Typographic design of outdoor signage, restaurant authenticity, and consumers'

willingness to dine: Extending semiotic theory

Abstract

Purpose – Restaurants' outdoor signage plays an irreplaceable role in attracting potential diners as it conveys important functional and symbolic meanings of the businesses. This study investigates the effect of typographic design elements of outdoor signage on consumers' perceptions of authenticity. We also test the linkage between authenticity and willingness to dine, as well as the moderating effect of frequency of dining in ethnic restaurants on the relationship.

Design/methodology/approach – Employing a 2 (simplified vs. traditional Chinese characters) x 2 (calligraphy vs. computer font) x 2 (vertical vs. horizontal text flow) between-subject design, we did two experiments with 786 Chinese diners. Restaurant authenticity and willingness to dine are dependent variables, and openness to ethnic cuisine is the control variable.

Findings – Display characters and text flow significantly affect restaurant authenticity. Furthermore, the results demonstrate that display characters interact with typeface to influence restaurant authenticity. Consumers' perceived authenticity significantly increases their willingness to dine. The frequency of dining in ethnic restaurants moderates the relationship between restaurant authenticity and willingness to dine.

Practical implications – Ethnic restaurateurs should pay attention to the outdoor signage design as it affects potential consumers' authenticity perceptions. Specifically, in Mainland China, traditional Chinese characters and vertical text direction increase potential consumers' authenticity perceptions.

Originality/value – This study extends the semiotic theory and applies the cue–judgment–behavior model in the hospitality literature. It also provides new understanding of authenticity by identifying the influence of typographic design on authenticity, which confirms the semiotic theory that certain semiotic cues affect consumers' judgments.

Keywords: authenticity, semiotics, signage, typographic design, frequency of dining in ethnic restaurants

Paper type: Research paper

1. Introduction

In today's restaurant business, authenticity is considered as a key business competency (Aksenova *et al.,* 2022; Soltani *et al.,* 2021). Scholars (e.g., De Vries and Go, 2017; Lin *et al.,* 2022) have been emphasizing the significant role of restaurants' internal and external environment in shaping customers' authenticity perception as it often reflects the business culture. However, little empirical support is available on the association between the restaurant's external environment (e.g., external façade and signage) and customers' authenticity perception of restaurants (Magnini *et al.*, 2011; Song and Kim, 2022), and the dominant literature focuses on the internal environment, such as food, décor, music, and staff ethnicity (Mohamed *et al.,* 2020; Richards, 2021; Song *et al.*, 2019; Yang *et al.,* 2022). Therefore, this study aims to fill this knowledge gap with contextual evidence of ethnic restaurants' outdoor signage.

Language, script, and display characters are key elements that represent and characterize outdoor signage of a restaurant (Magnini *et al.*, 2011). Other typographic design elements include typeface elements such as calligraphy or printed fonts (Reimer *et al.*, 2014), and vertical or horizontal text flow (Amos, 2017). For the Chinese language, three unique aspects of typographic design are the focus of this study: display characters (traditional versus simplified Chinese), typeface (calligraphy versus computer font), and text flow (horizontal versus vertical). All these elements may collectively form consumers' overall attitude toward the signage, and further influence their behaviors toward the corresponding businesses (Childers and Jass, 2002).

To this date, typographic design elements on outdoor signage have not been fully studied in the restaurant context. For example, although Kim and Baker (2017) confirmed the positive relationship between the language (English vs Korean) used on the menu and customers' perceived food authenticity, Magnini *et al.* (2011) failed to find

empirical support for the positive effects of language used on restaurants' outdoor signage. Additionally, no previous research has examined the effect of different scripts (or writing systems) in the same language. Concerning the typeface element of typography, Yu *et al.* (2020) acknowledged that typeface (handwritten versus printed) used on menus does not affect consumers' perceptions of food authenticity. However, Fuchs *et al.* (2015) indicated that handwritten communications are viewed as more authentic than computer-generated fonts. Furthermore, there appears a limited understanding of the possible effect of text flow (horizontal versus vertical) on consumers' perceptions (Xi *et al.*, 2022), particularly for those related to business authenticity.

This study is underpinned by semiotic theory, which suggests that individuals infer semantic associations not only from the actual words or text but also from the typographic design (McCarthy and Mothersbaugh, 2002). Typographic dimensions of a brand's logo affect consumers' judgments of the brand and product (Childers and Jass, 2002; Henderson *et al.*, 2004), such as the restaurant's authenticity (Androutsopoulos and Chowchong, 2021). Despite the potential linkage between restaurant outdoor signage and semantic associations, there has not been a study that adopted semiotic theory to investigate restaurant-related issues/topics (Echtner, 1999).

Drawing from the semiotic triangle (i.e., sign, object, and interpretant) of semiotic theory (Echtner, 1999; Kauppinen-Räisänen and Jauffret, 2018; Metro-Roland, 2009), our study considers the restaurant outdoor signage as the "sign" representing the "object" of the restaurant, and subsequently consumers' authenticity perception stands for "interpretant". In addition, as the typographic design of written language can serve as a semiotic cue to infer associative meanings (Heinen and Sommer, 2009; Serafini and Clausen, 2012), we also apply the cue–judgment–behavior model (Jha *et al.,* 2020) to extend the semiotic theory. This model originally indicates causal relationships between cues in a retail environment (e.g.,

retailers' promotional materials), consumers' judgments of retailers (e.g., perceived character), and their behavior toward those retailers. The existing literature applying the semiotic theory only focused on customers' mental reactions such as judgment and interpretation of the "sign" and "object" (Hunter, 2016; Sheng and Buchanan, 2022; Uzzell, 1984). However, the cue–judgment–behavior model (Jha *et al.*, 2020) suggests that consumers' judgment also influences their behavior. Accordingly, we extend the semiotic theory by including the behavioral component.

Specifically, we adopt the semiotics cues (i.e., the typographic design of restaurant outdoor signage) to represent the environmental cues, and use them to explain consumers' perception of restaurant authenticity and their willingness to dine in the cue-judgment-behavior model (Jha et al., 2020). Furthermore, while authenticity is highly associated with dining intention (J.-H. Kim *et al.*, 2017; C.-Y. Wang and Mattila, 2015; Youn and Kim, 2018), factors that could moderate such relationship have rarely been studied. C.-Y. Wang and Mattila (2015) indicated that for American diners, authenticity only influences patronage intentions among customers with high familiarity, showing that customers' familiarity with the restaurant is a moderator. Thus, this study also investigates whether the frequency of dining in ethnic restaurants can be a potential moderator for the relationship.

Based upon the previous discussions, the objectives of our study are threefold: 1) to investigate the impact of restaurant signboard on consumers' perceived restaurants' authenticity; 2) to examine the relationship between consumers' authenticity perception and their willingness to dine; 3) to explore whether the frequency of dining in ethnic restaurants moderates the relationship between restaurant authenticity and consumers' willingness to dine.

2. Literature review

2.1 Restaurant authenticity

Scholars have revealed internal environmental factors, such as food name, food ingredients, decorations, staff services and appearances, contribute to food/restaurant authenticity (J.-H. Kim *et al.*, 2017; Kim and Jang, 2016; Song *et al.*, 2019; Youn and Kim, 2018). Recent studies have incorporated the restaurants' external environmental factors, such as external façade, signboards, and surroundings, in the restaurant authenticity research. For example, De Vries and Go (2017) reported external façade contributes to restaurant authenticity. However, scholars found that both the foreign language displayed on outdoor signboard (Magnini *et al.*, 2011) and the area (city center vs. rural area) that the ethnic restaurant is located in (Song and Kim, 2022) do not contribute to the level of restaurant authenticity. As a result, the theoretical knowledge in this area is still limited and our study aims to shed light on this understudied area. Additionally, outdoor signage is a key semiotic device for conveying symbolic and iconic indications of the business to consumers (Cockain, 2018). Thus, businesses must carefully design their outdoor signage to attract consumers.

2.2 Signage attributes that affect restaurant authenticity

According to semiotic theory, business signage is an important environmental cue that affects consumers' perceptions and judgment, such as authenticity (Cavanaugh, 2019; Moriarty, 2014). This study extends further by focusing on restaurant signage with its three typographic design elements: display characters, typeface, and text flow.

2.2.1 Display characters

Foreign brands often incorporate a local language into the brand name to adapt to the local culture and market. In Mainland China, there are two systems for writing Chinese scripts: traditional Chinese and simplified Chinese. Traditional scripts were adopted by the Mainland

Chinese government until 1964. However, between 1955 and 1964, the Mainland government simplified traditional Chinese characters to use fewer strokes (Bökset, 2006). Still, traditional Chinese scripts were used as official scripts in some areas, such as Taiwan, Hong Kong, and Macau. In addition, the *kanji* of the Japanese writing system is identical to traditional Chinese characters, as they were borrowed from ancient China in the sixth century (Loveday, 1996).

2.2.2 Typeface

Font and typeface are particularly important in advertising and packaging design (Favier *et al.*, 2019), and may influence consumers' perceptions of the brand (Grohmann *et al.*, 2013). For example, an elegant font may lead consumers to judge the brand as elegant (McCarthy and Mothersbaugh, 2002). In China, various kinds of the typeface are used, including traditional calligraphic typefaces and computer fonts.

2.2.3 Text flow

Writing runs in different directions in different cultures. In Eastern Asia (e.g., Japan and Greater China), the script is traditionally written vertically from top to bottom (Ma *et al.*, 2013; Panichkriangkrai *et al.*, 2017), whereas Western texts are organized horizontally from left to right (Dale, 1986). However, following recent modernization, horizontal writing is now common in the Chinese written language (Dong and Salvendy, 1999). Some studies found that the display format (vertical versus horizontal) affects consumers' perceptions (Valenzuela *et al*, 2013). For instance, through analogy with horizontality, consumers associate a top-to-bottom script with "the higher, the better" ideology (Valenzuela *et al.*, 2013).

2.3 Underpinning theoretical foundation and the framework of this study

This study is underpinned by semiotic theory and the cue-judgment-behavior model. Semiotic theory is used to understand signs and symbols from linguistic and nonverbal perspectives (Bishop, 2001; DeRosia, 2008). Peircean's semiotic triangle of sign, object, and interpretant is a typical model to study semiotics (Echtner, 1999; Kauppinen-Räisänen and Jauffret, 2018; Metro-Roland, 2009). Sign represents the object. For example, a tourism advertisement is a sign that presents information on the destination (object)(Echtner, 1999). There are two opinions on interpretant (Kauppinen-Räisänen and Jauffret, 2018), one is the person who interprets the sign (Echtner, 1999), and the other is the person's mental reactions toward the sign (Kauppinen-Räisänen and Jauffret, 2018; Lau, 2014).

The semiotics research in tourism is in a very early stage with limited understanding. Some are merely conceptual in nature (Echtner, 1999; Leotta, 2019; Metro-Roland, 2009) while others are with limited empirical evidence (Hunter, 2016; Sheng and Buchanan, 2022; Uzzell, 1984). For example, Hunter (2016) adopted the semiotic analysis to focus on the interpretation of signs (e.g., destination visuals) using a qualitative approach. Uzzell (1984) implemented a qualitative approach to create a relationship between signs (e.g., photos) and interpretant (e.g., tourists' fantasy toward the object). Recently, Sheng and Buchanan (2022) adopted the semiotic theory to link signs (e.g., shopfront signboards, outdoor signage, and calligraphic plaque) in a destination to an interpretant (e.g., tourists' and residents' perception). Previous studies have provided an understanding of the link between sign and interpretant; however, other types of interpretant such as perceived authenticity in hospitality should also be studied to contribute to knowledge. Furthermore, semiotic studies on non-English languages, such as the Chinese language, are less (Sheng and Buchanan, 2022).

We adopt the cue–judgment–behavior model (Jha *et al.*, 2020) to add the component of consumers' behavioral intention to the semiotic theory. Traditionally, the semiotic theory

only focused on customers' mental reactions such as judgment and interpretation of the sign and object (Kauppinen-Räisänen and Jauffret, 2018). However, according to the cue–judgment–behavior model (Jha et al., 2020), external environmental cues affect consumers' judgment and subsequently influence their behavior. Therefore, we included the new component of consumers' behavioral intention in the semiotic theory.

The cue–judgment–behavior model was proposed by Jha et al. (2020) in their study of how environmental cues (i.e., haptic) affected customers' social judgment (i.e., warmth and competence) and their shopping behavior. The model stipulates that extrinsic environmental cues have a significant impact on customers' social judgment and subsequently affect their behavior. This model is particularly relevant to the current study context as restaurant signage can be regarded as an important environmental cue (semiotic cue) that influences customers' perception of authenticity and their willingness to dine. Moreover, previous studies have applied the concept of extrinsic cue utilization to research the effect of cues on consumers' perceptions. For example, consumers often infer business-related characteristics from external cues, such as the name on the signboard (Cordell, 1997). Consumers also use the color of the product package as a cue to infer an association with the product, such as food tastiness (Mai *et al.*, 2016). In addition to inferring quality, extrinsic cues, such as restaurant name, can also influence consumer purchase intentions (Roest and Rindfleisch, 2010).

Since previous literature on typography stated that the typographic design of written language can serve as a semiotic cue to infer associative meanings (Heinen and Sommer, 2009; Serafini and Clausen, 2012), we used semiotic cues to represent the environmental cues in the cue–judgment–behavior model. We proposed that the semiotic cues of typographic design elements, such as characters, typeface, and text direction, of a restaurant's outdoor signage, could influence consumers' judgment of restaurant authenticity, which affects

consumers' behavior such as their willingness to dine. Figure I depicts the research model for

this study, and detailed hypotheses are shown in section 2.4.

[Insert Figure I about here]

2.4 Hypothesis development

2.4.1 The effect of display characters on restaurant authenticity

Compared to simplified Chinese, traditional Chinese is believed to symbolize tradition and

index Chinese cultural authenticity (Su and Chun, 2021). Traditional Chinese characters are

the official script in Taiwan (Hsiau, 1997), and *kanji* are now considered to be integral to the

Japanese language and culture (Kunert, 2020). In line with semiotic theory and the cue–

judgment–behavior model, it is envisaged that a restaurant's use of traditional scripts rather

than simplified scripts on their signage may indicate that they are following the genuine

traditions of Taiwanese or Japanese food. Therefore, it is proposed that:

>*H1: Display characters in restaurant signage contribute to consumers' perceived*
>
>*restaurant authenticity. Specifically, traditional Chinese scripts indicate significantly*
>
>*higher restaurant authenticity than simplified scripts.*

2.4.2 The effect of typeface on restaurant authenticity

Handwritten communications are viewed as more authentic than computer-generated fonts

(Fuchs *et al.*, 2015), as the former convey a sense of sincerity and genuineness (Ren *et al.*,

2018). Calligraphy is a traditional cultural symbol in China and calligraphic landscapes

contribute to tourists' authenticity perceptions (J. Zhang *et al.*, 2008). In line with semiotic

9

theory, restaurant signage using handwritten calligraphy will indicate the authenticity not only of the typeface, but also of the restaurant, leading to the following hypothesis:

H2: The typeface of restaurant signage positively influences consumers' perceptions of restaurant authenticity. Specifically, calligraphy conveys significantly higher restaurant authenticity than computer fonts.

2.4.3 The effect of text flow on restaurant authenticity

Although there is no direct evidence on text flow and authenticity, previous studies show that authenticity is often associated with traditional attributes of a restaurant (Muñoz *et al.*, 2006). Chinese characters are generally presented horizontally from left to right in contemporary Mainland Chinese society (Dong and Salvendy, 1999), but were traditionally organized vertically from top to bottom (Panichkriangkrai *et al.*, 2017). In line with semiotic theory, restaurant signage using vertical flow will convey the associative meaning of tradition as well as restaurant authenticity, leading to the following hypothesis:

H3: Text flow in restaurant signage influences consumers' perceptions of authenticity. Specifically, vertical flow conveys significantly higher authenticity than horizontal flow.

2.4.4 The effect of restaurant authenticity on willingness to dine

Earlier literature confirms a significant linkage between authenticity and dining intention. For example, marketing studies (Ilicic and Webster, 2016; Wu and Hsu, 2018) confirm that brand and/or product authenticity are strong predictors of consumers' purchase intentions. Hospitality scholars also confirm that customers' perceptions of ethnic restaurants'

authenticity contribute to their willingness to dine there (J.-H. Kim *et al.*, 2017; Kim and Kim, 2022; Youn and Kim, 2018). Therefore, we hypothesize that:

> *H4: Restaurant authenticity derived from outdoor signage typography positively influences consumers' willingness to dine.*

2.4.5. Moderator: frequency of dining in ethnic restaurants

Although no study has tested the moderating effect of frequency of dining in ethnic restaurants on the relationship between authenticity and willingness to dine, Wang and Mattila (2015) emphasized the importance of customers' familiarity level with ethnic food in moderating the path from authenticity to patronage intentions. More specifically, authenticity only contributed to diners' patronage intentions among those with high familiarity, not among those with low familiarity. Studies note that loyal and frequent customers pay more attention to authenticity of products than non-loyal and infrequent customers (Edwards, 2010). Based on the existing literature, we propose the following hypotheses:

> *H5: Customers' frequency of dining in ethnic restaurants moderates the relationship between their perceived restaurant authenticity (as derived from outdoor signage typography) and willingness to dine. More specifically, the higher the frequency, the stronger relationship between restaurant authenticity and willingness to dine.*

3. Method

We conducted two experiments using different contexts. Study 1 created a fictitious Taiwanese restaurant in Mainland China to test H1-H5. Traditional Chinese characters

written in a vertical order are very common in Taiwan (Hsiau, 1997), thus, Taiwanese restaurants may follow this more familiar approach or they may consider using simplified Chinese characters written horizontally instead in their outdoor signage in Mainland China. Therefore, Taiwanese restaurant in Mainland China is a suitable context for researching typographic design.

In Study 2, we used a hypothetical Japanese restaurant in Mainland China to validate the results from Study 1. *Kanji,* which is identical to traditional Chinese characters, are important scripts in the Japanese writing system (Chu *et al.,* 2012). Vertical writing format of *kanji* is popular in Japan (Panichkriangkrai *et al.*, 2017). However, Japanese restaurants operating in Mainland China may consider localization and use simplified Chinese characters written with horizontal text flow. Therefore, Japanese restaurant in Mainland China is also an appropriate research context for validation purposes in this study.

3.1 Design and scenarios

Both studies are a 2 (simplified vs. traditional Chinese characters) x 2 (calligraphy vs. computer font) x 2 (vertical vs. horizontal text flow) between-subject experimental design. Semiotic theory suggests that individuals infer semantic associations from words or text (McCarthy and Mothersbaugh, 2002). To minimize the confounding effect of restaurant names in the scenarios, we created a list of ten fictitious Taiwanese restaurant names, and invited 20 Mainland Chinese participants who had dined in Taiwanese restaurants to evaluate these names (i.e., 1. whether the name reflects a flavor of Taiwanese culture, 2. their preference of the name, and 3. the attractiveness of the name) based on 7-point Likert scale (*1 = strongly disagree, 7 = strongly agree*). The name, *Feng Xing Guan,* with medium scores of 3.85, 4.42 and 4.22 for the above three questions were selected. For the meaning of each Chinese character, *Feng* means abundance, *Xing* means happiness or revival, and *Guan*

means mansion house. The simplified Chinese scripts of the name is 丰兴馆, and the traditional scripts is 豐興館. The SimSun computer font was selected owing to its popularity in Mainland Chinese communities. The calligraphy for the Chinese characters was written by a Mainland Chinese resident with years of experience in Chinese calligraphic writing. Eight versions of signage designs were created (see Appendix 1). Following the same procedures, we used a Japanese restaurant name of *Qi Ze Feng* in Chinese Pinyin to develop scenarios for Study 2 (see Appendix 2). *Qi* means air, *Ze* refers to marsh, and *Feng* means style. In terms of display characters, the restaurant name was written in either simplified Chinese characters (i.e., 气泽风) or traditional Chinese characters (i.e., 氣澤風).

3.2 Measurement

We presented the measurement items and Cronbach's alpha values in Table I. Five items for restaurant authenticity were revised from J.-H. Kim *et al.* (2020). Three items for participants' willingness to dine were adopted from C.-Y. Wang and Mattila (2015). We also measured a control variable of openness to ethnic food using four items from Youn and Kim (2017), including: 1) I like to eat foods from different cultures, 2) I often try foreign foods, 3) I am constantly trying new and different foods, and 4) I like to try new ethnic restaurants. All items were measured on 7-point Likert scales (1: *strongly disagree*; 7: *strongly agree*). Additionally, frequency of dining in ethnic restaurants such as Taiwanese/Japanese restaurants was measured on a 7-point Likert scale (1: *rarely*; 7: *always*). English items were initially developed, and then Sinaiko and Brislin (1973)'s back-translation procedure was used to ensure the quality of translation from English to Chinese.

[Table I here]

3.3 Data collection and participants' profile

In Study 1, Wenjuanxing in China assisted online data collection using a random sampling method based on a pool of 2.6 million reliable consumers. A web-based survey link was sent to the consumer pool. The participants must meet the criteria, 1) over 18 years old, 2) residents of Mainland China, and 3) had dined in any Taiwanese restaurants in the past three months. First, these people were targeted as they need relevant reference experiences to compare when responding to the survey questions. Otherwise, they may not have an explicit understanding of the meaning behind an ethnic restaurant's authenticity. Second, the duration of "the past three months" was used to avoid the memory decay effect that participants might not easily recollect their recent dining experiences as valid references. Then participants were randomly placed to one out of the eight experimental groups, followed by answering survey questions. 352 Mainland Chinese diners participated, with the sample size for each condition ranging from 39 to 50. As shown in Table II, 48% were 21~30 years old, 66.2% were male, and 73.6% held an undergraduate degree. The top three occupations were white-collar workers (38.1%), professionals (16.5%) and students (12.5%). 27.6% earned CNY 7,000~9,999 per month.

For Study 2, to avoid common method variance, we used a different company, Baidu Panel Data Collection in Mainland China with a pool of 17 million members in the database (Chang *et al.*, 2010). We used the same criteria to identify qualified participants. Altogether 434 Mainland Chinese were surveyed. The sample size for each experimental condition ranged from 52 to 57. As shown in Table II, 84.8% were 21-40 years old. Over half of the participants were females (52.8%) and received an undergraduate degree (54.6%). The leading three occupations were white-collar workers (24%), freelancers (16.4%) and professionals (15.4%). 26.7% earned CNY 5,000~6,999 per month.

[Table II here]

4. Study 1: Taiwanese restaurants

4.1 Manipulation and realism check

The scenario was manipulated successfully. Participants in the traditional character groups rated "this signage is written in traditional Chinese scripts" higher than those in the simplified script groups ($M_{\text{traditional Chinese}}$=6.42 > $M_{\text{simplified Chinese}}$=1.66; t[350]=45.286, p< .001). Participants in the calligraphy conditions agreed significantly more with "the typeface of this signboard is calligraphy" than those in the computer font conditions ($M_{\text{calligraphy}}$=6.26 > M_{computer}=1.79; t[350]=42.195, p< .001). In addition, subjects presented with the vertical condition agreed more with "this signage is in vertical order" than those presented with the horizontal condition (M_{vertical}=6.56 > $M_{\text{horizontal}}$=1.54; t[350]=45.604, p< .001). Participants agreed that the scenario is realistic in daily life (M=5.01, SD=1.21).

4.2 Results

According to Table III, display characters (F[1, 343]=4.138, p< .05, $M_{\text{simplified Chinese}}$=4.81, $M_{\text{traditional Chinese}}$=5.05) and text flow ($F$[1, 343]=5.578, p< .05, $M_{\text{horizontal}}$=4.79, M_{vertical}=5.07) significantly affected restaurant authenticity, supporting both H1 and H3. However, there was no main effect of typeface on authenticity (F[1, 343]=1.952, p=.163, M_{computer}=5.01, $M_{\text{calligraphy}}$=4.85), rejecting H2.

[Table III here]

For the interaction effects, display characters and typeface had interaction effects on authenticity (F=[1, 343]=4.449, p< .05). As shown in Figure II, in the computer font

scenario, participants in the traditional Chinese scripts groups ($M_{\text{traditional Chinese}}$=5.25) perceived a higher level of restaurant authenticity than those in the simplified Chinese scripts group ($M_{\text{simplified Chinese}}$=4.78; $F[1, 347]$=8.201, $p<$ .01). However, when presented with calligraphy, subjects in both scripts scenarios assessed authenticity similarly ($F[1, 347]$=.000, p=.987, $M_{\text{traditional Chinese}}$=4.83, $M_{\text{simplified Chinese}}$=4.84). Furthermore, the control variable of openness to ethnic food significantly influenced perceptions of restaurant authenticity ($F[1, 343]$=17.117, $p<$ .001). Participants with a high level of openness to ethnic food perceived a higher level of restaurant authenticity than those with a low level of openness to ethnic food.

[Figure II here]

H4 and H5 were tested through PROCESS (Hayes, 2013) using openness to ethnic food as a covariate. We found positive effects of restaurant authenticity on willingness to dine (β=.360, 95% CI=.139 to .581, $p<$ .01), supporting H4. In addition, frequency of dining in ethnic restaurants positively moderates the relationship between authenticity and willingness to dine (β=.080, 95% CI=.022 to .138, $p<$ .01). Based on Table IV, the path from authenticity to willingness to dine is positively associated with the increased level of frequency of dining in ethnic restaurants. Thus, H5 was supported. Frequency of dining in ethnic restaurants (β=-.339, 95% CI=-.631 to -.049, $p<$ .05) negatively affected willingness to dine. The covariate variable of openness to ethnic food (β=.018, 95% CI=-.060 to .086, p=.646) did not significantly influence willingness to dine.

[Table IV here]

5. Study 2: Japanese restaurants

5.1 Manipulation and realism check

Manipulation checks were successful. Compared to participants in the simplified Chinese scripts groups, respondents in the traditional Chinese scripts groups rated "traditional Chinese scripts is shown in this signage" significantly higher ($M_{\text{traditional Chinese}}$=4.96>$M_{\text{simplified Chinese}}$=2.69, t[432]=-13.788, p< .001). Subjects in the calligraphy conditions agreed significantly more with "the typeface of this signboard is calligraphy" than those in the computer conditions ($M_{\text{calligraphy}}$=5.48 >M_{computer}=3.35, t[432]=-13.907, p< .001). Compared to subjects in the vertical condition, those in the horizontal condition rated the item "this signage is in horizontal order" much higher ($M_{\text{horizontal}}$=5.91>M_{vertical}=2.80, t[432]=20.177, p<.001). Participants agreed that the scenario description presented here is realistic in daily life (M=4.57, SD=1.48).

5.2 Results

As shown in Table V, display characters (F[1, 425]=31.123, p<.001) affected authenticity. Compared to those in the simplified Chinese scripts condition, respondents in the traditional scripts scenarios ($M_{\text{traditional Chinese}}$=4.81>$M_{\text{simplified Chinese}}$=4.34) scored authenticity higher, confirming H1. Contrary to expectations, the main effect of typeface on restaurant authenticity was insignificant (F[1, 425]=.995, p=.319, $M_{\text{calligraphy}}$=4.53, $M_{\text{computer font}}$=4.62), rejecting H2. There was a main effect of text flow (F[1, 425]=6.580, p<.05) on participants' perceptions of restaurant authenticity. More specifically, subjects in the vertical direction condition (M_{vertical}=4.69) perceived a higher level of authenticity than those in the horizontal direction condition ($M_{\text{horizontal}}$=4.47), supporting H3.

[Table V here]

Display characters and typeface had a 2-way interaction effect ($F[1, 425]=15.620$, $p<.001$), and display characters, typeface, and text flow had 3-way interaction effect ($F[1, 425]=6.095$, $p<.05$) on authenticity. As shown in Figure III, in the computer font conditions, compared to participants in the simplified scripts groups, those in the traditional scripts groups perceived a higher level of authenticity ($M_{\text{traditional Chinese}}=5.04>M_{\text{simplified Chinese}}=4.21$; $F[1, 429]=46.293$, $p<.001$). However, in the calligraphy conditions, no matter which type of scripts that subjects viewed, they judged restaurant authenticity similarly ($F[1, 429]=1.179$, $p=.278$, $M_{\text{traditional Chinese}}=4.60$, $M_{\text{simplified Chinese}}=4.47$).

[Figure III here]

To interpret the three-way interaction effects, we divided the dataset for text flow into two groups, horizontal and vertical. As shown in Figure IV, in the vertical text flow scenario, there was a two-way interaction effect ($F[1, 217]=20.234$, $p<.001$). Specifically, in the computer font scenario, compared to those in the simplified scripts conditions, participants in the traditional scripts conditions perceived a higher authenticity ($M_{Traditional\ Chinese}=5.29>M_{simplified\ Chinese}=4.19$; $F[1, 217]=42.775$, $p<.01$). In the calligraphy scenario, participants in both traditional ($M_{Traditional\ Chinese}=4.66$) and simplified ($M_{simplified\ Chinese}=4.64$) Chinese characters conditions rated restaurant authenticity similarly ($F[1, 217]=.013$, $p=.911$). However, in the horizontal text flow scenario, display characters and typeface did not have interaction effects on authenticity ($F[1, 207]=1.303$, $p=.255$). As shown in Table IV, the control variable of openness to ethnic food affected authenticity ($F[1, 425]=53.635$, $p<.001$). Compared to those who less open to ethnic food, participants who highly open to ethnic food judged authenticity higher.

[Figure IV here]

Using Hayes' (Hayes, 2013) PROCESS, we tested H4 and H5. Restaurant authenticity (β=.299, 95% CI=.049 to .549, p<.05) affected willingness to dine, confirming H4. In addition, frequency of dining in ethnic restaurants positively moderates the relationship between authenticity and willingness to dine (β=.072, 95% CI =.018 to .125, p<.01), supporting H5. According to Table VI, the path from authenticity to willingness to dine is positively associated with the increased level of frequency of dining in ethnic restaurants. Furthermore, both frequency of dining in ethnic restaurants (β =-.202, 95% CI=-.458 to .053, p=.120) and openness to ethnic food (β =.074, 95% CI=-.006 to .153, p=.068) did not affect consumers' willingness to dine.

[Table VI here]

6. Discussion and Conclusions

6.1 Conclusions

Given the theoretical support of semiotic theory and the cue-judgment-behavior model, this study explored three typographic design elements of the restaurant's outdoor signage and found their effects on consumers' perceived restaurant authenticity and willingness to dine. Three study objectives were achieved. We found that the typographic design elements were selectively effective in affecting authenticity, thereby achieving the first objective. Then authenticity contributes to the consumers' willingness to dine, thereby fulfilling the second objective. The frequency of dining was found to moderate the relationship between authenticity and willingness to dine, thereby achieving the third objective. The following sections will discuss both the theoretical and practical implications herein involved.

6.2 Theoretical contributions

This study contributes to the prior literature. First, semiotic theory has previously been applied only in marketing (DeRosia, 2008; Grohmann *et al.*, 2013; McCarthy and Mothersbaugh, 2002) and tourism (Hunter, 2016; Sheng and Buchanan, 2022; Uzzell, 1984). Thus, our study is the first attempt to apply the semiotic theory in the hospitality context, particularly in the ethnic restaurant context. Although previous tourism literature linked certain components of the semiotic triangle (i.e., sign, object, interpretant) from the semiotic theory (Hunter, 2016; Sheng and Buchanan, 2022; Uzzell, 1984), such as tourists' interpretation of the sign (e.g., destination visual images) representing the object (e.g., destination) (Hunter, 2016), or residents' and tourists' satisfaction with the signs representing different businesses (Sheng and Buchanan, 2022), the linkage between restaurant outdoor signage and customer's authenticity has not been studied using the semiotic theory. In addition, our paper is one of the first in the tourism and hospitality field to investigate Chinese semiotics which is different from those English-dominated semiotics studies (Hunter, 2016; Uzzell, 1984).

Second, our study adds a new component of consumers' behavior in the semiotic triangle based on the support of the cue-judgment-behavior model (Jha *et al.*, 2020). Jha *et al.* (2020) focused on the haptic cues in retailers, whereas our study investigated semiotic cues of typographic design elements of restaurant signage, such as display characters, typeface and text flow, on consumers' judgments (i.e., perceptions of restaurant authenticity) and behaviors (i.e., willingness to dine).

Third, this study contributes to the restaurant authenticity literature. Previous studies seem to neglect the importance of external environmental factors (Song and Kim, 2022), particularly those related to signage language. Among the limited academic attempts, foreign language shown on the restaurant signs did not increase diners' authenticity perception

(Magnini *et al.*, 2011). Focusing on the same language but different writing systems, our study showed that traditional Chinese characters positively contribute to consumers' authenticity perception as compared to simplified Chinese characters. While consumers may have little knowledge to judge authenticity based on foreign language (Magnini et al., 2011), Mainland Chinese participants demonstrated a certain level of knowledge of both traditional and simplified Chinese characters. Mainland Chinese consumers generally believe that traditional Chinese characters symbolize tradition and represent Chinese cultural authenticity (Su and Chun, 2021). As a result, participants in this study rated traditional Chinese characters as more authentic than simplified Chinese characters. Yu *et al.* (2020) reported that font (handwriting versus print) in the food menu had no effects on consumers' perceived authenticity, which is consistent with the finding of our study in the restaurant signage context.

Fourth, our two experimental studies confirm the insignificant effect of typeface on consumers' perceptions of restaurant authenticity, and this finding contradicts previous qualitative studies proposing the effect of calligraphy in enhancing authenticity perceptions (J. Zhang *et al.*, 2008). This result could be due to the cultural similarity and heritage shared by Mainland Chinese, Japanese and Taiwanese language systems. Many Mainland Chinese consumers consider Japanese *kanji* or calligraphy as Chinese characters. Therefore, using calligraphy as signage may just arouse the perception of Chinese cultural heritage instead of providing a sense of authenticity for Japanese or Taiwanese cultural heritage.

Interestingly, however, the interaction tests found that in the specific computer font condition. Compared to simplified Chinese scripts, traditional Chinese characters led to higher restaurant authenticity. In contrast, in the calligraphy signboard scenarios, both type of Chinese characters formed a similar level of perceived restaurant authenticity. A possible

reason could be that compared with calligraphy, computer fonts are easier to interpret and process (Azmi and Alsaiari, 2014).

Finally, the inclusion of frequency of dining as a moderating variable in this study advances our existing knowledge of authenticity. In addition to verifying the association between restaurant authenticity and willingness to dine (J.-H. Kim *et al.*, 2020; J.-H. Kim *et al.*, 2017), our study confirms the moderating effect of frequency of dining in ethnic restaurants on this relationship. Different from a previous study stating that authenticity only contributed to patronage intentions among those customers with high familiarity with the ethnic cuisine (Wang and Mattila, 2015), the results of our study revealed a relationship between authenticity and willingness to dine among the less frequent or less familiar diners as well. In our study, as the frequency of dining in Japanese / Taiwanese restaurants increased, the effect of authenticity on willingness to dine became stronger for Mainland Chinese diners. It could be due to the cultural proximity that enables Mainland Chinese to judge food authenticity in Japanese and Taiwanese restaurants. However, there is a great difference between American and Chinese cuisine, and as such, Americans with low familiarity with Chinese cuisine may have less ability to assess food authenticity.

6.3 Practical implications

Previous studies indicate that restaurant operators should focus on internal elements such as food products and restaurant design (Montargot *et al.,* 2022). The findings from our study, however, suggest that external elements such as outdoor signage are equally important and provide important practical implications for restaurant operators. First, traditional Chinese characters and vertical text direction can be used in Mainland China to improve potential consumers' authenticity perceptions. Given the two systems of writings in terms of traditional and simplified Chinese, this finding may not apply to other languages of restaurant signage

designs. Nonetheless, restaurants operating in regions adopting the Chinese languages, such as Hong Kong, Macao, Malaysia, and Singapore, as well as Chinese restaurants overseas could utilize traditional Chinese characters in vertical text direction to enhance their authenticity appeals.

Second, handwritten calligraphy has no greater impact on authenticity perceptions than computer-generated text when the text flows horizontally. Practically, using handwritten calligraphy on outdoor signage is more costly than computer-generated text as the former must often be sourced from experienced calligraphy artists. Prospective ethnic restaurant owners in China need to carefully consider how to use handwritten calligraphy. For example, restaurant signage with horizontally written calligraphy does not increase authenticity perceptions and is unlikely to contribute to bringing in new diners. If the restaurant owners wish to use vertical text flow in outdoor signage to enhance restaurant authenticity, it is suggested that they use simplified Chinese characters written in calligraphy, or traditional Chinese characters generated in computer font.

Finally, a higher frequency of dining in ethnic restaurants leads to a greater impact of restaurant authenticity on the consumer's willingness to dine. This study found that perceived authenticity is particularly important for frequent diners in Taiwanese and Japanese restaurants in Mainland China. These restaurants may invite customers to fill out a short survey to gather information about their frequency of dining in ethnic restaurants and at the same time, promote the restaurant's image of being authentic.
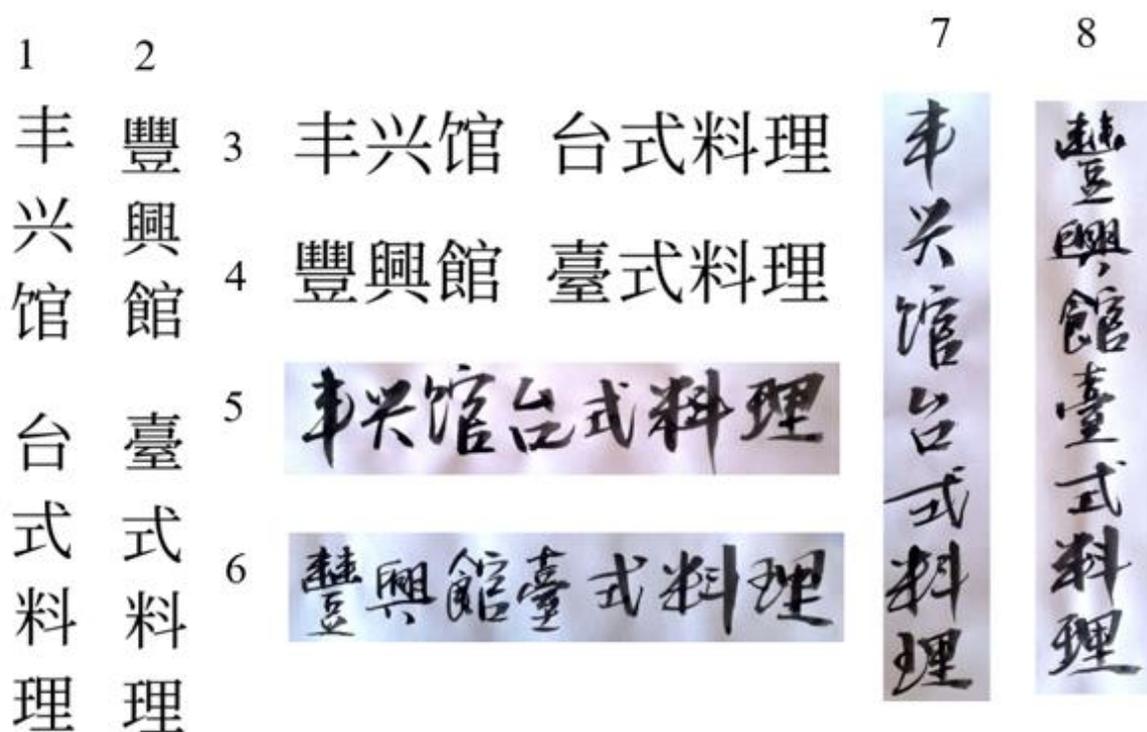

6.4 Limitations and areas for further research

This study is not free from limitations and suggests potential avenues for future research. First, this study tested horizontal text flow from left to right, whereas some time-honored restaurants in China display their restaurant names in a right-to-left text flow on exterior

signboards. Future studies may examine the impact of right-to-left text direction on consumers' authenticity perceptions. Second, our study is limited in choosing restaurants related to the Chinese culture to explore the influence of typographic design. However, the calligraphy and text flow effects may not be highly applicable to non-Chinese cultures. Future studies may incorporate different aspects of typographic design to validate our results in the context of non-Chinese restaurants.

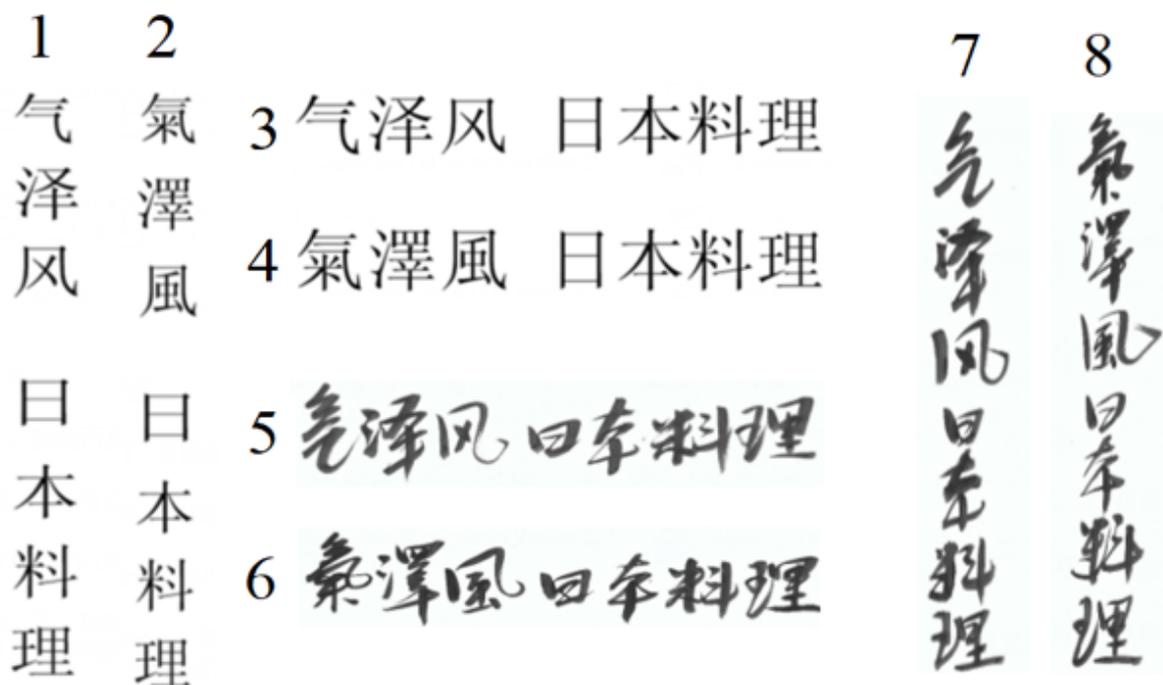**Appendix 1:** Eight experimental conditions used in Study 1

Please imagine that you are traveling in a city in Mainland China and want to have your meal. On your journey, you find a restaurant. The restaurant signboard is shown as below.

Notes: Condition 1: simplified Chinese, computer font, and vertical; Condition 2: traditional Chinese, computer font, and vertical; Condition 3: simplified Chinese, computer font, and horizontal; Condition 4: traditional Chinese, computer font, and horizontal; Condition 5: simplified Chinese, calligraphy, and horizontal; Condition 6: traditional Chinese, calligraphy, and horizontal; Condition 7: simplified Chinese, calligraphy, and vertical; Condition 8: traditional Chinese, calligraphy, and vertical.

Appendix 2: Eight experimental conditions used in Study 2

Please imagine that you are traveling in a city in Mainland China and want to have your meal. On your journey, you find a restaurant. The restaurant signboard is shown as below.

Notes: Condition 1: simplified Chinese, computer font, and vertical; Condition 2: traditional Chinese, computer font, and vertical; Condition 3: simplified Chinese, computer font, and horizontal; Condition 4: traditional Chinese, computer font, and horizontal; Condition 5: simplified Chinese, calligraphy, and horizontal; Condition 6: traditional Chinese, calligraphy, and horizontal; Condition 7: simplified Chinese, calligraphy, and vertical; Condition 8: traditional Chinese, calligraphy, and vertical.

References

Aksenova, D., Cai, W. and Gebbels, M. (2022), "Multisensory prosumption: how cooking classes shape perceptions of destinations", *International Journal of Contemporary Hospitality Management,* Vol. 34 No. 9, pp. 3417-3439.

Amos, H. W. (2017), "Regional language vitality in the linguistic landscape: hidden hierarchies on street signs in Toulouse", *International Journal of Multilingualism,* Vol. 14 No. 2, pp. 93-108.

Androutsopoulos, J. and Chowchong, A. (2021), "Sign-genres, authentication, and emplacement: The signage of Thai restaurants in Hamburg, Germany", *Linguistic Landscape,* Vol. 7 No. 2, pp. 204-234.

Azmi, A. M. and Alsaiari, A. (2014), "A calligraphic based scheme to justify Arabic text improving readability and comprehension", *Computers in Human Behavior,* Vol. 39, pp. 177-186.

Bishop, R. (2001), "Stealing the signs: A semiotic analysis of the changing nature of professional sports logos", *Social Semiotics,* Vol. 11 No. 1, pp. 23-41.

Bökset, R. (2006), "Long story of short forms: the evolution of simplified Chinese characters", Institutionen för orientaliska språk, Stockholm, Sweden.

Cavanaugh, J. R. (2019), "Labelling authenticity, or, how I almost got arrested in an Italian supermarket", available at: https://www.semioticreview.com/ojs/index.php/sr/article/view/47 (accessed 20 July 2021).

Chang, S.-J., van Witteloostuijn, A. and Eden, L. (2010), "From the Editors: Common method variance in international business research", *Journal of International Business Studies,* Vol. 41 No. 2, pp. 178-184.

Childers, T. L. and Jass, J. (2002), "All dressed up with something to say: Effects of typeface semantic associations on brand perceptions and consumer memory", *Journal of Consumer Psychology,* Vol. 12 No. 2, pp. 93-106.

Cockain, A. (2018), "Riding and reading the Shanghai metro: Signs, subjectivities and subversions on and around line# 8", *Social Semiotics,* Vol. 28 No. 4, pp. 533-554.

Cordell, V. V. (1997), "Consumer knowledge measures as predictors in product evaluation", *Psychology & Marketing,* Vol. 14 No. 3, pp. 241-260.

Dale, P. N. (1986), *The myth of Japanese uniqueness*, Croom Helm, London.

De Vries, H. J. and Go, F. M. (2017), "Developing a common standard for authentic restaurants", *The Service Industries Journal,* Vol. 37 No. 15-16, pp. 1008-1028.

DeRosia, E. D. (2008), "The effectiveness of nonverbal symbolic signs and metaphors in advertisements: An experimental inquiry", *Psychology & Marketing,* Vol. 25 No. 3, pp. 298-316.

Dong, J. and Salvendy, G. (1999), "Designing menus for the Chinese population: horizontal or vertical?", *Behaviour & Information Technology,* Vol. 18 No. 6, pp. 467-471.

Echtner, C. M. (1999), "The semiotic paradigm: implications for tourism research", *Tourism Management,* Vol. 20 No. 1, pp. 47-57.

Edwards, L. (2010), "Authenticity in organisational context: fragmentation, contradiction and loss of control", *Journal of Communication Management,* Vol. 14 No. 3, pp. 192-205.

Favier, M., Celhay, F. and Pantin-Sohier, G. (2019), "Is less more or a bore? Package design simplicity and brand perception: an application to Champagne", *Journal of Retailing Consumer Services,* Vol. 46, pp. 11-20.

Fuchs, C., Schreier, M. and Van Osselaer, S. M. (2015), "The handmade effect: What's love got to do with it?", *Journal of marketing,* Vol. 79 No. 2, pp. 98-110.

Grohmann, B., Giese, J. L. and Parkman, I. D. (2013), "Using type font characteristics to communicate brand personality of new brands", *Journal of Brand Management,* Vol. 20 No. 5, pp. 389-403.

Hayes, A. F. (2013), *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*, Guilford Press, New York.

Heinen, S. and Sommer, R. (2009), *Narratology in the age of cross-disciplinary narrative research*, Walter de Gruyter Berlin.

Henderson, P. W., Giese, J. L. and Cote, J. A. (2004), "Impression management using typeface design", *Journal of marketing,* Vol. 68 No. 4, pp. 60-72.

Hsiau, A.-C. (1997), "Language ideology in Taiwan: The KMT's language policy, the Tai-yu language movement, and ethnic politics", *Journal of multilingual and multicultural development,* Vol. 18 No. 4, pp. 302-315.

Hunter, W. C. (2016), "The social construction of tourism online destination image: A comparative semiotic analysis of the visual representation of Seoul", *Tourism management,* Vol. 54, pp. 221-229.

Ilicic, J. and Webster, C. M. (2016), "Being true to oneself: Investigating celebrity brand authenticity", *Psychology & Marketing,* Vol. 33 No. 6, pp. 410-420.

Jha, S., Balaji, M. S., Peck, J., Oakley, J. and Deitz, G. D. (2020), "The Effects of Environmental Haptic Cues on Consumer Perceptions of Retailer Warmth and Competence", *Journal of Retailing,* Vol. 96 No. 4, pp. 590-605.

Kauppinen-Räisänen, H. and Jauffret, M.-N. (2018), "Using colour semiotics to explore colour meanings", *Qualitative Market Research: An International Journal,* Vol. 21 No. 1, pp. 101-117.

Kim, J.-H. and Jang, S. (2016), "Determinants of authentic experiences: An extended Gilmore and Pine model for ethnic restaurants", *International Journal of Contemporary Hospitality Management,* Vol. 28 No. 10, pp. 2247-2266.

Kim, J.-H. and Song, H. (2020), "The influence of perceived credibility on purchase intention via competence and authenticity", *International Journal of Hospitality Management,* Vol. 90, pp. 102617.

Kim, J.-H., Song, H. and Youn, H. (2020), "The chain of effects from authenticity cues to purchase intention: The role of emotions and restaurant image", *International Journal of Hospitality Management,* Vol. 85, pp. 102354.

Kim, J.-H., Youn, H. and Rao, Y. (2017), "Customer responses to food-related attributes in ethnic restaurants", *International Journal of Hospitality Management,* Vol. 61, pp. 129-139.

Kim, J.-Y. and Hwang, J. (2022), "Who is an evangelist? Food tourists' positive and negative eWOM behavior", *International Journal of Contemporary Hospitality Management*, Vol. 34 No. 2, pp. 555-577.

Kim, K. and Baker, M. A. (2017), "The Impacts of Service Provider Name, Ethnicity, and Menu Information on Perceived Authenticity and Behaviors", *Cornell Hospitality Quarterly,* Vol. 58 No. 3, pp. 312-318.

Kunert, H. (2020), "Contemporary Loanwords in hiragana: An Analysis of Typical Traits and Contexts", *Japanese Studies,* Vol. 40 No. 1, pp. 21-40.

Leotta, A. (2019), "'This isn't a movie . . . it's a tourism ad for Australia': The Dundee campaign and the semiotics of audiovisual tourism promotion", *Tourist Studies,* Vol. 20 No. 2, pp. 203-221.

Lin, B., Wang, S., Fu, X. and Yi, X., (2022). "Beyond local food consumption: the impact of local food consumption experience on cultural competence, eudaimonia and behavioral intention", *International Journal of Contemporary Hospitality Management*, Online version.

Loveday, L. J. (1996), *Language contact in Japan: A sociolinguistic history*, Oxford University Press, New York.

Magnini, V. P., Miller, T. and Kim, B. (2011), "The psychological effects of foreign-language restaurant signs on potential diners", *Journal of Hospitality & Tourism Research,* Vol. 35 No. 1, pp. 24-44.

Mai, R., Symmank, C. and Seeberg-Elverfeldt, B. (2016), "Light and pale colors in food packaging: When does this package cue signal superior healthiness or inferior tastiness?", *Journal of Retailing,* Vol. 92 No. 4, pp. 426-444.

McCarthy, M. S. and Mothersbaugh, D. L. (2002), "Effects of typographic factors in advertising-based persuasion: A general model and initial empirical tests", *Psychology & Marketing,* Vol. 19 No. 7-8, pp. 663-691.

Metro-Roland, M. (2009), "Interpreting meaning: An application of Peircean semiotics to tourism", *Tourism Geographies,* Vol. 11 No. 2, pp. 270-279.

Mohamed, M.E.A., Hewedi, M.M., Lehto, X. and Maayouf, M. (2020), "Egyptian food experience of international visitors: a multidimensional approach", *International Journal of Contemporary Hospitality Management,* Vol. 32 No. 8, pp. 2593-2611.

Montargot, N., Kallmuenzer, A. and Kraus, S. (2022), "Haute cuisine three-star restaurants' representation on websites and dining guides: a lexicometric analysis", *International Journal of Contemporary Hospitality Management*, Vol. 34 No. 9, pp. 3376-3393.

Moriarty, M. (2014), "Contesting language ideologies in the linguistic landscape of an Irish tourist town", *International Journal of Bilingualism,* Vol. 18 No. 5, pp. 464-477.

Muñoz, C. L., Wood, N. T. and Solomon, M. R. (2006), "Real or blarney? A cross-cultural investigation of the perceived authenticity of Irish pubs", *Journal of Consumer Behaviour,* Vol. 5 No. 3, pp. 222-234.

Panichkriangkrai, C., Li, L., Kaneko, T., Akama, R. and Hachimura, K. (2017), "Character segmentation and transcription system for historical Japanese books with a self-proliferating character image database", *International Journal on Document Analysis and Recognition,* Vol. 20 No. 4, pp. 241-257.

Reimer, B., Mehler, B., Dobres, J., Coughlin, J. F., Matteson, S., Gould, D., Chahine, N. and Levantovsky, V. (2014), "Assessing the impact of typeface design in a text-rich automotive user interface", *Ergonomics,* Vol. 57 No. 11, pp. 1643-1658.

Ren, X., Xia, L. and Du, J. (2018), "Delivering warmth by hand: customer responses to different formats of written communication", *Journal of Services Marketing,* Vol. 32 No. 2, pp. 223-234.

Richards, G. (2021), "Evolving research perspectives on food and gastronomic experiences in tourism", *International Journal of Contemporary Hospitality Management,* Vol. 33 No. 3, pp. 1037-1058.

Roest, H. and Rindfleisch, A. (2010), "The influence of quality cues and typicality cues on restaurant purchase intention", *Journal of Retailing and Consumer Services,* Vol. 17 No. 1, pp. 10-18.

Serafini, F. and Clausen, J. (2012), "Typography as semiotic resource", *Journal of Visual Literacy,* Vol. 31 No. 2, pp. 1-16.

Sheng, R. and Buchanan, J. (2022), "Traditional visual language: A Geographical Semiotic Analysis of indigenous linguistic landscape of ancient waterfront towns in China", *SAGE Open,* Vol. 12 No. 1, pp. 21582440211068503.

Sinaiko, H. W. and Brislin, R. W. (1973), "Evaluating language translations: Experiments on three assessment methods", *Journal of Applied Psychology,* Vol. 57 No. 3, pp. 328–334.

Song, H. and Kim, J.-H. (2022), "Effects of history, location and size of ethnic enclaves and ethnic restaurants on authentic cultural gastronomic experiences", *International Journal of Contemporary Hospitality Management,* Vol. Online version.

Song, H., Phan, B. V. and Kim, J.-H. (2019), "The congruity between social factors and theme of ethnic restaurant: Its impact on customer's perceived authenticity and behavioural intentions", *Journal of Hospitality and Tourism Management,* Vol. 40, pp. 11-20.

Soltani, M., Soltani Nejad, N., Taheri Azad, F., Taheri, B. and Gannon, M.J. (2021), "Food consumption experiences: a framework for understanding food tourists' behavioral intentions", *International Journal of Contemporary Hospitality Management*, Vol. 33 No. 1, pp. 75-100.

Su, H.-Y. and Chun, C.-C. (2021), "Chineseness, Taiwaneseness, and the traditional and simplified Chinese scripts: Tourism, identity, and linguistic commodification", *Language & Communication,* Vol. 77, pp. 35-45.

Uzzell, D. (1984), "An alternative structuralist approach to the psychology of tourism marketing", *Annals of Tourism Research,* Vol. 11 No. 1, pp. 79-99.

Valenzuela, A., Raghubir, P. and Mitakakis, C. (2013), "Shelf space schemas: Myth or reality?", *Journal of Business Research,* Vol. 66 No. 7, pp. 881-888.

Wang, C.-Y. and Mattila, A. S. (2015), "The impact of servicescape cues on consumer prepurchase authenticity assessment and patronage intentions to ethnic restaurants", *Journal of Hospitality & Tourism Research,* Vol. 39 No. 3, pp. 346-372.

Wu, S.-L. and Hsu, C.-P. (2018), "Role of authenticity in massively multiplayer online role playing games (MMORPGs): Determinants of virtual item purchase intention", *Journal of Business Research,* Vol. 92, pp. 242-249.

Xi, Y., Wang, Y., Jiang, Y. and Wang, Y. (2022), "Study on the effect of text direction and temporal focus on advertising persuasiveness", *International Journal of Consumer Studies,* Vol. 46 No. 4, pp. 1149-1164.

Yang, H., Song, H., Ding, Q.S. and Wang, H. (2022). "Transparency, authenticity and purchase intentions: Chinese independent restaurants". *International Journal of Contemporary Hospitality Management*, Online version.

Youn, H. and Kim, J.-H. (2017), "Effects of ingredients, names and stories about food origins on perceived authenticity and purchase intentions", *International Journal of Hospitality Management,* Vol. 63, pp. 11-21.

Youn, H. and Kim, J.-H. (2018), "Is unfamiliarity a double-edged sword for ethnic restaurants?", *International Journal of Hospitality Management,* Vol. 68, pp. 23-31.

Yu, X., Huang, H., Liu, S. Q. and Lu, Z. (2020), "Signaling authenticity of ethnic cuisines via handwriting", *Annals of Tourism Research,* Vol. 85, pp. 103054.

Zhang, J., Tang, W., Shi, C., Liu, Z. and Wang, X. (2008), "Chinese Calligraphy and Tourism: From Cultural Heritage to Landscape Symbol and Media of the Tourism Industry", *Current Issues in Tourism,* Vol. 11 No. 6, pp. 529-548.
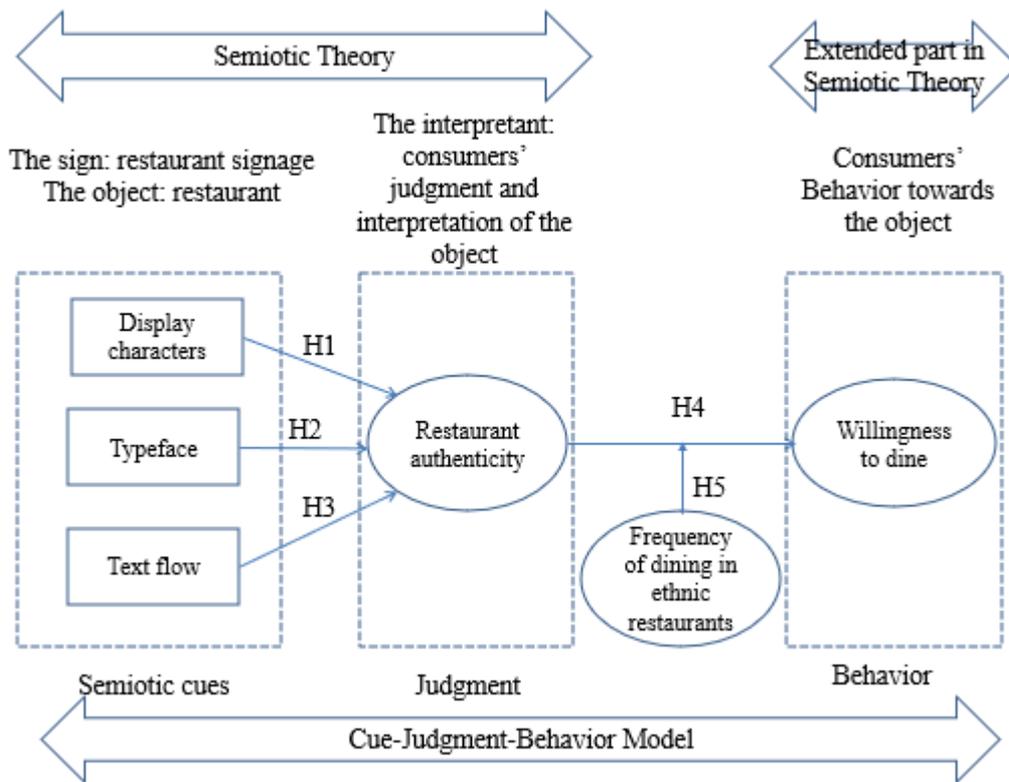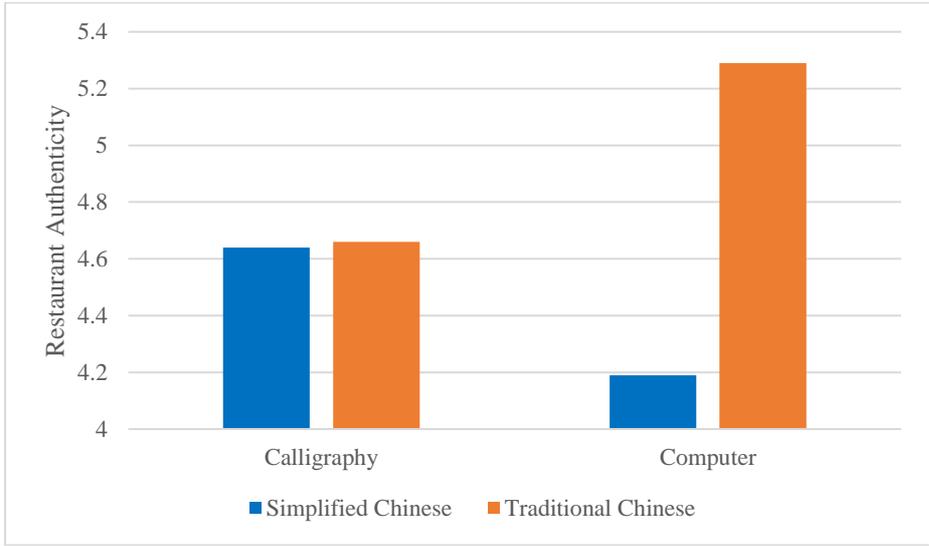
Figure I. Conceptual framework
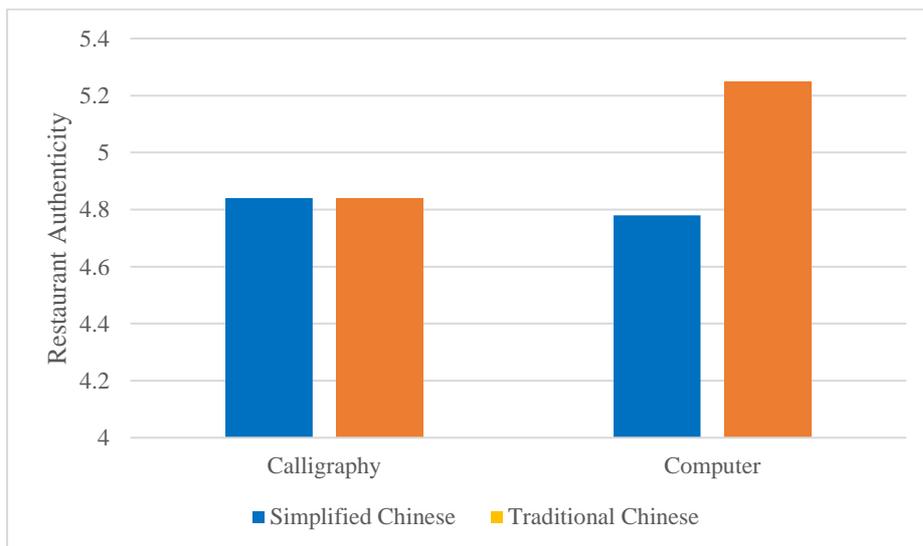
Figure II. Two-way interaction (display characters and typeface) on restaurant authenticity (Experiment 1)
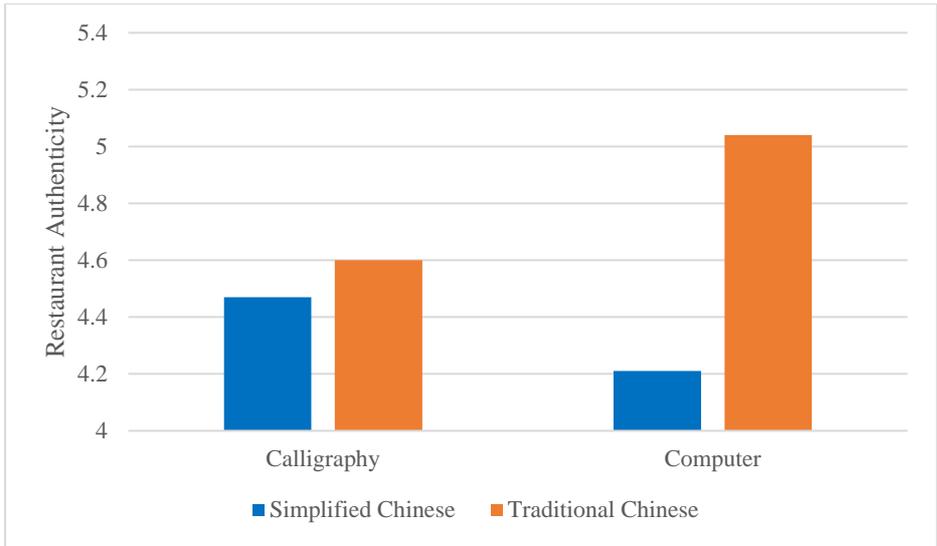
Figure III. Two-way interaction (display characters and typeface) on restaurant authenticity (Experiment 2)

Figure IV. Three-way interaction on restaurant authenticity with vertically flowing text (Study 2)

Table I. Measurement items for dependent variables

Variable	Items	Cronbach's α
Experiment 1		
Restaurant authenticity	This is an authentic Taiwanese restaurant	.856
	This restaurant looks very Taiwanese to me	
	This restaurant makes me feel connected with Taiwanese culture	
	I expect to experience and/or learn about the Taiwanese lifestyle in this restaurant	
	If I were to eat at this restaurant, I would be likely to be served traditional authentic Taiwanese food	
Willingness to dine	I would like to dine in this restaurant	.835
	I will choose to go to this restaurant rather than others	
	This restaurant would be my first choice compared with other Taiwanese restaurants	
Experiment 2		
Restaurant authenticity	This is an authentic Japanese restaurant	.943
	This restaurant looks very Japanese to me	
	This restaurant makes me feel connected with Japanese culture	
	I expect to experience and/or learn about the Japanese lifestyle in this restaurant	
	If I were to eat at this restaurant, I would be likely to be served traditional authentic Japanese food	
Willingness to dine	I would like to dine in this restaurant	.913
	I will choose to go to this restaurant rather than others	
	This restaurant would be my first choice compared with other Japanese restaurants	

Table II. Participants' background

	Experiment 1 (N=352)		Experiment 2 (N=434)	
Age	Frequency	Percentage	Frequency	Percentage
18~20	18	5.1	31	7.1
21~30	169	48.0	231	53.2
31~40	125	35.5	137	31.6
41~50	29	8.2	32	7.4
51~60	9	2.6	2	0.5
>60	2	0.6	1	0.2
Gender				
Male	233	66.2	205	47.2
Female	119	33.8	229	52.8
Education				
High school or below	10	2.8	35	8.1
College	50	14.2	130	30.0
Undergraduate	259	73.6	237	54.6
Postgraduate	33	9.4	32	7.4
Occupation				
Governmental officer	23	6.5	36	8.3
Entrepreneur	36	10.2	17	3.9
Professional	58	16.5	67	15.4
Private business owners	16	4.5	19	4.4
White-collar worker	134	38.1	104	24.0
Salesperson	17	4.8	37	8.5
Freelancer	16	4.5	69	15.9
Students	44	12.5	65	15.0
Housewife	0	0	3	0.7
Retired	3	0.9	0	0
Others	5	1.4	17	3.9
Personal monthly income (CNY)				
Less than 3000	42	11.9	89	20.5
3000~4999	46	13.1	94	21.7
5000~6999	75	21.3	116	26.7
7000~9999	97	27.6	75	17.3
10000 and above	92	26.1	60	13.8

Table III. ANCOVA results (Experiment 1)

Source	df	F	p	η^2
		Restaurant authenticity		
Display characters	1	4.138	.043	.012
Typeface	1	1.952	.163	.006
Text flow	1	5.578	.019	.016
Display characters x typeface	1	4.449	.036	.013
Display characters x text flow	1	.020	.888	.000
Typeface x text flow	1	.013	.908	.000
Display characters x typeface x text flow	1	.010	.921	.000
Openness to ethnic food	1	17.117	.000	.048
Error	343			

Table IV. Moderation results (Experiment 1)

Conditional effects	Effect (se)	p	LL 95% CI	UL 95% CI
Low frequency (2.00)	.520 (.061)	.000	.400	.640
Moderate frequency (4.00)	.680 (.042)	.000	.598	.762
High frequency (5.00)	.760 (.058)	.000	.646	.874

Note: Frequency means Frequency of dining in ethnic restaurants

Table V. ANCOVA results (Experiment 2)

Source		Restaurant authenticity		
	df	*F*	*p*	η^2
Display characters	1	31.123	.000	.068
Typeface	1	.995	.319	.002
Text flow	1	6.580	.011	.015
Display characters x typeface	1	15.620	.000	.035
Display characters x text flow	1	.984	.322	.002
Typeface x text flow	1	.012	.914	.000
Display characters x typeface x text flow	1	6.095	.014	.014
Openness to ethnic food	1	53.635	.000	.112
Error	425			

Table VI. Moderation results (Experiment 2)

Conditional effects	Effect (se)	*p*	LL 95% CI	UL 95% CI
Low frequency (2.00)	.443 (.079)	.000	.287	.598
Moderate frequency (4.00)	.586 (.048)	.000	.492	.680
High frequency (6.00)	.729 (.065)	.000	.602	.857

Note: Frequency means Frequency of dining in ethnic restaurants