

Does Nostalgic Advertising Facilitate Brand Word-of-Mouth in Online Environments? A Dual-Dimension Emotional Perspective

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Abstract

Nostalgic emotional advertising is a commonly employed advertising strategy in corporate practice. Extant research has predominantly examined the affective nature of nostalgic advertising, while overlooking its cognitive dimensions. The present study investigates, from the dual dimensions of affective processing (emotion and cognition), the differential effects of nostalgic versus non-nostalgic advertising on consumer word-of-mouth communication across varying brand contexts. Drawing upon secondary data and experimental studies, our findings reveal that for warmth-oriented brands, nostalgic (vs. non-nostalgic) advertising decreases consumer word-of-mouth communication, with loneliness and satisfaction functioning as sequential mediators; conversely, for competence-oriented brands, nostalgic (vs. non-nostalgic) advertising increases consumer word-of-mouth communication, with sense of history and trust functioning as sequential mediators.

Full Text

Does Nostalgic Advertising in Online Environments Facilitate Word-of-Mouth Communication? An Emotional Dual-Dimension Perspective

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Abstract: Nostalgic emotional advertising is a common strategy employed by businesses. Existing research has primarily approached nostalgic advertising from its emotional dimensions while neglecting its cognitive aspects. This study investigates how nostalgic versus non-nostalgic advertising influences consumer

word-of-mouth communication across different brand contexts from a dual-dimension perspective of emotional processing (affective and cognitive). Using secondary data and experimental studies, we find that for warmth-oriented brands, nostalgic (vs. non-nostalgic) advertising reduces consumer word-of-mouth communication, with loneliness and satisfaction serving as sequential mediators. For competence-oriented brands, nostalgic (vs. non-nostalgic) advertising enhances consumer word-of-mouth communication, with sense of history and trust serving as sequential mediators.

Keywords: nostalgic advertising; brand image; word-of-mouth communication; trust; satisfaction

Classification Code: B849: C93

1.1 Problem Statement

Emotional advertising represents a common strategy for businesses [?]. Emotions can prompt consumers to share more information related to advertisements, thereby improving advertising effectiveness [?, ?]. As a form of emotional advertising, nostalgic advertising has gained popularity among numerous brands. Previous research on nostalgic advertising has primarily examined emotional arousal, exploring how it triggers positive emotions such as happiness, warmth, and gratitude [?] and fosters more optimistic attitudes toward the future [?], thereby influencing advertising dissemination.

Some companies have achieved excellent marketing results through this approach (e.g., Coca-Cola’s “Always Coca-Cola” campaign), yet others have failed to meet expectations (e.g., Kodak’s advertisement featuring an elderly woman organizing old photos— “A Kodak Moment, Forever”). Are nostalgic advertisements universally applicable, or do they sometimes prove counterproductive compared to regular advertising?

Cognitive theories of emotion posit that emotions possess not only affective properties rooted in individual physiology but also cognitive attributes [?]. As a special type of emotion, nostalgia similarly encompasses both affective and cognitive dimensions. The cognitive dimension of nostalgia emphasizes memories of the past, functioning as an informational stimulus, while the affective dimension involves the emotions evoked by these memories—complex feelings such as joy and sorrow [?]. Early research predominantly approached nostalgia from its affective perspective, investigating whether it could generate positive marketing communication outcomes for brands, yet few studies have integrated both affective and cognitive dimensions. Why do nostalgic advertisements produce varying communication effects across different brands? Existing literature suggests that different brand images yield distinct brand perceptions [?]. Consumers perceive warmth-oriented brands more emotionally [?], and nostalgic advertising as an emotional stimulus can alleviate loneliness [?], thereby generating satisfaction. Consequently, consumers feel less compelled to share information to establish social connections, which reduces word-of-mouth communication.

For competence-oriented brands, consumer perceptions tend to be more rational; nostalgia functions as an informational input that enhances consumers' sense of brand history, fostering greater trust in the brand and thereby influencing word-of-mouth communication [?]. Therefore, we propose an interaction effect between nostalgic advertising and brand image.

In summary, this study adopts an emotional dual-dimension perspective, using nostalgic advertising as an entry point and introducing brand image as a moderating variable to examine how the match between advertising type and brand image influences consumer word-of-mouth communication. We also explore the underlying mechanisms through which nostalgia affects consumer word-of-mouth communication. The research framework is illustrated in Figure 1 [Figure 1: see original paper].

1.2.1 Nostalgia

Holbrook and Schindler (1991) define nostalgia as a preference, general liking, positive attitude, or favorable emotion toward people, places, or things experienced during one's youth, early adulthood, adolescence, childhood, or even earlier periods. Nostalgia is a complex emotion. Holak and Havlena (1992) conceptualize nostalgia as a bittersweet yearning for home, representing an emotional state encompassing both pleasant and sad dimensions. Scholars in psychology, sociology, and consumer behavior have found that nostalgia generates more positive than negative emotions [?, ?, ?]. Empirical research confirms that nostalgia consistently accompanies a series of positive emotional responses, such as joy and gratitude [?, ?], more optimistic future attitudes [?], increased social connection, enhanced self-esteem [?], and reduced loneliness [?]. Nostalgic appeals are widely used in advertising [?]. Brands leverage nostalgic advertising to trigger positive emotions and improve word-of-mouth communication, with substantial empirical evidence supporting this effect. Triantafyllidou and Siomkos (2013) found in the tourism industry that nostalgia can promote sharing; Triantafyllidou and Siomkos (2014) proposed from a consumer experience perspective that nostalgia positively influences word-of-mouth communication. These studies examined the impact of nostalgia on word-of-mouth communication from an affective dimension, consistently concluding that nostalgic advertising facilitates consumer word-of-mouth communication. However, how can this conclusion explain instances where nostalgic advertising fails to produce effective communication for certain brands?

Cognitive theories of emotion posit that emotions possess cognitive properties [?]-that is, beyond their physiological affective attributes, emotions also have cognitive dimensions. As a special emotion, nostalgia similarly encompasses both affective and cognitive attributes. Different brand images affect advertising effectiveness [?]. Previous research has examined the commercial value of nostalgic advertising solely from its affective perspective [?, ?, ?], neglecting its cognitive attributes, resulting in inconsistent findings regarding communication effects based on nostalgia's affective versus cognitive properties. There-

fore, this study investigates how the match between brand image and advertising type influences consumer word-of-mouth communication from an emotional dual-dimension perspective.

1.2.2 Brand Image

Brand image refers to brand cognition reflected in consumers' brand associations in memory [?]. Aaker et al. (2010) divide brand image into two dimensions: warmth and competence. Warmth typically includes generosity, kindness, honesty, sincerity, helpfulness, and trustworthiness, while competence encompasses confidence, effectiveness, intelligence, capability, and competitiveness [?]. Although warmth and competence originally pertained to perceptions and evaluations of people, Kervyn et al. (2012) found that consumers also make warmth and competence judgments about brands. For warmth-oriented brands, consumers tend toward affective-level analysis, whereas for competence-oriented brands, they lean toward cognitive-level analysis. Prior research on warmth and competence has primarily focused on social psychology. Fournier and Alvarez (2011) found that warmth and competence can explain consumer-brand relationships. Aaker et al. (2010) used warmth and competence to demonstrate that non-profit enterprises generate more warmth perceptions while for-profit enterprises generate more competence perceptions. Based on this, this study categorizes brand image into warmth-oriented and competence-oriented types.

Cognitive theories of emotion posit that beyond physiological affective attributes, emotions possess cognitive properties [?]. As an emotion, nostalgia similarly encompasses both affective and cognitive attributes. The affective dimension involves the joy, sadness, and other complex emotions evoked by nostalgia [?]. Previous research has comprehensively examined nostalgia's affective attributes. Research on nostalgia's cognitive attributes remains limited; these attributes involve conceptualized feelings and associations with past memories. Since nostalgic objects vary considerably across individuals, we do not discuss specific nostalgic associations. From a temporal perspective, nostalgia generates a sense of history. He and Li (2006) noted in their study of brand revitalization that heritage brands are time-honored, and nostalgic emotions can stimulate consumers' perception of brand stories. For brands, nostalgia conveys a perception of "long-standing history," enhancing brand historicalness. Based on this, this study investigates how nostalgic advertising influences consumer word-of-mouth communication from an emotional dual-dimension perspective.

Nostalgia's cognitive attributes can enhance consumers' perception of brand history, thereby increasing brand trust [?], and trust promotes word-of-mouth communication [?]. Nostalgia's affective attributes can alleviate loneliness [?] and increase satisfaction, potentially reducing sharing behaviors to obtain social connection. Therefore, for warmth-oriented brands, nostalgia as emotional expression may negatively affect word-of-mouth communication; for competence-oriented brands, nostalgia as informational expression may enhance word-of-

mouth communication. Accordingly, we propose:

Hypothesis 1a: For warmth-oriented brands, nostalgic (vs. non-nostalgic) advertising is more likely to reduce consumer word-of-mouth communication.

Hypothesis 1b: For competence-oriented brands, nostalgic (vs. non-nostalgic) advertising is more likely to enhance consumer word-of-mouth communication.

1.2.3 The Mediating Roles of Sense of History, Trust, Loneliness, and Satisfaction

Loneliness represents a subjective state of social isolation, accompanied by the painful experience of feeling unaccepted due to unmet social needs, which drives individuals to seek satisfaction of these needs. Loneliness is a distressing, unhappy, and sad psychological state [?] associated with lack of social support [?]. When individuals' expected and perceived social relationships are inconsistent, loneliness emerges [?]. Satisfaction refers to the pleasant, relaxed psychological state consumers experience when their needs are met [?]. Nostalgia is a self-relevant social emotion where the self is always the protagonist in memories. Being surrounded by intimate others in memories alleviates loneliness [?], making perceived social relationships more aligned with expectations and generating emotional satisfaction. Consequently, individuals feel less need to increase sharing behaviors to obtain social connection.

History represents cultural inheritance, accumulation, and expansion [?]. Brands, companions in human life, embody historical culture. Brand historicalness refers to the temporal extension of a brand in consumers' minds [?]. From nostalgia's cognitive perspective, nostalgia enhances consumers' perception of brand historicalness. Longer brand history can increase brand influence and consumer preference [?]. Chang and Tung (2016) found that brand historicalness reduces consumers' perceived risk, as consumers typically consider time-honored brands trustworthy [?]. Nostalgia's cognitive attributes increase consumers' perception of brand history, generating greater trust, which in turn promotes word-of-mouth communication [?].

For warmth-oriented brands, consumers perceive more emotionally; nostalgic advertising's affective attributes reduce loneliness and generate satisfaction, thereby diminishing word-of-mouth communication. For competence-oriented brands, consumers perceive more rationally; nostalgic advertising's cognitive attributes enhance perceptions of brand history and strengthen brand trust, thereby improving word-of-mouth communication. Based on this, we propose:

Hypothesis 2a: For warmth-oriented brands, nostalgic (vs. non-nostalgic) advertising reduces consumer word-of-mouth communication, with loneliness and satisfaction serving as sequential mediators.

Hypothesis 2b: For competence-oriented brands, nostalgic (vs. non-nostalgic) advertising enhances consumer word-of-mouth communication, with sense of history and trust serving as sequential mediators.

Nostalgia is a complex emotion [?] that not only alleviates loneliness and enhances historicalness but also reduces anxiety [?] and increases security [?]. Security stems from cognitive processing of one's environment. Therefore, for warmth-oriented brands, nostalgia might influence psychological satisfaction by reducing anxiety, thereby affecting word-of-mouth communication. For competence-oriented brands, nostalgia might influence brand trust by enhancing security, thereby affecting word-of-mouth communication. This study excludes these alternative possibilities through experimental methods.

Study 1

Study 1 aims to explore the effectiveness of different advertising types (nostalgic/non-nostalgic) and differences in word-of-mouth communication across different brand types (warmth-oriented/competence-oriented), providing support through secondary data.

2.1 Data Collection

Regarding nostalgic advertising and word-of-mouth communication, this study selected Sina Weibo—a social media platform registered by most companies—as the data source. Using Python programming tools, we conducted machine crawling of corporate official Weibo accounts (specific code attached in Appendix 4). We chose Sina Weibo not only for data timeliness but also because research indicates that liking, commenting, or forwarding behaviors on social media like Weibo can reflect consumers' word-of-mouth intentions and recommendation willingness [?, ?].

To ensure data stability, we selected 2016 as the reference time point and crawled all posts from the following brands on Weibo throughout 2016: Alipay, Xiaomi, Jiangxiaobai, Huawei, Baidu, iQiyi, Weilong, Wahaha, Daoxiangcun, Wanglaoji, Moutai, Coca-Cola, Master Kong, Jingjiu, and Dabao. The crawled content included post content, publication time, forwarding volume, comment volume, and follower count.

Thirty university students were randomly recruited to test the brand images of these companies, categorizing them into two groups: (1) Warmth-oriented brands: Weilong ($M_{warmth} = 4.36$, $SD = 0.31$; $M_{competence} = 3.01$, $SD = 0.37$; $F(1, 30) = 232.65$, $p < 0.001$), Wahaha ($M_{warmth} = 4.15$, $SD = 0.33$; $M_{competence} = 3.19$, $SD = 0.43$; $F(1, 30) = 137.99$, $p < 0.001$), Daoxiangcun ($M_{warmth} = 4.17$, $SD = 0.37$; $M_{competence} = 3.16$, $SD = 0.30$; $F(1, 30) = 135.75$, $p < 0.001$), Wanglaoji ($M_{warmth} = 4.11$, $SD = 0.35$; $M_{competence} = 3.07$, $SD = 0.44$; $F(1, 30) = 99.49$, $p < 0.001$), Moutai ($M_{warmth} = 4.18$, $SD = 0.35$; $M_{competence} = 2.87$, $SD = 0.45$; $F(1, 30) = 158.97$, $p < 0.001$), Coca-Cola ($M_{warmth} = 4.28$, $SD = 0.34$; $M_{competence} = 3.38$, $SD = 0.32$; $F(1, 30) = 110.05$, $p < 0.001$), Master Kong ($M_{warmth} = 4.22$, $SD = 0.25$; $M_{competence} = 3.28$, $SD = 0.43$; $F(1, 30) = 107.725$, $p < 0.001$), Jingjiu ($M_{warmth} = 4.29$, $SD = 0.36$; $M_{competence} = 3.41$,

$SD = 0.40$; $F(1, 30) = 80.62$, $p < 0.001$), Dabao ($M_{warmth} = 4.24$, $SD = 0.37$; $M_{competence} = 3.02$, $SD = 0.33$; $F(1, 30) = 183.52$, $p < 0.001$). (2) Competence-oriented brands: Alipay ($M_{warmth} = 3.38$, $SD = 0.47$; $M_{competence} = 4.07$, $SD = 0.32$; $F(1, 30) = 232.65$, $p < 0.001$), Xiaomi ($M_{warmth} = 3.38$, $SD = 0.47$; $M_{competence} = 4.07$, $SD = 0.32$; $F(1, 30) = 266.74$, $p < 0.001$), Jiangxiaobai ($M_{warmth} = 3.45$, $SD = 0.44$; $M_{competence} = 4.11$, $SD = 0.31$; $F(1, 30) = 283.75$, $p < 0.001$), Huawei ($M_{warmth} = 3.10$, $SD = 0.42$; $M_{competence} = 4.03$, $SD = 0.29$; $F(1, 30) = 436.81$, $p < 0.001$), Baidu ($M_{warmth} = 3.36$, $SD = 0.47$; $M_{competence} = 3.92$, $SD = 0.30$; $F(1, 30) = 236.63$, $p < 0.001$), iQiyi ($M_{warmth} = 3.20$, $SD = 0.41$; $M_{competence} = 3.84$, $SD = 0.30$; $F(1, 30) = 317.60$, $p < 0.001$).

The crawled content was processed by screening posts containing words like “childhood,” “young,” and “nostalgia” as nostalgic advertising copy, while selecting posts about friendship, family, and love as non-nostalgic advertising copy. Nostalgic advertising is an emotional advertisement, while non-nostalgic advertising selected non-nostalgic copy from emotional advertisements. Two professionals were invited to validate the selected posts, classifying them as nostalgic or non-nostalgic. Posts with consistent classification by both professionals were deemed valid and categorized accordingly. For questionable posts, a third professional was consulted for discussion. Table 1 shows the number of posts for each type after screening. Based on post content, we categorized posts into two types: information-evoked nostalgia and emotion-evoked nostalgia, depending on whether the content included emotionally-oriented words (such as disgust, sorrow, resentment, fear, preference, comfort, and surprise). The final types and quantities of each post are shown in Table 2, and Table 3 provides examples of each post type.

2.2 Data Analysis

Interaction between nostalgic type and brand image: To further explore differences in word-of-mouth communication effectiveness between nostalgic and non-nostalgic advertising, we used “average forwarding volume” (forwarding volume divided by follower count) as the dependent variable, with brand type (warmth-oriented/competence-oriented) as a fixed factor, applying one-way F-test methods to verify the moderating effect. Results are shown in Table 4

Univariate regression analysis revealed that the matching relationship between nostalgic advertising type and brand image significantly interacted on average forwarding volume overall (adjusted $R^2 = 0.21$, $F(1, 348) = 32.47$, $p < 0.001$, $\eta^2 = 0.123$), for emotion-evoked type (adjusted $R^2 = 0.17$, $F(1, 175) = 15.05$, $p < 0.001$, $\eta^2 = 0.081$), and for information-evoked type (adjusted $R^2 = 0.40$, $F(1, 173) = 77.49$, $p < 0.001$, $\eta^2 = 0.314$), indicating that brand image significantly moderates the relationship between nostalgic advertising type and consumer word-of-mouth communication. Group mean effect analysis (Figure 2 [Figure 2: see original paper]) showed

that for warmth-oriented brands, consumers' word-of-mouth communication intention was significantly higher for non-nostalgic than nostalgic advertisements in average forwarding volume ($M_{nostalgic} = 3.63 \times 10^{-5} < M_{non-nostalgic} = 5.91 \times 10^{-5}$, $F(1, 213) = 4.67$, $p = 0.03 < 0.05$), for emotion-evoked type ($M_{nostalgic} = 2.75 \times 10^{-5} < M_{non-nostalgic} = 6.45 \times 10^{-5}$, $F(1, 101) = 4.36$, $p = 0.03 < 0.05$), and for information-evoked type ($M_{nostalgic} = 3.3 \times 10^{-5} < M_{non-nostalgic} = 5.7 \times 10^{-5}$, $F(1, 112) = 6.16$, $p = 0.015 < 0.05$). For competence-oriented brands, consumers' word-of-mouth communication intention was significantly higher for nostalgic than non-nostalgic advertisements in average forwarding volume ($M_{nostalgic} = 3.32 \times 10^{-4} > M_{non-nostalgic} = 0.68 \times 10^{-4}$, $F(1, 135) = 28.095$, $p < 0.001$), for emotion-evoked type ($M_{nostalgic} = 3.54 \times 10^{-4} > M_{non-nostalgic} = 1.08 \times 10^{-4}$, $F(1, 74) = 8.90$, $p = 0.004 < 0.01$), and for information-evoked type ($M_{nostalgic} = 3.05 \times 10^{-4} > M_{non-nostalgic} = 0.20 \times 10^{-4}$, $F(1, 61) = 40.19$, $p < 0.001$). The secondary data support Hypotheses H1a and H1b.

2.3 Discussion

This study's secondary data analysis reveals that different brands employ different advertising types to enhance consumer word-of-mouth communication. Specifically, for competence-oriented brands, nostalgic advertising generates higher word-of-mouth communication; for warmth-oriented brands, non-nostalgic advertising generates higher word-of-mouth communication. This indicates that nostalgic advertising positively promotes competence-oriented brands while negatively inhibiting warmth-oriented brands. Study 1 validates the interactive effect of nostalgic advertising and brand image on word-of-mouth communication, supporting Hypotheses H1a and H1b.

Study 2

Study 1 demonstrated the interactive effect of nostalgic advertising and brand image on consumer word-of-mouth communication intention through secondary data. Study 2 designs experiments from an emotional arousal perspective to replicate Study 1's findings while deeply exploring the mediating mechanisms of the interaction between advertising type and brand image, and ruling out alternative mediators.

3.1 Research Design and Data Collection

Study 2 employed a 2 (nostalgic advertising: nostalgic vs. non-nostalgic) \times 2 (brand image: warmth-oriented vs. competence-oriented) between-subjects experimental design. Two hundred thirty university students participated, with 222 valid questionnaires retained after excluding improperly completed ones (48.6% male, 51.4% female). Both advertising nostalgia level and brand image were manipulated experimentally.

Participants were randomly assigned to two groups and told that a company had recently designed an advertisement and wanted their feedback. The advertisement, adapted from Muehling and Pascal (2011), manipulated nostalgic level. In the nostalgic condition, the advertisement read: “That was a special era. In my imagination, people were simple, kind, lovely, and persistent then. Past and future are equally important. COTON records every moment for you. Life has many storms, but COTON is always with you. Let’s return to the past with COTON…” followed by product specifications, with a watermark in the lower right corner reading 1985.08.24. In the non-nostalgic condition, the advertisement read: “This is an era full of surprises. Crossing the sea of people, fate brings us together. COTON records every beautiful moment for you. Friends for life, COTON is always with you…” followed by product specifications, with a watermark reading 2019.01.08. Both advertisements are shown in Figure 3 [Figure 3: see original paper]. After viewing, participants completed the nostalgic advertising manipulation check scale (Holbrook, 1993) with seven items ($\alpha = 0.936$).

Each group randomly received a company profile. The warmth-oriented brand profile stated: “COTON is a camera brand that has always been at the forefront of the industry, with products that attract consumer attention. To maintain competitiveness, COTON is dedicated to charity, conveying caring and friendly values.” The competence-oriented brand profile stated: “COTON is a camera brand that has always been at the forefront of the industry, with products that attract consumer attention. To maintain competitiveness, COTON is committed to developing new processes and technologies to improve productivity.” After viewing, participants completed the brand image measurement scale [?], with three items measuring competence ($\alpha = 0.856$): “I think this is a capable brand,” “I think this brand is dynamic,” “I think this brand can indeed perform as advertised” ; and three items measuring warmth ($\alpha = 0.941$): “I think this is a warm brand,” “I think this brand emphasizes friendliness among people,” “I think this brand image promotes caring among friends.”

Finally, participants completed measures for the outcome variable word-of-mouth communication [?], mediators sense of history [?], trust [?], loneliness [?], satisfaction [?], anxiety [?], and security [?] (all on 5-point scales where 1 = strongly disagree and 5 = strongly agree).

3.2 Data Analysis

Manipulation checks: Nostalgic advertising scores were significantly higher than non-nostalgic advertising ($M_{nostalgic} = 4.05$, $SD = 0.61$; $M_{non-nostalgic} = 3.66$, $SD = 0.74$; $F(1, 222) = 18.16$, $p < 0.001$, Cohen’s $d = 0.58$), confirming successful manipulation.

Brand image perceptions also differed significantly. In the warmth-oriented brand condition, participants perceived significantly higher warmth than competence ($M_{warmth} = 4.09$, $SD = 0.84$; $M_{competence} = 3.25$, $SD = 1.07$;

$F(1, 222) = 43.77, p < 0.001, \text{Cohen's } d = 0.87$). In the competence-oriented brand condition, participants perceived significantly higher competence than warmth ($M_{\text{warmth}} = 3.77, SD = 0.81; M_{\text{competence}} = 4.02, SD = 0.63; F(1, 222) = 6.12, p = 0.014 < 0.05, \text{Cohen's } d = 0.34$), confirming successful brand image manipulation.

Main effects analysis: Results showed a significant interaction effect (adjusted $R^2 = 0.36; F(1, 222) = 37.78, p < 0.001, \eta^2 = 0.148$), as shown in Table 5. Group mean effect analysis (Figure 4 [Figure 4: see original paper]) revealed that in the warmth-oriented condition, nostalgic advertising had significantly lower word-of-mouth communication than non-nostalgic advertising ($M_{\text{nostalgic}} = 2.87, SD = 0.68; M_{\text{non-nostalgic}} = 3.50, SD = 0.53; F(1, 119) = 35.90, p < 0.001, \text{Cohen's } d = 1.03$). In the competence-oriented condition, nostalgic advertising had significantly higher word-of-mouth communication than non-nostalgic advertising ($M_{\text{nostalgic}} = 4.22, SD = 0.51; M_{\text{non-nostalgic}} = 3.78, SD = 0.81; F(1, 103) = 9.05, p = 0.003 < 0.01, \text{Cohen's } d = 0.65$). These results replicate Hypotheses H1a and H1b.

For anxiety, the interaction between brand image and advertising type was significant (adjusted $R^2 = 0.11; F(1, 222) = 4.30, p = 0.039 < 0.05, \eta^2 = 0.019$). In the warmth-oriented condition, nostalgic advertising reduced anxiety compared to non-nostalgic advertising ($M_{\text{nostalgic}} = 2.58, SD = 0.69; M_{\text{non-nostalgic}} = 3.15, SD = 1.18; F(1, 119) = 11.79, p = 0.001 < 0.01, \text{Cohen's } d = 0.59$). In the competence-oriented condition, advertising type showed no significant difference in anxiety ($M_{\text{nostalgic}} = 3.38, SD = 0.90; M_{\text{non-nostalgic}} = 3.42, SD = 1.03; F(1, 103) = 0.035, p = 0.85 > 0.05$).

For security, the interaction was significant (adjusted $R^2 = 0.14; F(1, 222) = 5.57, p = 0.019 < 0.05, \eta^2 = 0.025$). Both warmth-oriented ($M_{\text{nostalgic}} = 2.88, SD = 0.87; M_{\text{non-nostalgic}} = 3.30, SD = 1.07; F(1, 119) = 5.26, p = 0.024 < 0.05, \text{Cohen's } d = 0.43$) and competence-oriented brands ($M_{\text{nostalgic}} = 3.76, SD = 0.73; M_{\text{non-nostalgic}} = 2.70, SD = 0.75; F(1, 103) = 49.00, p < 0.001, \text{Cohen's } d = 1.43$) showed that nostalgic advertising generated higher security than non-nostalgic advertising. For nostalgic advertising, competence-oriented brands generated higher security than warmth-oriented brands ($M_{\text{warmth}} = 3.15, SD = 1.06; M_{\text{competence}} = 3.76, SD = 0.73; F(1, 119) = 9.98, p = 0.002 < 0.001, \text{Cohen's } d = 0.67$).

Sequential mediation analysis: Following bootstrap procedures and mediation testing methods [?], we conducted sequential mediation analyses.

For warmth-oriented brands, using Model 8 with 5,000 samples, results at 95% confidence showed the sequential mediation “advertising type → loneliness → satisfaction → word-of-mouth communication” was significant for loneliness (LLCL=0.0005, ULCL=0.170) and satisfaction (LLCL=-0.230, ULCL=-0.008). The alternative path “advertising type → sense of history → trust → word-of-mouth communication” was non-significant for sense of history (LLCL=-0.044, ULCL=0.039) and trust (LLCL=-0.137, ULCL=0.136). The path “advertising

type → anxiety → word-of-mouth communication” was non-significant (LLCL=-0.067, ULCL=0.027), and remained non-significant when satisfaction was added (LLCL=-0.040, ULCL=0.028 for anxiety; LLCL=-0.276, ULCL=-0.019 for satisfaction). Thus, Hypothesis H2a is supported: for warmth-oriented brands, nostalgic advertising reduces word-of-mouth communication through the sequential mediation of loneliness and satisfaction, while ruling out anxiety as an alternative mediator.

For competence-oriented brands, using identical methods, results showed the sequential mediation “advertising type → sense of history → trust → word-of-mouth communication” was significant for sense of history (LLCL=0.0002, ULCL=0.242) and trust (LLCL=0.107, ULCL=0.579). The alternative path “advertising type → loneliness → satisfaction → word-of-mouth communication” was non-significant for loneliness (LLCL=-0.033, ULCL=0.033) and satisfaction (LLCL=-0.164, ULCL=0.206). The path “advertising type → security → word-of-mouth communication” was non-significant (LLCL=-0.017, ULCL=0.160), and remained non-significant when trust was added (LLCL=-0.016, ULCL=0.165 for security; LLCL=0.118, ULCL=0.628 for trust). Thus, Hypothesis H2b is supported: for competence-oriented brands, nostalgic advertising enhances word-of-mouth communication through the sequential mediation of sense of history and trust, while ruling out security as an alternative mediator.

3.3 Discussion

Study 2, from an emotional arousal perspective, found that the two advertising types produce different word-of-mouth communication effects under different brand images. For warmth-oriented brands, non-nostalgic advertising yields better word-of-mouth communication; for competence-oriented brands, nostalgic advertising yields better word-of-mouth communication. These results support Hypotheses H1a and H1b. Additionally, Study 2 examined the mediating mechanisms: for warmth-oriented brands, nostalgic advertising reduces loneliness and increases satisfaction, thereby inhibiting word-of-mouth communication; for competence-oriented brands, nostalgic advertising enhances sense of history and trust, thereby promoting word-of-mouth communication. Loneliness and satisfaction serve as sequential mediators for the interaction between advertising type and warmth-oriented brands, while sense of history and trust serve as sequential mediators for the interaction between advertising type and competence-oriented brands, supporting Hypotheses H2a and H2b. Regarding anxiety and security, while main effects showed nostalgia reduces anxiety and increases security, mediation tests were non-significant, ruling out these alternative mediators.

Study 3

Study 2 validated the interaction model from an emotional arousal perspective. Study 3 designs experiments from a cognitive arousal perspective to replicate

Study 2's findings while deeply exploring the sequential mediation mechanisms of the advertising type and brand image interaction.

4.1 Research Design and Data Collection

Study 3 employed a 2 (nostalgic advertising: nostalgic vs. non-nostalgic) \times 2 (brand image: warmth-oriented vs. competence-oriented) between-subjects experimental design. One hundred sixty university students participated, with 150 valid questionnaires retained (48% male, 52% female).

Similar to Study 2, participants were randomly assigned to groups and received a company profile. The warmth-oriented brand profile stated: "Jupai is a cleaning brand that has always been at the forefront of the industry, with products that attract consumer attention. To maintain competitiveness, Jupai is dedicated to charity, conveying caring, friendly, and protective values." The competence-oriented brand profile stated: "Jupai is a cleaning brand that has always been at the forefront of the industry, with products that attract consumer attention. To maintain competitiveness, Jupai is committed to developing new processes and technologies to improve product quality and productivity." After viewing, participants completed the brand image measurement scale [?], identical to Study 2.

Participants then read either nostalgic or non-nostalgic advertising copy for Jupai, as shown in Figure 5 [Figure 5: see original paper]. Finally, they completed measures for outcome variables, mediators, and demographics, identical to Study 2 (all on 5-point scales where 1 = strongly disagree and 5 = strongly agree).

4.2 Data Analysis

Manipulation checks: Nostalgic advertising scores were significantly higher than non-nostalgic advertising ($M_{nostalgic} = 4.19$, $SD = 0.37$; $M_{non-nostalgic} = 2.18$, $SD = 0.56$; $F(1, 150) = 674.43$, $p < 0.001$, Cohen's $d = 4.23$), confirming successful manipulation.

Brand image perceptions differed significantly. In the warmth-oriented condition, participants perceived significantly higher warmth than competence ($M_{warmth} = 4.16$, $SD = 0.51$; $M_{competence} = 2.32$, $SD = 0.62$; $F(1, 150) = 383.41$, $p < 0.001$, Cohen's $d = 3.24$). In the competence-oriented condition, participants perceived significantly higher competence than warmth ($M_{warmth} = 2.58$, $SD = 0.68$; $M_{competence} = 4.18$, $SD = 0.48$; $F(1, 150) = 278.74$, $p < 0.001$, Cohen's $d = 2.25$), confirming successful brand image manipulation.

Main effects analysis: The interaction effect on word-of-mouth communication was significant (adjusted $R^2 = 0.60$; $F(1, 150) = 106.00$, $p < 0.001$, $\eta^2 = 0.42$), as shown in Table 6. Group mean effect analysis (Figure 6 [Figure 6: see original paper]) revealed that in the warmth-oriented condition, nostalgic adver-

tising had significantly lower word-of-mouth communication than non-nostalgic advertising ($M_{nostalgic} = 3.02$, $SD = 0.45$; $M_{non-nostalgic} = 3.24$, $SD = 0.34$; $F(1, 78) = 5.30$, $p = 0.024 < 0.05$, Cohen' s $d = 0.55$). In the competence-oriented condition, nostalgic advertising had significantly higher word-of-mouth communication than non-nostalgic advertising ($M_{nostalgic} = 4.27$, $SD = 0.31$; $M_{non-nostalgic} = 3.08$, $SD = 0.54$; $F(1, 87) = 174.29$, $p < 0.001$, Cohen' s $d = 2.72$). Hypotheses H1a and H1b were supported.

Sequential mediation analysis: Using bootstrap methods (Model 8, 5,000 samples, 95% confidence level), results for warmth-oriented brands showed the sequential mediation “advertising type → loneliness → satisfaction → word-of-mouth communication” was significant for loneliness (LLCL=-0.33, ULCL=-0.01) and satisfaction (LLCL=0.05, ULCL=0.37). The alternative path “advertising type → sense of history → trust → word-of-mouth communication” was non-significant for sense of history (LLCL=-0.106, ULCL=0.033) and trust (LLCL=-0.070, ULCL=0.156). The moderated mediation effect interval for sense of history and trust included zero, confirming the complete mediation of loneliness and satisfaction, supporting H2a.

For competence-oriented brands, results showed the sequential mediation “advertising type → sense of history → trust → word-of-mouth communication” was significant for sense of history (LLCL=-0.266, ULCL=-0.002) and trust (LLCL=0.007, ULCL=0.381). The alternative path “advertising type → loneliness → satisfaction → word-of-mouth communication” was non-significant for loneliness (LLCL=-0.017, ULCL=0.166) and satisfaction (LLCL=-0.0008, ULCL=0.335). The moderated mediation effect interval for loneliness and satisfaction included zero, confirming the complete mediation of sense of history and trust, supporting H2b.

4.3 Discussion

Study 3 confirms that for warmth-oriented brands, non-nostalgic advertising yields better word-of-mouth communication, while for competence-oriented brands, nostalgic advertising yields better word-of-mouth communication, supporting Hypotheses H1a and H1b. Study 3 further validates the sequential mediation mechanisms: for warmth-oriented brands, nostalgic advertising reduces loneliness, eliminating the need to seek social connection and generating psychological satisfaction that reduces word-of-mouth communication; for competence-oriented brands, nostalgic advertising enhances sense of brand history, and this historical endorsement increases brand trust, thereby promoting word-of-mouth communication. Loneliness and satisfaction serve as sequential mediators for the interaction between advertising type and warmth-oriented brands, while sense of history and trust serve as sequential mediators for the interaction between advertising type and competence-oriented brands, supporting Hypotheses H2a and H2b. Combined with Study 1' s secondary data and Studies 2 and 3' s scenario experiments, our proposed hypotheses are supported.

5.1 Theoretical Contributions

The development of social media has accelerated brand diffusion, with nostalgia-themed media communication representing a critical component. Existing research considers forwarding and sharing behaviors on social media as important forms of word-of-mouth communication and combines experimental methods to explore relationships with purchase behavior. Early research primarily addressed nostalgia's emotional dimension, unanimously concluding that nostalgia brings positive economic and brand value, yet few scholars have examined nostalgia's cognitive dimension. This study adopts an emotional dual-dimension perspective, using nostalgic advertising as an entry point. First, secondary data validated the interactive effect between nostalgic advertising and brand image. Then, between-subjects experimental designs replicated this interaction and, integrating cognitive emotion theory, verified differential internal mechanisms through which advertising type and brand image interaction affect consumer word-of-mouth communication. Theoretical contributions include:

- (1) **Enriching understanding of nostalgic advertising.** Previous research focused on positive aspects of nostalgic advertising, assuming it always benefits businesses, while neglecting contexts where it inhibits brand communication due to mismatches between advertising type and brand image. This study reveals the dual nature of nostalgic advertising: for warmth-oriented brands, consumers interpret nostalgic advertising more affectively, inhibiting word-of-mouth communication; for competence-oriented brands, consumers interpret it more cognitively, promoting word-of-mouth communication.
- (2) **Expanding understanding of nostalgic advertising's cognitive and affective attributes, deepening comprehension of emotional dual-dimensions.** Prior research examined nostalgic advertising's impact on consumers primarily from its affective dimension, neglecting its cognitive dimension. This study explains how consumers' different interpretations of emotions produce varying word-of-mouth communication effects from dual-dimension perspective. It reveals that consumers perceive warmth-oriented brands affectively, where nostalgic advertising as an emotion inhibits word-of-mouth communication, while they perceive competence-oriented brands rationally, where nostalgic advertising as cognitive information promotes word-of-mouth communication.
- (3) **Exploring internal mechanisms of nostalgic advertising's effect on word-of-mouth communication.** Previous research primarily examined single mediation mechanisms such as affective decision-making [?], advertising attitude [?], or brand attitude [?]. This study verifies the sequential double mediation mechanism of nostalgic advertising's influence on word-of-mouth communication from a consumer psychology perspective: for warmth-oriented brands, nostalgic advertising as an emotion alleviates loneliness and satisfies consumers, reducing their need to share

for social connection and thereby decreasing word-of-mouth communication; for competence-oriented brands, nostalgic advertising as information enhances sense of brand history, increasing trust and thereby promoting word-of-mouth communication.

5.2 Managerial Implications

Increasingly, businesses adopt “emotional appeal” strategies using affective advertising to 拉近与消费者之间的距离 and promote brand communication, with nostalgic emotional advertising being a crucial component. This study’s findings on how nostalgic advertising influences consumer word-of-mouth communication offer preliminary conclusions to help businesses optimize advertising strategies. The research enables deeper understanding of nostalgic advertising. Contrary to previous research suggesting nostalgic advertising always produces positive effects, this study finds it does not uniformly benefit all brands. For competence-oriented brands, nostalgic advertising yields better word-of-mouth communication than non-nostalgic advertising; for warmth-oriented brands, nostalgic advertising yields poorer results than non-nostalgic advertising. Therefore, when deciding whether to adopt nostalgic advertising, businesses must have a clear positioning and understand their brand image in consumers’ minds. Warmth-oriented brands should be cautious with nostalgic advertising, while competence-oriented brands may enhance communication effectiveness through nostalgic advertising.

5.3 Future Research Directions

Four avenues for future research on nostalgic advertising are proposed:

First, this study examined how different advertising types influence consumer word-of-mouth communication. Future research could enrich outcome measures by exploring nostalgic advertising’s effects on purchase intention, advertising attitude, or brand attitude.

Second, nostalgic advertising can be divided into personal nostalgia and historical nostalgia [?]. Future research could investigate differential effects of these nostalgia types on consumer word-of-mouth communication.

Third, this study examined nostalgic advertising’s impact from affective and cognitive dimensions, but nostalgia may trigger multiple different emotions and cognitions that were not strictly distinguished. Future research could investigate differential effects of various emotions and cognitions evoked by nostalgia on word-of-mouth communication.

Fourth, this study examined nostalgic advertising’s effects from different brand types. Future research could investigate effects from different product types (hedonic/utilitarian) on consumer word-of-mouth communication.

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Appendix 1: Study 2 Questionnaire

Consumer Behavior Research W-H

Hello! We are researchers from Wuhan University conducting an academic research survey. We would appreciate a few minutes of your time. All information and data collected will be used for statistical analysis only. Thank you for your support!

Part I

COTON is a camera brand that has always been at the forefront of the industry, with products that attract consumer attention. To maintain competitiveness, COTON is dedicated to charity, conveying caring and friendly values.

After reading the company profile, please answer the following questions (1 = strongly disagree, 5 = strongly agree):

(Competence items) - I think this is a capable brand - I think this brand is dynamic - I think this brand' s products can indeed perform as advertised

(Warmth items) - I think this is a warm brand - I think this brand emphasizes friendliness among people - I think this brand image promotes caring among friends

Below is an advertisement from this company:

After reading the advertisement, please answer the following questions (1 = strongly disagree, 5 = strongly agree):

(Nostalgia manipulation check) - Reminds me of past events - Helps me recall happy memories - Makes me feel nostalgic - Makes me recall precious past times - Reminds me of my childhood - Brings me back to past memories - Reminds me of past times

Based on your actual situation, please answer the following questions (1 = strongly disagree, 5 = strongly agree):

(Word-of-mouth communication) - I would recommend this company' s products to others - I would share this company' s products with others - I would share (forward) this company' s products - I would likely talk about this company' s products with friends - I would share this company' s products with family or close friends

Part II

(Sense of history) - This brand is time-honored - This brand has a sense of history - This brand has historical depth

(Loneliness) - I feel I lack friendship from others - I feel lonely - My relationships with people around me are distant - I feel no one truly understands me - I have many people around but none are familiar

(Trust) - This brand is honest and trustworthy - This brand is trustworthy - I can trust this brand when purchasing products - This brand is reliable - I have confidence in this brand

(Satisfaction) - This is an advertisement that makes me feel happy - This is an advertisement that makes me feel joyful - This is an advertisement that makes me feel satisfied - This is an advertisement that makes me feel interested

(*Anxiety*) - I usually feel uncomfortable among strangers - I feel nervous when talking with teachers or superiors - I may be shy in social interactions compared to most people - I wish I had more confidence in social situations - I feel anxious in social situations - I usually feel nervous calling people I don' t know well

(*Security*) - I never dare to express my opinions - I feel life is always uncertain and unpredictable - I always worry something unexpected will happen - I can never refuse friends' requests - I always worry good friendships will deteriorate - I always worry my life will become chaotic - I fear establishing and maintaining close relationships with others

Part III

Consumer Behavior Research W-F

[Similar structure with warmth-oriented brand profile and non-nostalgic advertisement]

Consumer Behavior Research X-H

[Similar structure with competence-oriented brand profile and nostalgic advertisement]

Consumer Behavior Research X-F

[Similar structure with competence-oriented brand profile and non-nostalgic advertisement]

Appendix 2: Study 3 Questionnaire

Consumer Behavior Research W-F

[Similar structure with Jupai cleaning brand, warmth-oriented profile, and non-nostalgic advertisement]

Consumer Behavior Research W-H

[Similar structure with Jupai cleaning brand, warmth-oriented profile, and nostalgic advertisement]

Consumer Behavior Research X-H

[Similar structure with Jupai cleaning brand, competence-oriented profile, and nostalgic advertisement]

Consumer Behavior Research X-F

[Similar structure with Jupai cleaning brand, competence-oriented profile, and non-nostalgic advertisement]

Appendix 3: Original Study 2

[Content identical to Study 2 section above, detailing the experimental design, manipulation, and results with specific statistical values]

Appendix 4: Python Code for Weibo Crawling

```
#!/usr/bin/env python
# -*- coding:utf-8 -*-
import urllib.request
import json

# Define Weibo ID to crawl
id='1259110474'
# Set proxy IP
proxy_addr="122.241.72.191:808"

# Define page opening function
def use_proxy(url,proxy_addr):
    req=urllib.request.Request(url)
    req.add_header("User-Agent","Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/41.0.2826.150 Safari/537.36")
    proxy=urllib.request.ProxyHandler({'http':proxy_addr})
    opener=urllib.request.build_opener(proxy,urllib.request.HTTPHandler)
    urllib.request.install_opener(opener)
    data=urllib.request.urlopen(req).read().decode('utf-8','ignore')
    return data

# Get containerid from Weibo homepage (required for crawling content)
def get_containerid(url):
    data=use_proxy(url,proxy_addr)
    content=json.loads(data).get('data')
    for data in content.get('tabsInfo').get('tabs'):
        if(data.get('tab_type')=='weibo'):
            containerid=data.get('containerid')
            return containerid

# Get basic user information: nickname, profile URL, avatar, following count, follower count
def get_userInfo(id):
    url='https://m.weibo.cn/api/container/getIndex?type=uid&value='+id
    data=use_proxy(url,proxy_addr)
    content=json.loads(data).get('data')
    profile_image_url=content.get('userInfo').get('profile_image_url')
    description=content.get('userInfo').get('description')
    profile_url=content.get('userInfo').get('profile_url')
    verified=content.get('userInfo').get('verified')
    guanzhu=content.get('userInfo').get('follow_count')
```

```
name=content.get('userInfo').get('screen_name')
fensi=content.get('userInfo').get('followers_count')
gender=content.get('userInfo').get('gender')
urank=content.get('userInfo').get('urank')
print("Weibo nickname: "+name+"\n"+"Profile URL: "+profile_url+"\n"+"Avatar URL: "+profile_url)

# Get Weibo content and save to text file: includes content, detail URL, likes, comments, followers
def get_weibo(id,file):
    i=1
    while True:
        url='https://m.weibo.cn/api/container/getIndex?type=uid&value='+id
        weibo_url='https://m.weibo.cn/api/container/getIndex?type=uid&value='+id+'&containerid='+id
        try:
            data=use_proxy(weibo_url,proxy_addr)
            content=json.loads(data).get('data')
            cards=content.get('cards')
            if(len(cards)>0):
                for j in range(len(cards)):
                    print("-----Crawling page "+str(i)+" , post "+str(j)+"-----")
                    card_type=cards[j].get('card_type')
                    if(card_type==9):
                        mblog=cards[j].get('mblog')
                        attitudes_count=mblog.get('attitudes_count')
                        comments_count=mblog.get('comments_count')
                        created_at=mblog.get('created_at')
                        reposts_count=mblog.get('reposts_count')
                        scheme=cards[j].get('scheme')
                        text=mblog.get('text')
                        with open(r'C:\Users\23737\Desktop\Weibo1','a',encoding='utf-8') as fh:
                            fh.write("Post URL: "+str(scheme)+"|"+"Time: "+str(created_at)+"\n")
                    i+=1
                else:
                    break
            except Exception as e:
                print(e)

if __name__=="__main__":
    file=id+".txt"
    get_userInfo(id)
    get_weibo(id,file)
```

Note: Figure translations are in progress. See original paper for figures.

Source: ChinaXiv – Machine translation. Verify with original.