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## Is Natural More Beautiful? Research on Natural Product Preference Based on IAT

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### ABSTRACT

This study aims at testing consumers' preference for natural products behind buying decisions and exploring moderating factors as rural life experience and gender for their effects on natural preference. With the help of implicit association theory, we used IAT (Implicit Association Test) to measure the remoteness between positive words and natural products to identify whether there is an implicit preference. And we examined the moderating effects through online research in China. Three hundred one participants have joined this experiment. The result shows that Chinese consumers do have an implicit preference for natural products. When consumers had more than five years of rural life experience, their preference for natural products was significantly higher than those without. However, gender did not make any significant difference, except that women have more preference for nature in the field of food. Our conclusion not only enriches the understanding of consumer behavior but could also help product designing and development, particularly in the food area.

*Keywords:* Natural products, natural preference, implicit association, rural life experience, gender difference

### INTRODUCTION

Social psychologist Rozin and other scholars have found that for most people in the western world, natural food and natural medicine are better than processed food and drugs (Rozin *et al.*, 2004; Rozin *et al.*, 2012), and natural landscape is better than man-made landscape (Hartig & Evans, 1993; Purcell & Lamb, 1998). People generally show an attitude that "*natural things are better than unnatural things*," even in terms of negative events. They also thought that natural injuries are more acceptable than man-made ones (Williams & Hammitt, 2001). Even though there is no obvious difference in physical and other attributes are the same (Overvliet & Soto-Faraco, 2011), natural products are still considered as better taste, more valuable nutrition, and higher safety. Thus they would be more likely to be chosen when consumers are making purchase decisions (Franchi, 2012; Dominick *et al.*, 2018). Hence the natural preference theory was born, which represents the idea that people generally prefer things that are natural to those that have been interfered with.

Humans' preference for nature has existed for a long time. However, the preference is not to stay still. In the industrial revolution ages, the development of industry had grown rapidly, and many new products were produced to change people's life hugely. Thus, people's attitude towards nature has changed from awe to domination since industrial products could perfectly fulfill their large demand. With the development of the economy and the awareness of caring about nature and environmental issues, people begin to return their affection to nature again. Natural preference has been verified to be widespread in modern Western countries (Hemmerling *et al.*, 2016), but studies on natural preference in eastern and developing countries are very limited.

Although Basha *et al.* had done their survey on organic food preference in India (Basha & Lal, 2019) and Cheung and Hsu also had completed their conclusions on organic food preference in Hong Kong (Cheung *et al.*, 2015) and Taiwan (Hsu *et al.*, 2016) respectively. There is no systematic inductive exploration of natural product preference as an individual concept. Since the industrial development process is relatively later and slower than that of the west, the degree of natural preference in China may differ, as one of the typical examples of developing countries in East Asia. For example, Yip has found that Hong Kong consumers have different preferences for mainland organic food due to other reasons (Yip & Janssen, 2015). In addition, there is an unavoidable question laid between the translation from English to Chinese. When Chinese people talk about nature, it probably means the landscape, such as the sky and waterfront. So, whether there is a "natural preference" among domestic consumers is still a subject to be verified.

Combined with the above considerations, this study will develop the hypotheses and theoretical model on the basis of the literature review of knowledge sharing in the context of natural preference. Furthermore, the consumer data obtained from the experiment will be used for analysis and discussion later. Moreover, the theoretical and managerial implications will also be proposed to provide some references for other scholars or managers.

## LITERATURE AND HYPOTHESES

### Natural Products and Perception of Naturalness

FDA once stated that it was difficult to define the standard of natural products from the perspective of food science since most so-called natural products seen in common commercial situations involve some degree of processing and are no longer purely indigenous products. That is, the concept of the natural product is widely misused in commercial products by the industry (Czarnecki, 2016) and understood by consumers in different countries from different perspectives (Berry *et al.*, 2017). From the perspective of semantics, the concept is also expressed differently in different countries. Naturalness is an ill-defined concept both in terms of its objective definition as well as in terms of subjective sensation.

In terms of the perception of naturalness, naturalness is a dimension that reflects the authenticity of products (Beverland & Luxton, 2005), and it is an ill-defined concept both in terms of its objective definition as well as in terms of subjective sensation (Overvliet & Soto-Faraco, 2011). If a product has shown perceivable naturalness, consumers will consider it more credible (Lunardo & Saintives, 2013). As human beings have had an innate preference for nature for a long time (WILSON, 1984), products that are rich in naturalness and able to trigger natural association are favored by more consumers. Based on the literature reading and interview results of "nature" at home and abroad, this study defines natural products as "*products from or originating from nature, rich in natural connotations and capable of triggering natural associations.*" According to this definition, "green products," "organic products," and "environmental protection products" commonly seen in the Chinese consumer environment are all "natural products," originating from nature and rich in natural connotations, and falling within the category of natural products defined in this paper.

### Implicit Attitude and Implicit Association Test

Due to different social motivations, people often choose to blur or hide their true attitude when expressing their preference for a certain point of view or thing. Thus individuals' self-reported attitudes may be suspect. (Fazio *et al.*, 1995). Implicit attitudes, on the contrary, are introspectively unidentified (or inaccurately identified) traces of past experience that mediate favorable or unfavorable feelings, thought, or actions toward social objects. (Greenwald & Banaji, 1995), which is also called a "bona fide pipeline" for attitude measurement (Fazio *et al.*, 1995). Although the participants themselves are not aware of it, implicit attitudes do exist and can be measured through Implicit Association Test (Banaji & Hardin, 1996). (IAT, the same later)

Natural products have always been considered morally or ethically superior (Honkanen *et al.* (, 2006). Hwang found that consumers had higher purchase intention for natural food due to self-presentation motivation and ethical self-identity attached to natural food (Hwang, 2016). Carrigan also proposed that consumers who choose natural products would owe partly to their personal moral beliefs rather than moral consumption (Carrigan *et al.*, 2004). The purpose of this study is to identify consumers' real natural product preferences rather than socialized processing attitudes. So as to explore consumers' real implicit preference attitudes more effectively, we choose to use IAT to effectively reduce the influence of consumers' active hidden or converging preference attitudes.

In this study, the e-Prime program was used to write an IAT program for natural product preference. Two groups of words with positive or negative attributes and two groups of words representing the natural product and the non-natural product were designed for experiments. Participants were required to judge and connect them in a short time, and the D-value representing the closeness of concept words and attribute words was calculated by the response time difference between compatible and incompatible joint tasks, then we summarized the implicit attitude of consumers towards natural product preference. Based on the arrangement of previous studies and the foregoing discussion, this paper puts forward the hypothesis:

*H1: At the implicit attitude level, Chinese consumers have a positive preference for natural products.*

### Life Course Theory and Rural Life Experience

According to the life course theory, an individual's life course is a sequence composed of multiple life events (Elder *et al.*, 2003), which emphasizes that the life course moves forward in a non-linear form, including pause, cycle, and direction change (Pearlin & Skaff, 1996.), and these adaptation processes will lead to changes in people's thoughts and behaviors. The life-course theory states that people's attitudes and behaviors at any time and stage are influenced by three change mechanisms: norms, pressures, and human capital (Elder, 1998; Blossfeld & Huinink, 1991). Norms represent the transformation of people's roles and behavior patterns in the process of socialization. For example, when a young girl becomes a mother, her attitude towards life will change greatly due to the birth of offspring, and the process of adapting to the new role is called norms. Stress refers to behavioral and psychological changes that occur when people adjust their behavior to a routine when they encounter an event such as the death of a beloved person. Human capital emphasizes the influence of individuals' past linking resources, abilities, and knowledge on their future choices (Blossfeld & Huinink, 1991; Frytak *et al.*, 2003). These mechanisms are simultaneously influenced by the time of event occurrence, people's initiative (i.e., people's choice of their own life), society, and historical background (Elder Jr, 1998).

According to the life course theory, consumers with different life courses have different preferences for natural products. From the perspective of human capital, consumers who have lived in rural areas in the past will have more preference to embrace nature because of "intimacy" and "nostalgia." However, consumers who have no rural life experience and have been brought up in cities are more inclined to choose the common "unnatural scene" in their growing-up environment. Therefore, we speculate:

*H2: Consumers' rural life experience positively moderates their preference for natural products. Consumers with rural life experience would have a stronger preference for natural products.*

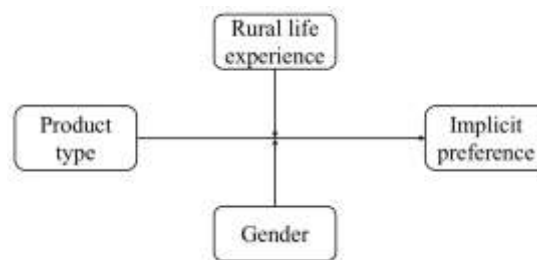
### Gender Difference

When people are processing information, women tend to pay attention to details and take a comprehensive approach; men, on the other hand, tend to use selective heuristic processing for information and pay less attention to details of information, resulting in perceptual differences (Meyers-Levy & Maheswaran, 1991). At present, there have been a large number of studies on women's choice of natural products. For example, Shin has verified that there is a positive correlation between buying organic food and femininity (Shin & Mattila, 2019). To avoid being considered as related to femininity, men will engage in non-environmentally friendly compensatory behaviors after choosing organic food. Tindall also found that women tend to reuse and recycle items more often than men (Tindall *et al.*, 2003). In general, women tend to show more pro-environment behaviors than men (Zelezny *et al.*, 2000) and hold stronger beliefs about the health of organic food (Akhondan *et al.*, 2015).

According to the Sex-Role theory, due to the needs of social structure, women are encouraged to express more, care more, and take care of others, while men are encouraged to analyze problems and do hands-on operations (Putrevu, 2001). At the same time, women are also encouraged to complete task goals and social goals to achieve altruistic value (Eagly *et al.*, 1990). Thus, it is more likely for women to choose natural products with low risk and low harm and produce more psychological preference. Therefore, this study speculates that:

*H3: Consumer gender has a moderating effect on preference for natural products. Women would have a stronger preference for natural products than men.*

Based on the above hypotheses, our research model is shown in Figure 1.



Source: This study.  
Figure 1: Theoretical Model.

## STUDY(A): EXAMINE WHETHER PREFERENCE FOR NATURAL PRODUCTS EXISTS

### Measurement

This paper first uses an offline IAT to examine consumers' natural preferences. Before proceeding with the formal IAT study, we first conducted a pre-test to select the most common words (both abstract descriptive words and specific products) that fit with customers' expectations towards natural products and unnatural products. Next, we carried out an online experiment to identify consumers' preferences towards different types of natural products.

### Pre-test

In order to make material words used in the formal experiment conform to the majority of the consumers' minds, we first conducted brainstorming. After picking up 15 selected vocabularies representing natural products and 15 selected vocabularies representing unnatural products, as concept words, we then sent out an online questionnaire through social media. All participants were asked to select six words with the highest and lowest naturalness perception, respectively. According to the voting results of 173 people (89 female), the following two groups of words were finally determined, with a total of 12 words, as shown in Table 1.

Based on Li's summary of the reasons for consumers' preference for natural products (Li & Chapman, 2012), the IAT experiment planned to use adjectives representing emotion and evaluation words as attribute words to show positive or negative attitudes so that subjects could connect concept words with them. We first selected 36 words describing emotion or evaluation tendency and then invited ten undergraduates (6 female) to screen these words. After removing some neutral and inappropriate words, we finally obtained 24 tendency words (among which 12 are positive and 12 are negative), as shown in Table 2.

Table 1: Concept Words.

Natural products	Unnatural products
------------------	--------------------

Aloe gel	Reinforced concrete
Cotton and linen garments	3D-printer
Hand-made carpet	Button batteries
Cany chair	Robot arm
Log furniture	Computer
Pressed peanut oil	Motor car

In addition, it should be noted that the authors have used the Chinese translation versions of the above for this study in China. So, there may be different semantically.

Table 2: Attribute Words.

Emotion tendency		Evaluate tendency	
Positive	Negative	Positive	Negative
deserve to be loved	should be hated	peaceful	irritating
like	hate	Beautiful	ugly
relaxed	anxious	comfortable	uncomfortable
devoted	indifference	safe	dangerous
joyful	sad	healthy	unhealthy
excited	bored	kind	evil

### Design and Procedure

In the formal experiment, we used a 2 (subject type: Natural products vs. Unnatural products)  $\times$  2 (descriptive words: Positive vs. Negative) between-subject design, and the participants were required to sit down in a quiet and undisturbed area, such as library reading room, computer room, and other confined spaces. They should sit in the same position away from the computer and complete the IAT experiment independently according to the experimental instructions printed in advance by the investigator and the operating instructions provided by the program. If they were ready, participants would press the tab button. All participants would be rewarded free tissue sets or free dining coupons after completing the experiment.

The words presented on the screen were randomized for each participant. Their task was to press the key labeled different attributes in each task as quickly as possible to indicate his or her judgment of the word. They were instructed to maximize the speed and accuracy of their responses while completing the tests shown below in Table 3.

Table 3: IAT Task Sequence.

Test Sequence	Task	Label	
		F	J
1	Recognition of attribute words	Positive	Negative
2	Recognition of concept words	Natural products	Unnatural products
3	Compatible conjoint task (practice)	Positive & natural products	Negative & unnatural products
4	Compatible conjoint task (formal)	Positive & natural products	Negative & unnatural products
5	Recognition of concept words	Unnatural products	Natural products
6	Incompatible conjoint task (practice)	Positive & Unnatural products	Negative & natural products
7	Incompatible conjoint task (formal)	Positive & Unnatural products	Negative & natural products

After completing the IAT experiment, participants were also required to fill out a questionnaire including some personal information.

### Participants

A total of 42 subjects participated in this experiment in Changsha, China. There were 20 male subjects and 22 female subjects, mainly aged from 18 to 25 years old (66.7%), ( $M = 25.28$ , Median = 22,  $SD = 7.16$ ); 14 subjects who had lived in urban areas for a longer time, and 28 subjects who had lived in rural areas for a longer time.

### Measures

**Manipulation.** In the IAT experiment, participants were asked to press the keyboard button in response to the different words randomly displayed on the computer screen. When the subjects were stimulated by these words and asked to react quickly, they needed to process and respond in their brains and judge to press the correct button. It is generally believed that in the compatible conjoint task, the relationship between concept words and attribute words is relatively close (at the level of implicit attitude cognition), and the discrimination at this point is more dependent on automatic processing so that the difficulty of completing button action is lower. That's to say, the response speed is faster, and the response time is shorter. In incompatible joint tasks, the relationship between concept words and attribute words is relatively loose or opposite, which leads to a cognitive conflict of the subjects, so that the linking process would be more complex, resulting in spending more time on completing the button action.

According to such principles, the responses of subjects in completing various tasks were collected to calculate the D-value representing whether the IAT effect was significant for subsequent analysis.

**Dependent Variables.** The reaction time from a new word shown on the screen to participant made a press was automatically collected by the e-Prime program and then analyzed by SPSS23.0. The improved D-value calculated method proposed by Greenwald was adopted for data processing (Greenwald *et al.*, 2003). Compared with the traditional D-value calculation method, the improved method can better reflect the potential association strength, evaluate the relationship between association strength and other variables, and better reveal that individual differences are mainly caused by association strength rather than other variables.

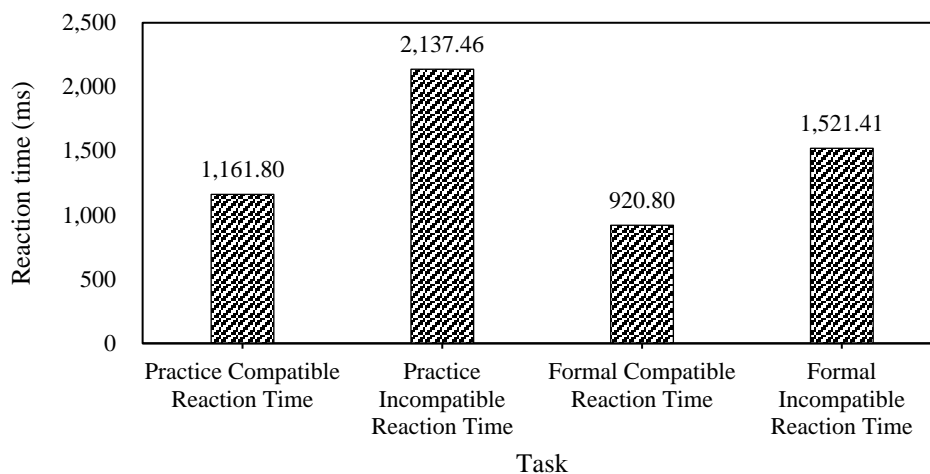
**Moderating Variables.** For the moderator variable of the preference for natural products, we've decided to focus on gender and rural life experience. In order to make the variable clear, participants only needed to answer whether they lived in the countryside or in the city longer. Anyone who has lived in the countryside for more than five years should tick one selection box to show they are different from the city-living ones.

**Other Measures.** We chose demographic information as the control variables for this study, including age, education, professional career.

## Result and Discussion

### Manipulation Check

From the result shown in Figure 2, we can know intuitively that participants spend more time on incompatible conjoint tasks than on compatible conjoint tasks in both practice tasks and formal tasks. Also, we can make a preliminary judgment that it is indeed more difficult to associate natural products with negative words than unnatural products with negative words.



Source: This study.

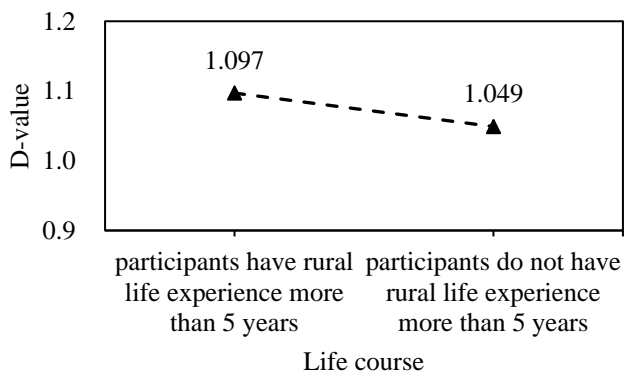
Figure 2: Reaction time in study1(a).

It is generally believed that when the absolute value of D-value is less than 0.15, the IAT effect is not obvious; when the absolute value of D-value is greater than 0.35, there is a moderate IAT effect; when the absolute value of D-value is greater than 0.65, there is a strong IAT effect (Greenwald *et al.*, 2003). The D-value obtained by the IAT experiment is 1.081 in study1(a). That is, in terms of a single choice of products in the combination, consumers have a strong implicit preference for natural products. Any difference between rural life experience and gender is shown in Figure 3 & Figure 4. No matter whether they have rural life experience for more than five years and no matter they are female, their D-value both exceed 0.65, suggesting the strong IAT effect. The difference between gender seems to be significant, for the D-value of the female is 1.24 while the D-value of the male is 0.926 so that we could say that females do have a stronger implicit preference for natural products than males. However, it failed the significance test when conducting an Independent Two-sample t-Test ( $p=0.237>0.05$ ). Meanwhile, the sample number of study1(a) is not enough to make any conclusion on moderating effect, so we will discuss it later.

Since IAT is an inter-subject experiment, which studies the same subject's responses to two different aspects, so we used the paired Wilcoxon non-parametric test to judge the significant difference between the compatible and incompatible joint tasks. No matter in the group of practice tasks or formal tasks,  $p=0.000<0.001$ . In other words, individuals showed significant differences between incompatible and compatible conjoint tasks in both practice and formal stages, which again verified that the IAT experiment could measure subtle implicit attitudes and had an excellent evaluation performance. Therefore, our manipulation of model type was effective.

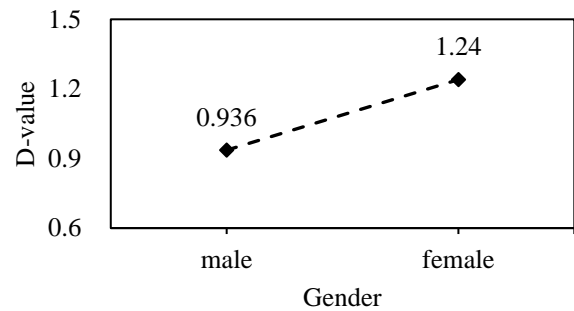
Generally speaking, in the current market, natural products are mostly daily necessities with low value (such as peanut oil and aloe gel, etc.), while non-natural products (such as computer and motor cars, etc.) are mostly high-value durable goods, which

means they do have an unavoidable difference in price and value. However, even in the same category, we couldn't control it with the same price. Take food as an example; organic food subordinated to natural products is often more expensive than ordinary food.



Source: This study.

Figure 3: Rural life experience difference in D-value in study1(a).



Source: This study.

Figure 4: Gender difference in D-value in study1(a).

Considering the unavoidable value difference in different categories, the concept words in study1(a) may affect the experimental performance of the subjects. So, we decided to conduct study1(b), using abstract product description adjectives to conduct the IAT experiment again for more rigorous exploration.

### STUDY1(B): EXAMINE WHETHER PREFERENCE FOR NATURAL PRODUCTS EXISTS

#### Measurement

In study1(a), we verified the existence of implicit natural products preference in different consumer categories successfully. Since the value of natural products and unnatural products is difficult to unify, which may influence the choice of subjects and reaction, we decided to use free association words as concept words, while other conditions remained the same.

#### Design and Procedure

Based on the study of natural product association words carried out by Rozin *et al.* (2012), study1(b) took two groups of words describing natural products and non-natural products as conceptual objects respectively to blur the specific product categories. The words were screened by three experts who are vice professors in college to avoid the bias of the material, as shown in Table 4. The choice of attribute words remained unchanged from study 1(a).

All procedures remained the same as study1(a). The only change was the concepts words presented on the computer screen. Measures were the same as study 1(a).

#### Participants

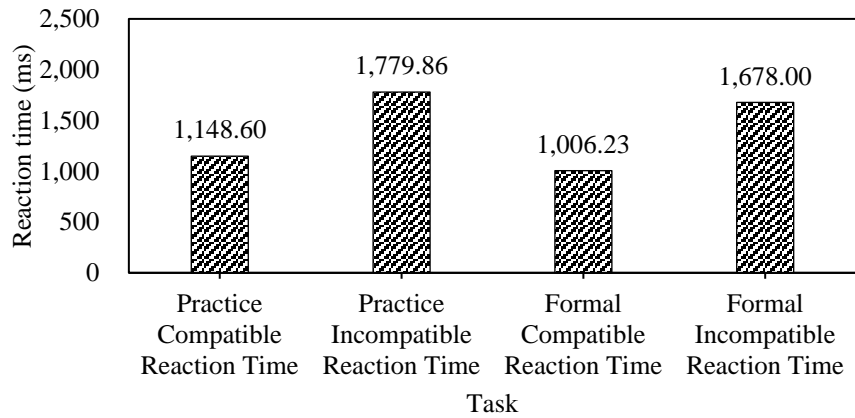
A total of 30 subjects participated in this experiment in Changsha, China. There were 14 male subjects and 16 female subjects, all of them aged from 18 to 25 years old, 96.7% of them were undergraduates, 17 subjects who had lived in urban areas for a longer time, and 13 subjects who had lived in rural areas for a longer time.

Table 4: Abstract Concept Words.

Natural products	Unnatural products
natural	technological
No-process	processed
No-additives	additives
Origin from nature	artificial

#### Result and Discussion

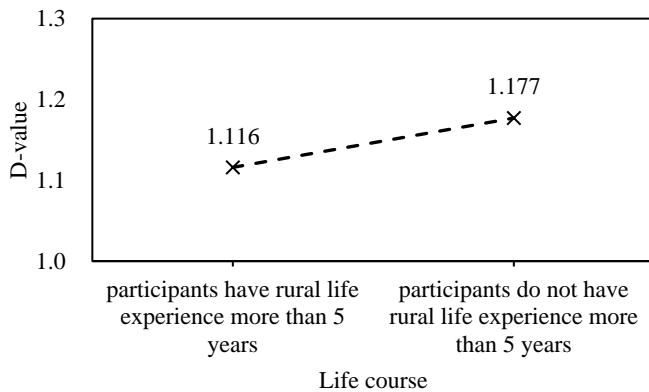
The data were processed in the same way as in study1(a). The average D value was 1.142, greater than 0.65, which verified the strong implicit natural product preference of the subjects again, supporting H1. So, when we don't consider the value difference between natural products and unnatural products, consumers still show a stronger preference for natural products. In study1(b), we can still infer the information from Figure 5 that participants need to spend more time associating natural products with negative words than unnatural products with negative words.



Source: This study.

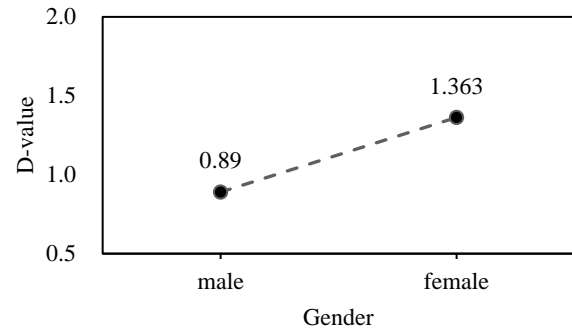
Figure 5: Reaction time in study1(b).

Any difference between rural life experience and gender is shown in Figure 6 & Figure 7. The result is similar to the conclusion in study1(a).



Source: This study.

Figure 6: Rural life experience difference in D-value in study1(b).



Source: This study.

Figure 7: Gender difference in D-value in study1(b).

The paired Wilcoxon non-parametric test showed the result of  $p=0.000 < 0.001$  when comparing the compatible and incompatible joint tasks, no matter in the group of practice tasks or formal tasks. Therefore, again, our manipulation of model type was effective in study1(b).

However, no matter in study1(a) or study1(b), the moderating effects could not be tested successfully. We first divided participants by whether they had lived in the countryside longer or not in each study and ran the Independent Two-sample t-Test. The result showed  $p=0.840 > 0.05$  in study1(a), and  $p=0.792 > 0.05$  in study1(b). Then we divided those participants by gender. The results also did not support our hypothesis, showing  $p=0.237 > 0.05$  in study1(a) and  $0.041 < 0.05$  in study1(b). Although the result of study1(b) seems to be significant, it could not be a convincing reason to support H3. Considering the IAT experiment only involved a small sample size, the main effects could be verified. However, the moderating effect should be verified in a greater sample size.

## STUDY2: EXPLORE THE MODERATING EFFECTS

### Measurement

We decided to use a situational experiment to measure consumers' preference for a specific classification of natural products, examining the moderating effects of rural life experience and gender. Meanwhile, we also examined different preference degrees when the categories differ in natural products.

### Design and Procedure

According to our definition of natural products, we decided to further refine products with natural ingredients and products that could raise the natural perception so that consumers can easily substitute them into the scene and make choices in accordance



with the real situation. With the help of experts who major in consumer behavior, we went out a discussion in a 10-people's focus group and finally selected vitamin C (chemical synthesis VC VS. Natural extracts VC), facial masks (hyaluronic acid facial mask vs. resurrection grass facial mask), vegetable shopping scenes (chain supermarket VS. small vegetable market) and single apartment (with urban landscape VS. with natural landscapes) these four situations as our experiment material. The experiment was presented online, and participants were asked to make a choice between the given options and score their willingness on a seven-point Likert scale. We also added related images to raise consumers' awareness towards four situations, making it more like in a real scene, so that the participants would make their real buying decision in a greater possibility. In order to avoid interference from other elements in the matching images, all images adopted in study 2 were processed with information occlusion.

### Participants

A total of 342 people participated in the online experiment. After filtering the ones who guessed out the real objective of the experiment, 301 valid data (effective rate 88.0%) were recorded. There were 175 men subjects and 126 female subjects. One hundred twenty-six of them had five years' rural life experience, while 175 of them did not have rural life for more than five years. There were 102(33.9%) subjects spending more time having rural life, and 199 respondents (66.1%) spent more time living in cities. The subjects were mainly aged from 18 to 24 years old (71.8%), and most of them were full-time students, including graduate and undergraduate (66.4%).

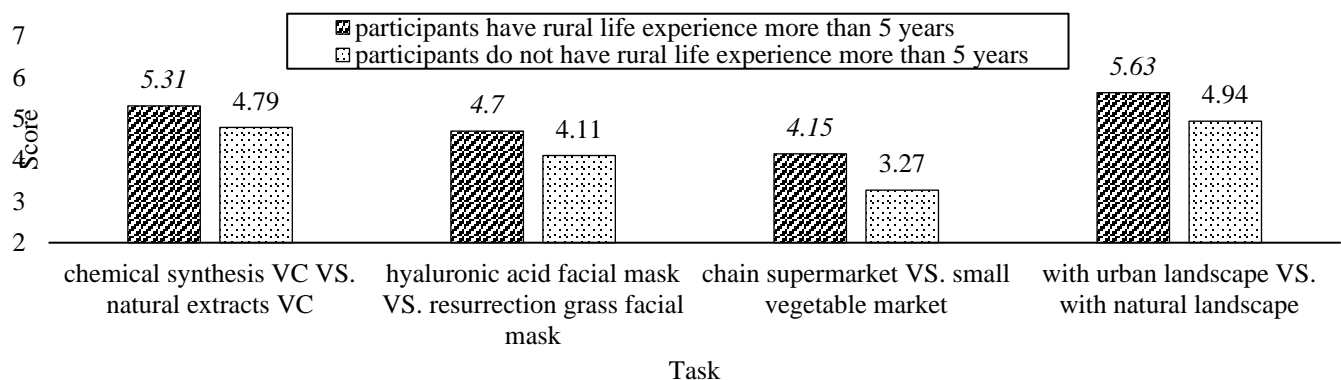
### Measures

All measures were answered on a seven-point Likert scale (1: I would definitely choose unnatural products to 7: I would definitely choose natural products).

In order to prevent the subjects, doping out the experiment's purpose and affecting data reliability, this experiment asked the subjects to write the purpose of the experiment in their mind at the end of the questionnaire. If the subjects made "investigation consumer preferences of natural products and unnatural products" or similar answer, the data needs to be manually deleted and excluded from valid data analysis.

### Result and Discussion

The results reveal that consumers prefer natural extracts vitamin C ( $M=5.09$ ,  $SD=0.12$ ), resurrection grass facial masks ( $M=4.46$ ,  $SD=0.11$ ), and single apartments with natural landscapes ( $M=5.34$ ,  $SD=0.12$ ). And they were significant in the Single Sample t-Test ( $p=0.000 < 0.001$ ,  $T=9.080$ ,  $4.108$ , and  $11.530$ , respectively). That is, compared with other products, consumers prefer natural products, supporting H1 again. In the scenario of vegetable shopping, both chain supermarkets and small vegetable markets were chosen by consumers, with an average of  $3.78(p=0.097 > 0.05, t=-1.666)$ . The result showed that the difference was not significant, but consumers, on the whole, prefer to buy vegetables in chain supermarkets. We proposed this may be caused by the urbanization process of consumption habits change. New guaranteed shopping chain supermarkets with a strong brand image, such as Fresh Hema and Aunt Qian, had won more consumers' trust and preferences.



Source: This study.

Figure 8: The average score of each group differs in rural life experience.

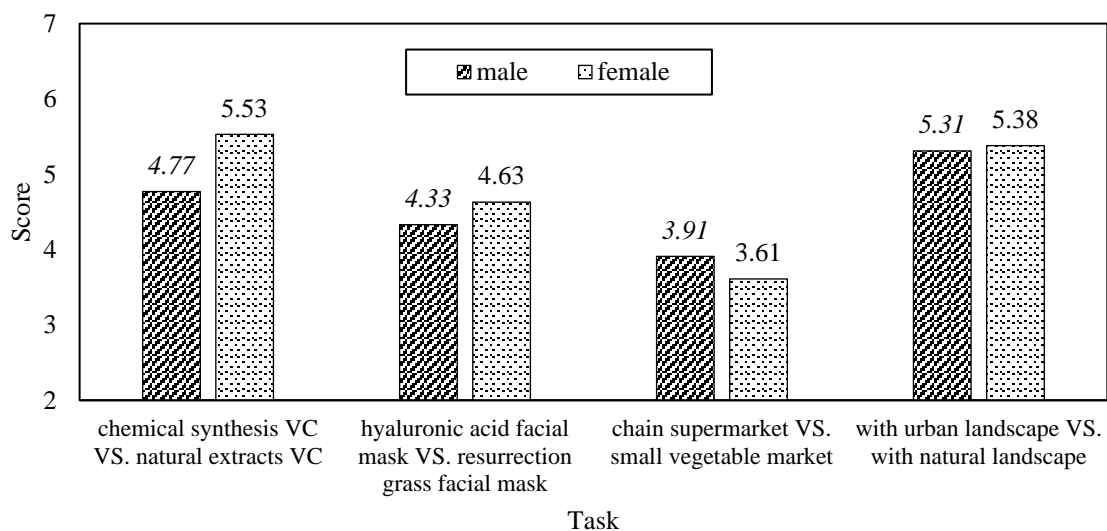
The difference is shown directly in Figure 8, suggesting that the participants who have rural life experience for more than five years score higher than those who don't, which represents the former have a stronger preference for natural products. According to the result, as for the subjects with more than five years of rural life experience, they preferred to buy vegetables in the small vegetable market, although this effect is not significant ( $p=0.358 > 0.05, t=0.921$ ). However, subjects without more than five years of rural life experience showed a significant preference for supermarkets,  $p=0.000 < 0.001, t=-3.726$ . It is also important to note that although in the overall single-sample analysis, for hyaluronic acid facial mask VS. resurrection grass facial mask,  $p=0.000 < 0.001$ , but in the Grouped Single Sample t-Test under the variable of 5-year rural life experience (Table 5), the subjects without 5-year rural life experience showed no significant product preference ( $p=0.527 > 0.05$ ). In comparison, subjects with more than 5-year rural life experience did show a significant preference for resurrection grass facial masks as natural products.

Table 5: Grouped Single Sample t-Test under the variable of 5-year rural life experience.

Whether participant has rural life experience more than 5 years		Test value=4					
		t	df	Sig (2 tailed)	Mean Dif.	95% Confidence Interval of the Difference	
						Lower	Upper
Yes	chemical synthesis VC VS. natural extracts VC	8.672	174	.000	1.309	1.01	1.61
	hyaluronic acid facial mask VS. resurrection grass facial mask	5.005	174	.000	.703	.43	.98
	chain supermarket VS. small vegetable market	.921	174	.358	.154	-.18	.48
	with urban landscape VS. with natural landscape	11.243	174	.000	1.629	1.34	1.91
No	chemical synthesis VC VS. natural extracts VC	4.069	125	.000	.786	.40	1.17
	hyaluronic acid facial mask VS. resurrection grass facial mask	.635	125	.527	.111	-.24	.46
	chain supermarket VS. small vegetable market	-3.726	125	.000	-.730	-1.12	-.34
	with urban landscape VS. with natural landscape	5.051	125	.000	.944	.57	1.31

Based on the above analysis, subjects without five years of rural life experience had more preferences to buy vegetables in the chain supermarket, but there is no significant preference for facial masks. For the subjects with five years of rural life experience, they prefer to purchase vegetables in the small vegetable market, although it was not significant. All in all, consumers did show a strong preference for natural products, a large part of  $p=0.000<0.001$ .

Similarly, we divided participants based on gender. The result shows that males and females both believe natural products are better when choosing vitamin C, facial masks, and a single apartment with a natural landscape ( $p<0.05$ ). But when it came to vegetable shopping, women scored lower than men. More of them chose to buy food in the supermarket (Figure 9 & Table 6).



Source: This study.

Figure 9: The average score of each group differs in gender.

### Hypotheses Testing

Then we processed the Independent Samples t-Test to examine moderating effects. Firstly, whether the subjects have more than five years of rural living experience been taken as a grouped variable, all results show  $p<0.05$  when they were choosing between buying natural products or not. That is, the results verified that whether the subjects have more than five years of rural living experience has a significant impact on the subjects' choice of natural products, supporting H2. Secondly, gender was used as a grouped variable, and it could be seen that the significance was only reflected in the product dimension of vitamin C ( $p=0.002<0.05$ ), while the  $p$ -values in other product dimensions were all greater than 0.05, indicating that gender had no significant impact on the subjects' choice of natural products. Thus, H3 was not supported.

Table 6: Grouped Single Sample t-Test under the variable of gender.

Gender	Test value=4
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		t	df	Sig (2 tailed)	Mean Dif.	95% Confidence Interval of the Difference	
						Lower	Upper
Male	chemical synthesis VC VS. natural extracts VC	4.536	174	.000	.771	.44	1.11
	hyaluronic acid facial mask VS. resurrection grass facial mask	2.189	174	.030	.326	.03	.62
	chain supermarket VS. small vegetable market	-.515	174	.607	-.091	-.44	.26
	with urban landscape VS. with natural landscape	8.321	174	.000	1.314	1.00	1.63
Female	chemical synthesis VC VS. natural extracts VC	9.896	125	.000	1.532	1.23	1.84
	hyaluronic acid facial mask VS. resurrection grass facial mask	3.855	125	.000	.635	.31	.96
	chain supermarket VS. small vegetable market	-2.077	125	.040	-.389	-.76	-.02
	with urban landscape VS. with natural landscape	8.048	125	.000	1.381	1.04	1.72

### CONCLUSION

To examine the preference for natural products, we first conducted 2 IAT experiments. Through each subject's reaction time in compatible and incompatible conjoint tasks, we calculated the D-value that suggests the IAT effect. The results were significantly greater than the reference value, verifying consumers do have a strong implicit preference for natural products. That is, consumers are more likely to connect natural products with fine words and quality, and they believe natural products are much more satisfying than unnatural products in their implicit attitudes, supporting H1.

Furthermore, we also conducted an online situational experiment to examine whether there are moderating factors affecting consumers' preference towards natural products. It turned out that gender would not make a significant difference when consumers are thinking about whether to choose natural products or not. Thus, H3 was not supported by our results. But there is one thing to mention that women do care more about whether the ingredients were extracted from nature in the food area, which was also verified before in Shin's research (Shin, J., & Mattila, A. S., 2019). In addition, when making choices between natural products and unnatural products, people who have lived a rural life for more than five years do think differently and act differently from those who lived in the city longer and merely don't have rural life experience. They significantly believed that natural products would be better in the given situations, which covers health care products, cosmetics, and the living environment, thus supporting H2.

Through analyzing the experimental data obtained from Study2, we found that consumers did not just have strong implicit preferences for natural products. They showed significant explicit natural product preferences as well.

### Theoretical Implication

The theoretical implications of this research are as follows. First, this paper expands our understanding of implicit association theory and life course theory in the field of natural preference and demonstrates the feasibility of using these two theories to explain consumer preference in this area. What's more, by analyzing the data collected from study1(a) & study1(b), the result from paired Wilcoxon non-parametric test did verify the effectiveness of IAT, which further demonstrates IAT's excellent accuracy of evaluating implicit attitude. Also, we featured on human capital by referring to life course theory and raised rural life experience as a moderating factor, which is also quite typical in China nowadays, since our lives have been affected hugely by urbanization for decades, and the urbanization process would also play a continuous and important role in the future. For a long time.

Second, our study also contributes to the literature on natural preference and natural products. Although there have been numerous studies on preference for organic food and natural landscape as subdivision topics, there has been little research on natural products as an integrated topic. This paper defines and classifies natural products, explores whether consumers have a consistent preference for overall natural products, and tries to answer the question that *Is Natural More Beautiful*.

### Managerial Implication

The managerial implications and suggestions of this study are twofold. First, it captures the consumption trend nowadays. In today's fast-paced life, more and more consumption phenomenon show consumer tends to pursue "natural product" consumption. For example, a travel agency that advocates ecology travel spots to relax and run away from anxious urban life would win a lot of support and admiration; a cosmetics company that advocates protection and prevention by extracting useful ingredients from nature would also make a profit. In this context, enterprises should pay attention to the practical needs of consumers, analyze the natural product categories that are more likely to be popular with consumers, and grasp the development and growth opportunities to explore the niche market. This study reveals the hidden layer in preference for natural products. Through a contextualization

questionnaire and the IAT experiments, we found out that, from the viewpoint of the life course, individuals with a continuous and longer time of rural life would have more preference for natural embrace due to “intimacy” and “nostalgia”; however, if individuals grow up in cities all the time, they would be more likely to choose technological and industrial “unnatural scenes” which were common in their past life.

Moreover, “homesickness” will also affect the purchasing decisions of consumers who have lived in rural areas in other shopping scenes. Therefore, enterprises can screen consumers' rural growth experience and geographical distribution to make an advantageous market strategy in segmented areas.

### Limitations and Future Research

Although our research has several limitations, these limitations represent opportunities for future research. First, the experiment materials we prepared (such as the concept words and the product information in the situation experiment) might not be the perfect substitute for a real situation. Also, differences remain between the preference presentation and the consumer's experience of real shopping. If future research could be conducted in real stores and if real consumers could be invited as participants in field experiments, the external validity of the research would be substantially improved.

In addition, we use rural life experience as a moderating variable, but in study2, we did not take full consideration whether the life experience would raise a non-linear effect. Instead, we only collected data on whether participants have rural life experience of more than 5 years or not by setting out a single-selected question. Is there a reversal effect in the results of more than ten consecutive years or 15 consecutive years of rural living experience? In other words, the relationship between the length of rural life experience and natural product preference still needs to be explored by future studies.

We also find it interesting that though gender might not raise significant influence towards consumers' preference for natural products, femininity might be a more proper variable, since Shin also mentioned that in her report (Shin, J., & Mattila, A. S. 2019). It would definitely be very interesting and meaningful to examine how these factors influence the effects of natural products preference.

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