal and cognitive effort) and ensure the smooth progress of the experiment. Before the formal experiment, we invited 40 subjects to browse the two groups of prepared stimulus materials, each of which contains six pieces of positive and negative reviews. Then the subjects will be required to finish question, "fill in the negative emotion value of this review", with a range of 0-100 points, to test the subjects' judgment on the emotional degree of negative reviews in stimulus materials. The results show that the mean value of emotional negative reviews with strong and medium emotional intensity is significantly higher than that of those without emotional words (  $M_{strong}=65.12$  vs  $M_{none}=42.30$  ,  $F=30.12$  ,  $P<0.01$  ;  $M_{medium}=60.96$  vs  $M_{none}=39.29$  ,  $F=37.42$  ,  $P<0.01$  ) , demonstrating that the two groups of stimulus materials meet the experimental requirements of emotional negative online reviews.

The emotional dimension includes valence and emotional arousal. In order to exclude the alternative explanation of valence to the experimental results and to control the impact of valence on consumer behavior in the data analysis, a valence scale was added to the experimental questionnaire. The test is divided into pre-test and post-test, with an interval of two weeks. The subjects were invited to the laboratory and each of them had a computer and the situation was that the subjects buy a 4G mobile phone online for themselves. By letting the subjects browse the pictures and product descriptions of a new product and online reviews of other consumers, they were exposed to the real online shopping setting. In the pre-test experiment, the participants were first shown the basic introduction of mobile phones and three positive reviews, and filled in the relevant questionnaires, including the personality trait scale, consumer response and purchasing intention scale. In the post-test experiment two weeks later, the subjects browse the prepared stimulus materials which include six pieces of positive and negative reviews, and fill in the consumer response and purchasing intention scale, emotional arousal scale, perceived cognitive effort scale, and potency. Finally, fill in the relevant demographic information.

## DATA ANALYSIS AND PROCESSING

### Sample statistics

211 subjects were recruited in this experiment. 5 questionnaires were excluded from the pre-test and 19 questionnaires were excluded from the post test. The final effective questionnaire was 187, with an effective rate of 88.6%. Among the effective questionnaires, 101 were female, accounting for 54%, and 86 were male, accounting for 46%. The participants are between 18 and 30 years old, have more than 2 years of online shopping experience.

### Examination of Reliability and Validity

Since Smart PLS has good model fitting effect on small sample data, we adopted Smart PLS for data processing. The data were tested for reliability and validity, and the results showed that all the croubach's  $\alpha$  are greater than 0.7, and the AVE values are greater than 0.5, which indicates that the scale has good reliability and convergence validity, and the square roots of all AVE values (bold numbers on the diagonal in the table) are greater than the correlation coefficients among the constructs. (Table 1)

Table 1: Root mean square of correlation coefficient and mean extraction variance of constructs t.

	EA	CE	CR	ER	BI	PRO	PRE	V
EA	<b>0.915</b>							
CE	0.280	<b>0.938</b>						
CR	0.397	0.440	<b>0.893</b>					
ER	0.414	0.289	0.744	<b>0.879</b>				
BI	0.336	0.195	0.631	0.730	<b>0.861</b>			
PRO	-0.044	-0.083	-0.240	-0.251	-0.117	<b>0.806</b>		
PRE	0.064	0.111	0.235	0.282	0.267	-0.137	<b>0.832</b>	
V	-0.307	-0.120	-0.204	-0.134	-0.015	0.057	0.061	<b>0.911</b>

Note: The value on the diagonal is the root mean square of the AVE value of each variable, and the other values are the correlation coefficients between each construct.

The total variance of the cumulative interpretation of the model is 55.2%, indicating that the emotional and cognitive responses generated by consumers after reading negative comments of different intensities have a good explanatory power on consumers' behavior. To further explore the effects of each latent variable, we measured  $Q^2$  and  $f^2$  respectively, the result of which can be seen in Table 2. Since  $0.15 \leq f^2 \leq 0.35$ , it indicates that the path effect is in the medium effect and has good influential effect; since  $Q^2 > 0$ , it indicates that the variables of the model have predictive power to the endogenous latent variables.

Table 2: Q2 and f2 in path of model

Path	f <sup>2</sup>	Q <sup>2</sup>	Path	f <sup>2</sup>	Q <sup>2</sup>
E A → ER	0.19	0.12	ER → BI	0.34	0.37
CE → CR	0.24	0.23	CR → BI	0.16	0.12

### Hypothesis test

We applied central processing method to the data and found that emotional arousal positively affects emotional response ( $b_{EA*ER}=0.41, P<0.001$ ), perceived cognitive effort positively affects cognitive response ( $b_{CE*CR}=0.44, P<0.001$ ), emotional and cognitive responses positively affect purchase intention ( $b_{ER*BI}=0.59, P<0.001, b_{CR*BI}=0.31, P<0.05$ ). The result confirms the hypotheses H1, H2 and H3. By comparing the effect of emotional response and cognitive response on purchase intention, it is found that emotional response has a more significant effect on purchasing intention than cognitive response. This also demonstrates that attitude based on emotion has a stronger predictive power on purchase intention, and emotion tend to plays a dominant role in behavior. In the light of these statements, consumers cannot make rational decisions actually, and their behavior is often accompanied by emotional impulse and perceptual thinking. Moreover, the study found that emotional arousal and valence will jointly affect consumers' emotional response. In order to explore the impact of valence, the processed data tells that the relationship between potency and emotional response was not significant ( $b_{V*ER}=-0.15, P>0.05$ ). In order to test the moderation effect, we set valence, gender, age, education, Internet age and online shopping age as controlled variables with the application of AHP, constructing product interaction terms of emotional response and prevention focus (ER \* PRE) and cognitive response and promotional focus (CR \* PRO) respectively, the result of which is showed in Table 3. After four times of regression, R<sup>2</sup> witnesses an increase of 0.387, from 0.175 to 0.562, indicating that the more significant the trait of the promoting individual, the stronger the influence of cognitive response on purchasing intention; the more significant the characteristics of preventive individuals, the stronger the influence of emotional response on purchasing intention. This precisely justifies the hypotheses H4、H4a、H4b.

Table 3: Results of analytic hierarchy process

Item	Variables	Purchasing Intention			
		Model1	Model2	Model3	Model4
Controlled Variables	Gender	0.025	0.016	0.132	0.062
	Age	0.032	0.064	0.058	0.055
	Education	-0.121	-0.217	-0.233	0.186
	Internet Age	0.092	0.136	0.242	0.196
	Online Shopping Age	0.234	0.147	0.349	0.150
	Valence	-0.160	-0.233	-0.179	-0.303
Argument and Moderators	EA		0.129***	0.157***	0.122***
	CE		0.212**	0.342***	0.200***
	ER		0.465***	0.656***	0.541***
	CR		0.203***	0.438***	0.205**
	PRO			0.241*	0.202*
	PRE			0.311*	0.204
Moderating Effect	ER*PRE				-0.210*
	CR*PRO				-0.143*
	R <sup>2</sup>	0.175	0.428	0.519	0.562
	△R <sup>2</sup>		0.253	0.091	0.043

Note: \*P<0.05, \*\*P<0.01, \*\*\*P<0.001.

A two-way ANOVA was conducted to analyze the impact of consumers' cognitive and emotional responses on the subjects' purchasing intention when the consumers were prevention focus or promotion focus. The results showed that the data of cognitive response and emotional response under emotional negative reviews were regressed with the types of regulatory focus. The interaction of promotion focus and cognitive response had a greater effect than the interaction of prevention focus and cognitive response ( $b_{PRO*CR}=0.48, P<0.05; b_{PRE*CR}=0.21, P<0.05$ ); on the contrary, compared with the interaction of promotion focus and emotional response, the interaction of prevention focus and emotional response had a greater impact ( $b_{PRE*ER}=0.65, P<0.05; b_{PRO*ER}=0.34, P<0.05$ ). As can be seen from Fig. 2 and Fig.3, the cognitive response of promotion focused ones can make them produce greater purchasing intention, while it turns out to be the emotional response when it comes to prevention focused ones.



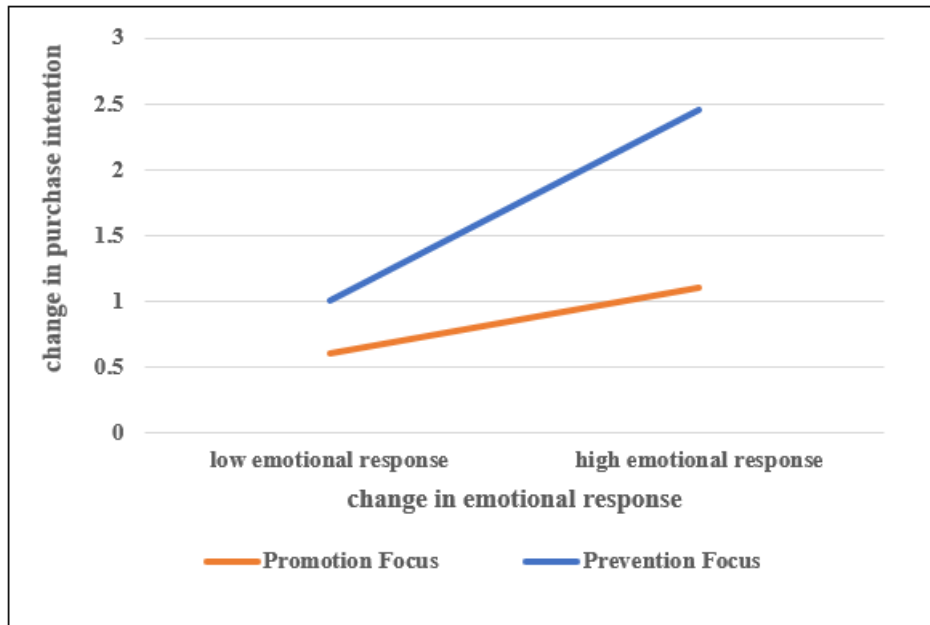


Figure 2: The moderating effect of regulation focus on the relationship between emotional response and purchase intention.

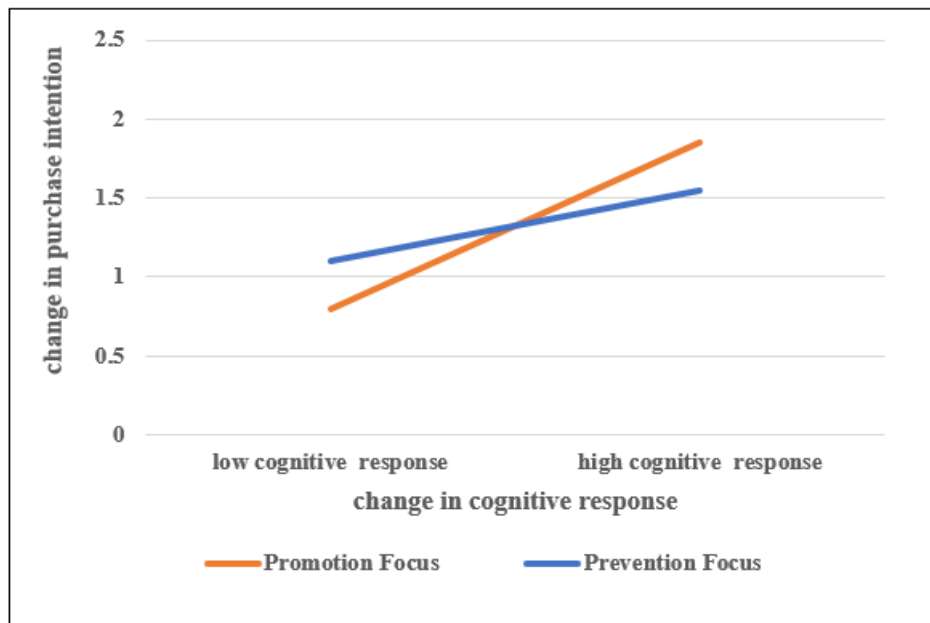


Figure 3: The moderating effect of regulation focus on the relationship between cognitive response and purchasing intention under the emotional online reviews

## CONCLUSION AND PROSPECT

### Research conclusion and theoretical contribution

Consumers tend to cover different emotions when expressing negative reviews. Then, will all consumers adopt the same information processing method when facing these reviews? What factors do consumers perceive when processing information? This study uses experimental scenario simulation to explore the influence of regulation focus on consumers' purchasing intention in the face of emotional online reviews, and reveals the mechanism and boundary conditions of the influence. The experimental results show that: (1) the prevention focused consumers are mainly affected by the emotional arousal of the peripheral path, and the purchasing intention is positively affected by the emotional reaction; (2) The promotion of targeted consumers is mainly affected by the cognitive efforts of the central path, and positively affects the purchasing intention through cognitive response; (3) Emotional arousal variables positively affect emotional response; (4) Perceived cognitive effort positively affect cognitive response. (5) Cognitive and emotional responses positively affect consumers' purchasing intention, among which emotional reaction plays a more dominant role.

In this study, regulatory focus and ELM theory are introduced into the impact of emotional negative online comments on consumer behavior. The main theoretical contributions are reflected in the following aspects: Firstly, the results show that consumers' purchasing decisions are influenced by the way of information processing. Specifically, after browsing emotional

reviews, consumers' emotional tendency turns out to be important factor that affects decision-making and information behavior, and this influence is regulated by consumers' own characteristics (i.e., promotion and prevention focused personality), thus forming the unique information processing methods of different individuals. The research explored the specific internal mechanism of consumer behavior, and changed from the thinking pattern of "phenomenon-result" which is common in relevant experimental research, to the demonstration of "phenomenon-path-result", thus casting light into the black box of consumer behavior in a more profound and detailed manner. Secondly, the existing researcher tend to discuss ELM theory and regulatory focus theory separately when studying consumer attitude change or purchasing intention. The former pays more attention to the information processing mode of consumers, and the latter tends to divide consumers into two different groups according to their personality traits. This paper combines ELM theory with regulatory focus theory, and finds that consumers tend to choose information processing methods that conform to their own personality characteristics after receiving information. When reviews convey emotional content matching the personality characteristics of the target audience, reviews will have a greater impact on consumer attitudes. At the same time, the results of the existing studies in discussing the mechanism of negative reviews and consumer behavior lack generality. Our study focuses on the certain situation of emotional negative reviews, starting from consumer perception to further explore the psychological mechanism of consumer behavior decisions, which also provides a reference for other scholars to explain the differences in consumer behavior decisions.

### **Practical significance**

Firstly, according to the conclusion of hypothesis 3, consumers' cognition and emotional reaction positively affect consumers' purchasing intention. For negative reviews, merchants are supposed reduce negative reactions of consumers and make full use of social media to communicate with consumers. Merchants can avoid or remedy emotional negative reviews such as anger and sadness caused by consumers' dissatisfaction by improving quality of product and service. For the emotional negative reviews that have existed, the merchants should respond to such comments in a punctual manner. During the data analysis, we found that negative emotional reactions are more dominant in the final decision-making of consumers. Therefore, consumers are encouraged to write objective reviews and cut down sentimental words and modal words to avoid negative consumer behaviors.

Secondly, the e-commerce platform can determine the type of consumer according to the collection volume of consumers, the ratio of recent trading volume to time, or ask several related questions during register process, and display the matching reviews based on group division to affect their purchasing intention. According to the conclusion of Hypothesis 4, for the promotion focused consumer groups, merchants and platforms can respond positively to some negative emotional reviews involving questioning cognitive information (product characteristics, quality, etc.). For the prevention focused groups, businesses and platforms can also actively avoid reviews with strong emotional intensity through after-sales service and remedial measures, which is conducive to reducing the adoption and influence of the prevention focused groups on these negative reviews with strong emotional intensity, or weaken their prevention characteristics through the design of the website interface, and try to offset other positive emotional experiences of the prevention focused individuals, such as offering coupons.

### **Limitation and prospect**

Limitation: 1. The experimental object of this research is college students. Although inviting such groups can ignore the technical problems of social media use and the interference of product knowledge factors of experimental objects, the homogeneity limits the representativeness of demographics. 2. This experiment only focused on search products such as mobile phones. When compiling the reviews, we classifies the emotional intensity according to the different emotional words, and only involves the product function problems. In order to control the weight of product attributes in the stimulus information, we are supposed to further verified which of the emotional words and product problems in the negative reviews has a more significant effect on consumer behavior.

Prospect: 1. Future research is encouraged to introduce adjustment matching theory to explore consumers' information preference. 2. it is the future research direction to explore whether there are other regulatory variables in the relationship between attitude and behavior, and whether the consistency of cognitive and emotional responses has different differences for different consumers. 3. Future research can also focus on online reviews with mixed positive and negative emotions, and explore the differences between mixed reviews and changes in consumers' purchasing intention caused by monochromatic reviews.

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