

# The interplay of information order and locus of attention on the truth effect in healthy food advertisements

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## Abstract

The perceived truthfulness of advertised claims plays a vital role in healthy food marketing, shaping positive consumer responses. This study investigates how the presentation order of healthy ingredients and food products commonly featured in advertisements influences the perceived truthfulness of these claims, also known as the truth effect, using the congruency effect as a theoretical framework. Two studies were conducted to explore the impact of the compatibility between a contextual factor (presentation order) and an individual difference (locus of attention) on the subjective experience of processing fluency, and how it subsequently enhances the truth effect, wherein consumers believe the advertised claims about the product. Studies 1 and 2 revealed that individuals, depending on their locus of control, are more likely to exhibit a heightened truth effect when the food product is presented first, followed by the healthy ingredient as an attribute, or when the information is presented in the opposite order. Additionally, the observed effect was found to be completely mediated by processing fluency. These findings make theoretical and practical contributions by highlighting the role of the congruency effect as a novel determinant of the truth effect.

## KEYWORDS

congruency effect, locus of attention, order of information, processing fluency, truth effect

## 1 | INTRODUCTION

Amid the rising concerns of consumers regarding health and their preference for natural ingredients, such as fresh vegetables and whole grains, the decision-making process for healthy food purchases is significantly influenced by these factors. In response to these consumer preferences, companies have adopted a prevalent practice of presenting food products along with their healthy attributes, primarily through health food advertisements. These advertisements promote various healthy food products, free from artificial and unhealthy ingredients (e.g., 100% natural

fruit juice without added sugar, artificial colors, or preservatives), by emphasizing their health benefits to effectively convince consumers to purchase them. Despite the common practice of presenting both the ingredient and the final product together in healthy food communication, limited attention has been given to the order of information presentation. Therefore, this research focuses on the context of healthy food advertising and explores how the sequence of presented information, concerning the healthy ingredient and final product, influences consumers' perceived convincingness of the advertised claims—also known as the truth effect—within the communication context.

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In the truth effect literature, numerous studies have extensively documented the positive impact of processing fluency on consumers' belief about provided information. Processing fluency refers to the experienced ease with which ongoing information is processed, leading consumers to judge the offered information as more likely to be true (Koch & Forgas, 2012; Reber & Schwarz, 1999; Unkelbach & Stahl, 2009; Unkelbach, 2006). Previous research has primarily focused on a limited set of sources, specifically investigating single factors to shed light on the underlying mechanisms of processing fluency, such as repetition (Hasher et al., 1977; Hawkins & Hoch, 1992; Roggeveen & Johar, 2002; Sundar et al., 2015) and perceptual contrast (Reber & Schwarz, 1999; Unkelbach & Stahl, 2009; Unkelbach, 2006).

However, an alternative perspective in the literature suggests that the congruency effect plays a pivotal role in inducing processing fluency (Lee & Aaker, 2004; Maio & Haddock, 2007). Despite both areas of literature employing processing fluency, they have not been fully integrated, and their investigation angles remain distinct. Consequently, a notable gap exists in the literature, warranting exploration to establish a comprehensive link between the congruency effect, processing fluency, and the truth effect. To address this gap in the literature, the present study introduced two interacting factors, namely, the contextual factor of information presentation order and the cultural/individual difference of locus of control, thus creating the congruency effect, which serves as a comprehensive framework to be tested.

In light of these observations, the present research aims to address this gap and proposes the congruency effect as a potential novel determinant of the truth effect. By investigating the influence of the congruency effect on processing fluency and the truth effect sequentially, this study endeavors to shed new light on an unexplored aspect of the truth effect literature. The findings from this research will be essential in bridging the gap between these two research areas, facilitating a more holistic understanding of how congruency, processing fluency, and the truth effect interrelate. Through this investigation, the current study aims to contribute valuable insights to the field of consumer psychology and advertising effectiveness.

## 2 | THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

### 2.1 | Truth effect

There is a growing body of empirically interesting literature on the truth effect in persuasion. The truth effect, also known as the "illusory truth effect," is a cognitive bias where people are more likely to believe a statement is true if they are repeatedly exposed to the statement regardless of whether it is actually true or not (i.e., Hasher et al., 1977; Hawkins & Hoch, 1992; Roggeveen & Johar, 2002; Sundar et al., 2015). In other words, if people have heard or seen it before, the induced familiarity can create a sense of credibility even if the statement is actually false or misleading.

This effect has been demonstrated in various studies, where participants have been shown to be more likely to rate a statement they have heard or seen before as true even if they had earlier been told it was false. In an early study of the truth effect, this bias was tested mostly under the condition of the statement being repeated multiple times. Hasher et al. (1977), while rating truthfulness during three sessions, showed that participants were more likely to believe repeated statements to be true than new statements. The truth effect has also been robustly demonstrated for product-related claims (Hawkins & Hoch, 1992; Roggeveen & Johar, 2002) and opinion statements. Moreover, frequency (Hasher et al., 1977), recognition (Bacon, 1979), and familiarity (Hawkins & Hoch, 1992; Roggeveen & Johar, 2002) as mediators have been found to explain the underlying mechanism of the truth effect.

Recently, some studies have suggested that while repeated exposure is a common method whereby the truth effect is studied, it is not the only way that it can occur. In addition, they explored how the truth effect can also be influenced by factors such as processing fluency. The truth effect can occur when the statement is presented in a way that is easy to process and remember (i.e., Koch & Forgas, 2012; Reber & Schwarz, 1999; Unkelbach, 2006, 2007; Unkelbach & Stahl, 2009). Of particular relevance to the current study is the metacognitive experience of processing fluency, which refers to the subjective feelings of the ease or difficulty of processing information. This experience can be influenced and enhanced by various sources, including repeated exposure (Sundar et al., 2015), readability (Oppenheimer, 2008), figure and ground contrast (Koch & Forgas, 2012), and duration of exposure (Hawkins & Hoch, 1992). The enhanced processing fluency, in turn, has been found to evoke the truth effect (Hawkins & Hoch, 1992; Koch & Forgas, 2012; Oppenheimer, 2008; Sundar et al., 2015).

For instance, Koch and Forgas (2012) manipulated perceptual fluency by using high- or low-contrast backgrounds (i.e., black letters on a white background vs. black letters on a gray background, respectively). Participants in the high-contrast background condition reported higher ratings of truth judgment than those in the low-contrast background condition. Similarly, Unkelbach (2007) employed color contrast to create experimental conditions for processing fluency and found that manipulated contrasts directly enhanced the truth effect.

Significantly, despite the multitude of studies emphasizing the critical role of processing fluency in the truth effect, the existing literature has predominantly focused on investigating single determinants that directly manipulate different levels of processing fluency. Notably, within the processing fluency literature, the congruency effect, which stems from the interaction effect of two factors, has been extensively explored and stands as a prevalent source of processing fluency (Cardwell et al., 2017; Han & Shavitt, 1994; Higgins et al., 2003; Jang & Shin, 2019; Lee & Aaker, 2004; Lee & Labroo, 2004; Schwarz, 2004; Zhang & Gelb, 1996). However, surprisingly, this effect has not received the attention it deserves in the context of the truth effect. Addressing this significant gap in the literature, the present study directs its focus toward testing the

congruency effect of the information presentation order as a contextual factor and the locus of control as an individual difference, as a potentially influential determinant of the truth effect through the lens of processing fluency.

## 2.2 | Expectation for the congruency-induced truth effect

As discussed, while the truth effect is often associated with repeated exposure, it can also occur in other contexts when the statement is presented in a way that is easy to process and remember, even when people are only exposed to it once (Alter & Oppenheimer, 2009; Jacoby et al., 1989; Reber & Schwarz, 1999; Topolinski & Strack, 2009; Whittlesea, 1993; Whittlesea & Williams, 1998). In other words, when a statement is clear and simple to understand, people are more likely to perceive it as true. The truth effect is because our brains tend to associate ease of processing with truth and familiarity (Whittlesea, 1993), even if we are encountering the statement for the first time. The findings show that the subconscious experience of fluency in processing information leads to a stronger judgment of truth, regardless of how the processing fluency was induced (for a review, see Dechêne et al., 2010).

In line with this reasoning, this study suggests that consumers are more likely to exhibit a stronger truth effect when they experience processing fluency resulting from the congruency effect in a healthy food communication context. Because healthy food advertising often uses two key pieces of information, namely, a healthy ingredient and a food product, it is meaningful to investigate a more effective way to present this information. This study specifically focuses on which sequential order of information enhances persuasion effectiveness. It is important to note that the order of information presented in advertising may not affect all consumers in the same way, which suggests the existence of a boundary condition. This study found that individuals' locus of attention, as characterized by their thinking style, moderates the effect of information order in this context. Specifically, there is a congruency effect between the information order and individuals' locus of attention, which possibly contributes to enhancing the truth effect.

## 2.3 | Locus of attention-information order congruency and the truth effect

Numerous studies have demonstrated that people have two fundamental approaches to perceiving and comprehending their surroundings: analytic and holistic thinking (Monga & John, 2008; Monga & Williams, 2016; Morris & Peng, 1994; Nisbett et al., 2001). The key difference between these thinking styles is locus of attention, which can be field-independent or field-dependent, and this difference has various consequences. Holistic thinking involves paying attention to the context or field as a whole, including the relationships between a focal object and the field, and explaining and predicting events based on those relationships (Choi et al., 2007; Nisbett et al., 2001). Analytic thinking, on the other hand, involves

focusing on the attributes of the object, detaching it from its context, assigning it to categories, and using rules about those categories to explain and predict the object's behavior (Choi et al., 2007; Nisbett et al., 2001). These two thinking styles vary not only across cultures, with Westerners being more analytic and field-independent and Asians being more holistic and field-dependent thinkers (Nisbett et al., 2001; Peng & Nisbett, 1999), but also within a culture as an individual difference (Choi et al., 2007).

In this research stream, the current research proposes the interactive influence of information presentation order depending on individuals' locus of attention in healthy food advertisements. In particular, there is likely to be a more compatible or compelling presentation order of information for the particular locus of attention style when both a final product and ingredient information are sequentially provided within a one-unit advertisement. In this research context, the final product can be considered as a focal object, that is, as a product category, whereas the ingredient can be seen as field information, that is, as attribute information (Chiu, 1972; Ji et al., 2001). Consequently, field-independent individuals may feel that the sequence of the final product presented first and the ingredient as attribute information presented later in an ad is more comfortable and/or easy to understand because their focal information was presented first, and so they can easily ignore the attribute information, which is compatible with their natured locus of attention. On the other hand, when the ingredients are presented first and the final product follows, field-dependent individuals would perceive the order of information and the ad itself to be appropriate, right, and better fitting because this order facilitates figuring out the relationship between the provided information and incorporating several pieces of information together.

To sum up, if the ad information is displayed compatibly with individuals' locus of attention style, people will show a stronger truth effect, that is, enhanced convincingness of the advertised messages. This can be summarized in the following hypotheses:

**H1** (Moderation effect): Individuals' locus of attention will moderate the relationship between the presentation order of information and the truth effect.

**H1a** Field-independent individuals will exhibit a greater truth effect in the "product-first, attribute-next" condition than in the reverse order condition.

**H1b** Field-dependent individuals will exhibit a greater truth effect in the "attribute-first, product-next" condition than in the reverse order condition.

## 2.4 | Underlying psychological mechanism: processing fluency as mediator

Several studies have shown that consumers respond more favorably to messages that are congruent with their goals and characteristics

(Arnold et al., 2014; Cesario et al., 2004; Higgins et al., 2003; Lee & Aaker, 2004; Roy & Naidoo, 2017). When message content and framing match recipients' characteristics, the message is easier to understand and process due to positive familiarity, resulting in a positive metacognitive experience (Lee & Aaker, 2004; Maio & Haddock, 2007). For example, Lee and Aaker (2004) found that based on regulatory orientation theory, compatibility between message framings and the individual's goal orientation results in more effective communication. Processing fluency, or the ease with which stimuli are understood and processed, plays a crucial role in constructing preferences, enhancing confidence, forming judgments of truth and frequency, and increasing positive affect or emotions (Alter & Oppenheimer, 2009; Cardwell et al., 2017; Maier & Dost, 2018; Reber et al., 1998; Sohn, 2017).

Based on these findings, the congruence between information order (product information first and attribute information later, or vice versa) and locus of attention styles should transfer to truth judgments (Camacho et al., 2003; Higgins, 2000; Higgins et al., 2003) if the information order is more compatible with a particular locus of attention style, as proposed in this study. This leads to the formulation of the second set of hypotheses.

**H2** (Moderation effect): Individuals' locus of attention will moderate the relationship between the presentation order of information and consumers' processing fluency.

**H2a** Field-independent individuals will exhibit greater processing fluency in the "product-first, attribute-next" condition than in the reverse order condition.

**H2b** Field-dependent individuals will exhibit greater processing fluency in the "attribute-first, product-next" condition than in the reverse order condition.

The current study predicts that congruency between the ad message presentation order and individuals' locus of attention will lead to processing fluency. This means that when the presentation order of information aligns with the individuals' locus of attention style, people are more likely to experience processing fluency when making decisions about the target. Moreover, the smooth processing fluency is likely to result in a more favorable response, specifically, a stronger belief toward the stimulus (i.e., the advertised information), indicating a stronger truth effect. Based on this, the third hypothesis is formulated as follows:

**H3** (Underlying mechanism): Processing fluency will mediate the interactive impact between individuals' locus of attention and the presentation order of information in an ad on truth effect.

To sum, the proposed research model is as follows (see Figure 1).

### 3 | STUDY 1

The purpose of Study 1 is twofold. First, it aims to investigate whether the order of information has a differential effect on consumers' perception of the truthfulness of claims made in healthy food advertisements, depending on their locus of attention style (field-independent vs. field-dependent). Second, the study aims to provide evidence to support the claim that processing fluency mediates the observed effects of information order and locus of attention on the truth effect.

#### 3.1 | Methods

##### 3.1.1 | Design

The hypotheses were tested in a 2 (presentation order of information: *attribute-first* vs. *product-first*)  $\times$  2 (locus of attention: field-independent vs. field-dependent) between-subjects design.

##### 3.1.2 | Participants

To conduct the empirical test, the locus of attention was considered as a cultural difference in Study 1. In accordance with the previous literature (i.e., Monga & John, 2007; Nisbett et al., 2001), two countries were selected as representative samples of two different types of locus of attention: the United States as field-independent individuals and Korea as field-dependent individuals. Research on cultural differences in thinking style (Monga & John, 2007; Nisbett et al., 2001) suggests that individualistic cultures (such as the United States) promote field-independent attention characterized by analytic thinking, whereas collectivistic cultures (such as Korea) promote field-dependent attention characterized by holistic thinking. To validate these expected cultural differences in the locus of attention, a preliminary study was conducted with 67 participants (28 from the United States and 39 from Korea). Participants reported their general

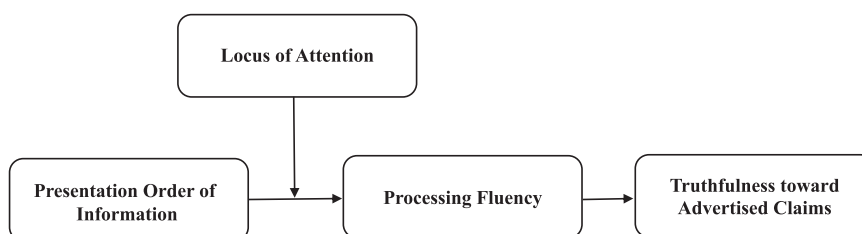


FIGURE 1 Research model.

thinking style tendency using 12 items adapted from Choi et al. (2007; see Supporting Information: Appendix C), with a higher score representing holistic thinking ( $M = 4.98$ ,  $SD = 0.51$ ; 1 = strongly disagree, 7 = strongly agree). Consistent with prior research, a one-way ANOVA revealed that analytic thinking was more dominant among US participants compared to Korean participants ( $M_{US} = 4.76$ ,  $SD = 0.50$  vs.  $M_{Korea} = 5.13$ ,  $SD = 0.47$ ,  $F(1, 65) = 9.751$ ,  $p = 0.003$ ). The locus of attention, which is one of the sub-dimensions of thinking styles, displayed the expected patterns in the study. Field-independent attention was found to be more prevalent in the US participants than in the Korean participants ( $M_{US} = 4.40$ ,  $SD = 0.78$  vs.  $M_{Korea} = 5.17$ ,  $SD = 0.84$ ,  $F(1, 65) = 14.335$ ,  $p < 0.001$ ). It is important to note that a higher score indicates field-dependent attention. This result confirms the compatibility between culture and locus of attention, with the US participants demonstrating a field-independent attention style and the Korean participants displaying a field-dependent attention style. As a result, the study successfully validated the selection of representative samples for two different types of locus of attention (i.e., the United States and Korea).

As a result, 167 US participants (47.9% female) and 118 Korean participants (50.9% female) were recruited; they completed an online survey for a partial course credit or a small monetary reward. Participants were randomly assigned to one of two conditions for the presentation order of information.

### 3.1.3 | Procedure

The experiment was designed and conducted using a Qualtrics questionnaire. The survey was described as marketing research on a draft proposal of a commercial ad that would be launched soon. The target product being marketed was tomato juice, which was selected due to its commonness across the two countries and its suitability for all ages and genders. Neither knowledge nor skills were required to understand descriptions concerning its ingredients and the final product.

The survey presented two slides sequentially on the computer screen, one displaying a fresh tomato as an attribute of the product, and the other showcasing the tomato juice as the final product, thus providing category membership (see Supporting Information: Appendix A). The order in which the slides were presented was manipulated. In the attribute-first condition, participants were shown an image of fresh tomatoes first, followed by an image of tomato juice, while in the product-first condition, the order of the images was reversed. After viewing the advertisement, participants rated the subjective truthfulness of the advertised tomato juice's purity on a 7-point scale, indicating their belief in the statement "I believe the fresh juice is 100% tomato juice" (adapted from Sundar et al., 2015; 1 = strongly disagree, 7 = strongly agree). This rating served as an indicator of the truth effect in this context. Because the photos were presented without any accompanying messages or descriptions, they could create the impression that the advertised juice was made from fresh tomatoes. Therefore, evaluating the product's purity could serve as an indicator of the truthfulness of the advertising claims in

this context. Participants also rated their processing fluency using two bipolar items on a 7-point scale; "not at all organized—well organized", "not at all structured—well structured" (adapted from Chae & Hoegg, 2013; Cronbach's  $\alpha = .92$ ) and reported their general tendencies toward liking, interest, and experience with juice on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Finally, participants provided their demographic information.

## 3.2 | Results

### 3.2.1 | Control variables

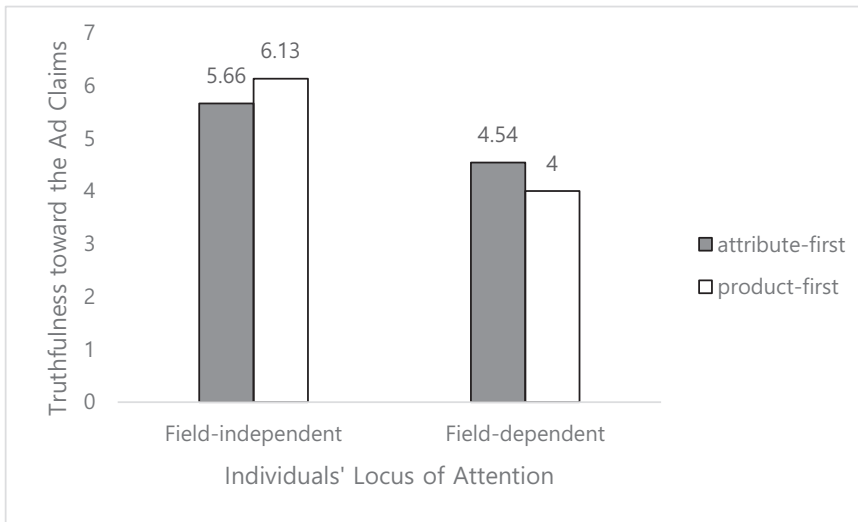
Participants' general tendencies toward juice (liking, interest, and experience) were submitted to 2 (presentation order of information)  $\times$  2 (locus of attention) MANOVA. There were no significant interactions of information order and locus of attention ( $ps > 0.10$ ). These results confirm that the manipulation in this study did not affect the general perception toward the juice, so these variables were excluded from further analysis.

### 3.2.2 | Truth effect

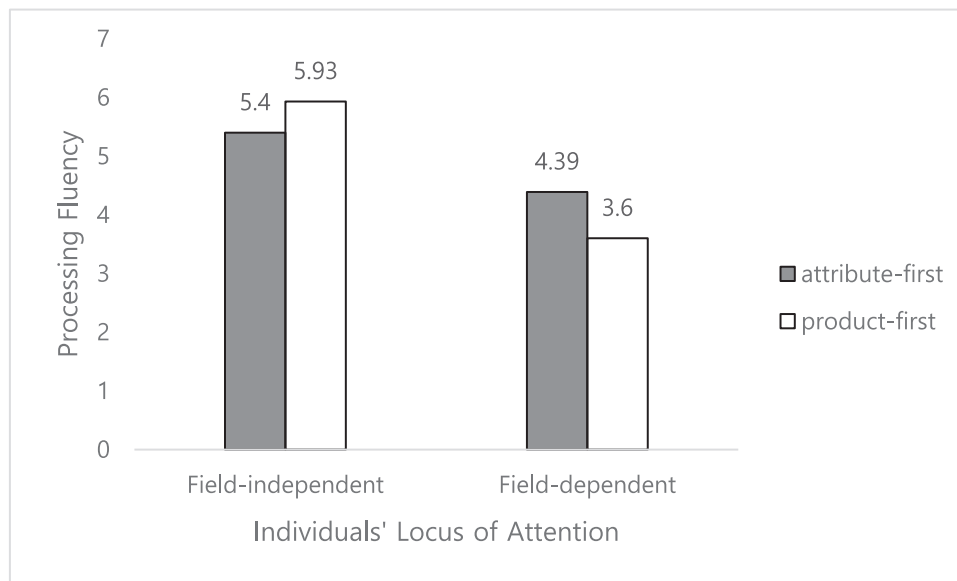
A 2 (presentation order of information)  $\times$  2 (locus of attention) ANOVA with the subjective truthfulness of the advertised tomato juice's purity was performed. As expected, the results demonstrated a significant two-way interaction between information order and locus of attention ( $F(1, 280) = 7.740$ ,  $p = 0.006$ ). Specifically, planned contrasts showed an expected congruency effect: as hypothesized, field-independent individuals (the US participants) estimated significantly higher product purity in the *product-first* condition than in the *attribute-first* condition ( $F(1, 280) = 4.089$ ,  $p = 0.044$ ;  $M_{\text{attribute-first}} = 5.66$ ,  $SD = 1.40$  vs.  $M_{\text{product-first}} = 6.13$ ,  $SD = 1.06$ ), whereas field-dependent individuals (Korean participants) showed significantly greater product purity estimation in the *attribute-first* condition than in the *product-first* condition ( $F(1, 280) = 3.753$ ,  $p = 0.054$ ;  $M_{\text{attribute-first}} = 4.54$ ,  $SD = 1.71$  vs.  $M_{\text{product-first}} = 4.00$ ,  $SD = 1.83$ ). Thus, H1 was supported (see Figure 2).

### 3.2.3 | Processing fluency

A 2  $\times$  2 ANOVA revealed a significant interaction effect for processing fluency ( $F(1, 280) = 15.606$ ,  $p < 0.001$ ). The contrast analyses revealed expected results of consistent patterns for field-independent individuals (the US participants;  $F(1, 280) = 6.253$ ,  $p = 0.013$ ;  $M_{\text{attribute-first}} = 5.40$ ,  $SD = 1.55$  vs.  $M_{\text{product-first}} = 5.93$ ,  $SD = 1.10$ ) and field-dependent individuals (Korean participants;  $F(1, 280) = 9.354$ ,  $p = 0.002$ ;  $M_{\text{attribute-first}} = 4.39$ ,  $SD = 1.34$  vs.  $M_{\text{product-first}} = 3.60$ ,  $SD = 1.44$ ). Participants experienced greater processing fluency when the information was presented in an order compatible with their locus of attention style than in the reverse order. These results support H2 (see Figure 3).



**FIGURE 2** Information order, locus of attention, and the truth effect (Study 1).



**FIGURE 3** Information order, locus of attention, and processing fluency (Study 1).

### 3.2.4 | Moderated mediation analysis

The PROCESS analysis using Model 8 (Hayes, 2018) was used to examine the indirect effects of the interaction between the presentation order and individuals' locus of attention on the subjective truthfulness of the advertised tomato juice's purity (the truth effect) through processing fluency. The analysis was conducted using bootstrapping with 5000 resamples to estimate the indirect effects and 95% confidence intervals (CIs).

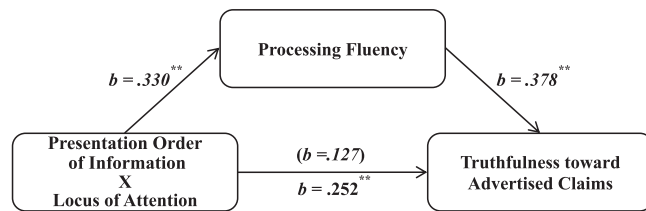
The results of the analysis indicated that the index of the proposed moderated mediation effect was significant (indirect effect = 0.25, 95% CI = [0.11, 0.44]). Specifically, the interaction between presentation order and individuals' locus of attention was significantly related to processing fluency ( $b = 0.33$ ,  $SE = 0.08$ ,  $t = 3.95$ ,  $p < 0.001$ , 95% CI = [0.17, 0.49]), and processing fluency was significantly related to the truth effect ( $b = 0.38$ ,  $SE = 0.06$ ,  $t = 6.21$ ,  $p < 0.001$ , 95% CI = [0.26, 0.50]). Additionally, if

processing fluency is included in the model, the direct interaction between presentation order and locus of attention on the truth effect was not significant ( $b = 0.13$ ,  $SE = 0.09$ ,  $t = 1.46$ ,  $p > 0.05$ , 95% CI = [-0.04, 0.30]), suggesting that processing fluency fully mediated the relationship among presentation order, locus of attention, and the truth effect (Zhao et al., 2010; see Figure 4). Hence, H3 was supported.

### 3.3 | Discussion

These findings confirm the expected novel finding that a congruency effect contributes to enhancing the truth effect. That is, participants showed greater truthfulness toward the advertised information (i.e., perceived product purity) in the congruency than in the incongruency conditions. Specifically, field-independent individuals (US participants) estimated higher product purity when the product information was





**FIGURE 4** Moderated mediation analysis (Study 1).

\* $p < 0.05$ , \*\* $p < 0.01$ .

presented first, followed by the attribute information, whereas field-dependent individuals (Korean participants) estimated higher product purity in the reverse order condition. These differences were derived from compatibility with information order and individuals' locus of attention.

The next study aimed to replicate the results found in Study 1 by examining the differences in locus of attention within cultures that arise due to individual differences, as demonstrated in previous studies (Choi et al., 2007; Monga & John, 2008). To better comprehend the underlying mechanism, the next study involved conducting an empirical test of the serial mediation of processing fluency and the truth effect, both of which are believed to influence advertising attitudes. Study 2 further strengthens the generalizability of the concept discussed in this paper by utilizing a different stimulus, a loaf of bread, as the final product, with whole grain as the attribute (see Supporting Information: Appendix B) to test the proposed relationship.

## 4 | STUDY 2

### 4.1 | Methods

#### 4.1.1 | Design and participants

The study was a 2 (presentation order of information: *attribute-first* vs. *product-first*) between-subjects design, and locus of attention was measured to identify whether they had part-focused or field-focused attention. As previously mentioned, Study 2 aims to investigate the locus of attention within the same culture, the United States, specifically focusing on individual differences between field-independent versus field-dependent individuals.

In total, 198 US participants (26.3% female) were recruited, and they completed the online survey for a monetary reward. They were randomly assigned to one of two conditions of presentation order of information.

#### 4.1.2 | Procedure

The general manipulation and procedure used in Study 2 were similar to those of Study 1 except for three notable differences. First, measurement items were included to identify individual differences in locus of attention, and attitude toward advertising was measured to test the serial mediation model as a psychological mechanism.

Secondly, stimuli photos were presented with messages to enable direct measurement of truthfulness toward the advertised claims. This approach provides a more rigorous explanation of the truth effect in this context. Finally, bread and whole grain were presented as category membership and attribute, respectively.

Specifically, after reading the two-page advertisement that varied the information order, participants rated their attitude toward advertising using four items on a 7-point scale: "good," "like," "interesting," and "favorable" (adapted from Mitchell & Olson, 1981; Cronbach's  $\alpha = 0.77$ ; 1 = strongly disagree, 7 = strongly agree). Truthfulness toward advertised claims was measured using four items on a 7-point scale: the ad claims looked "trustful," "convincing," "credible," and "true" (adapted from Darley & Smith, 1993; Kamins & Marks, 1987, Cronbach's  $\alpha = 0.78$ ; 1 = strongly disagree, 7 = strongly agree). Processing fluency was measured with four bipolar items on a 7-point scale: "not at all organized—well organized," "not at all structured—well structured," "hard for me to process the information—easy for me to process the information," and "hard to understand—easy to understand" (adapted from Chae & Hoegg, 2013; Cronbach's  $\alpha = 0.71$ ). Participants also reported their general tendencies of knowledge, liking, interest, and experience with whole grain bread on a 7-point scale (1 = strongly disagree, 7 = strongly agree), as well as their locus of attention (adapted from Choi et al., 2007; Cronbach's  $\alpha = 0.79$ ), where a higher score indicates individuals have field-dependent attention. Lastly, they reported their demographic information.

## 4.2 | Results

### 4.2.1 | Control variables

The results of the PROCESS analysis using Model 1 (Hayes, 2018) confirm that the manipulation in this study did not affect the general perception toward whole grain bread ( $ps > 0.10$ ), so these variables were excluded from further analysis.

### 4.2.2 | Truth effect and processing fluency

The PROCESS analysis using Model 1 (Hayes, 2018) was conducted to investigate how the interaction between presentation order (product-first = 1, attribute-first = 2) and individuals' locus of attention (measured as a moderator indicating higher scores for field-dependent individuals) influenced two outcomes: processing fluency (H2) and truthfulness toward advertised claims (known as the truth effect; H1). The analysis used bootstrapping with 5000 samples to estimate the indirect effects and 95% CIs. The results indicated that the interaction between presentation order and locus of attention was significantly related to processing fluency ( $b = 0.30$ ,  $SE = 0.10$ ,  $t = 2.86$ ,  $p = 0.005$ , 95% CI = [0.09, 0.50]) and to the truth effect ( $b = 0.29$ ,  $SE = 0.10$ ,  $t = 2.91$ ,  $p = 0.004$ , 95% CI = [0.09, 0.48]). These findings replicate those of Study 1, thus providing support for H1 and H2.

### 4.2.3 | Moderated mediation analysis—processing fluency as a mediator

The PROCESS (Hayes, 2018; Model 8, 5000 bootstrap samples) with 95% CIs was used to test the mediation effect of processing fluency on the relationship among presentation order, locus of attention, processing fluency, and truthfulness toward advertised claims (the truth effect). Consistent with Study 1, the index of the proposed moderated mediation effect was significant (indirect effect = 0.13, 95% CI = [0.02, 0.24]). The interaction between presentation order and locus of attention was significantly related to processing fluency ( $b = 0.31$ ,  $SE = 0.10$ ,  $t = 2.95$ ,  $p = 0.004$ , 95% CI = [0.10, 0.51]), and processing fluency was significantly related to the truth effect ( $b = 0.42$ ,  $SE = 0.06$ ,  $t = 6.96$ ,  $p < 0.001$ , 95% CI = [0.30, 0.54]). When processing fluency was included in the model, the direct interaction between presentation order and locus of attention on the truth effect was no longer significant ( $b = 0.15$ ,  $SE = 0.09$ ,  $t = 1.62$ ,  $p > 0.05$ , 95% CI = [-0.03, 0.32]), indicating full mediation by processing fluency (Zhao et al., 2010). Thus, our findings support H3, which posits that the indirect effects of the interaction between presentation order and locus of attention on truthfulness are fully mediated by processing fluency.

### 4.2.4 | Serial moderated mediation analysis—processing fluency and the truth effect as mediators with respective sequence

The results of the PROCESS Model 85 analysis revealed significant indirect effects of the interaction between presentation order and locus of attention on attitude toward advertising, mediated by processing fluency and the truth effect. The first stage of the mediation analysis showed that the interaction between presentation order and locus of attention was significantly associated with processing fluency ( $b = 0.31$ ,  $SE = 0.10$ ,  $t = 2.95$ ,  $p = 0.004$ , 95% CI = [0.10, 0.51]). The second stage of the mediation analysis indicated that processing fluency was significantly associated with the truth effect ( $b = 0.42$ ,  $SE = 0.06$ ,  $t = 6.96$ ,  $p < 0.001$ , 95% CI = [0.30, 0.54]). The third stage of the mediation analysis revealed a positive association between the truth effect and attitude toward advertising ( $b = 0.63$ ,  $SE = 0.06$ ,  $t = 10.12$ ,  $p < 0.001$ , 95% CI = [0.51, 0.76]). Finally, the index of the moderated serial mediation effect was significant (indirect effect = 0.08, 95% CI = [0.01, 0.16]).

In conclusion, the findings of this study suggest that processing fluency and the truth effect sequentially mediate the relationship between the interaction of presentation order and locus of attention and attitude toward advertising. Specifically, higher levels of processing fluency were associated with a greater truth effect, which, in turn, was associated with a more favorable attitude toward the advertised product. These results have important implications for interventions aimed at enhancing the congruency effect of presentation order and individuals' locus of attention on the effectiveness of advertisements, consistent with the previous literature on the congruency effect (Han & Shavitt, 1994; Jang & Shin, 2019; Lee &

Aaker, 2004; Zhang & Gelb, 1996). The study highlights the need to target both processing fluency and the truth effect to effectively enhance the effectiveness of advertising.

## 5 | GENERAL DISCUSSION

### 5.1 | Summary and conclusions

Two empirical studies identified a new factor that influences the truth effect and that has not been investigated in previous literature. Specifically, it was found that the congruency of the presentation order of information in a unit of advertising and the locus of attention played a key role in determining the participants' truth ratings of advertised claims. When the appearance order of identical pieces of information in advertising varied, participants showed different levels of truthfulness toward the advertised claims. Participants were more likely to believe the claims when the presentation order of the information was compatible with their locus of attention (either field-independent or field-dependent) than when it was not. In Studies 1 and 2, the mediating role of processing fluency was tested to understand the psychological mechanism underlying the effect, and how the order effect and locus of attention interacted to influence the participants' beliefs about truthfulness. In Study 1, the locus of attention was considered a cultural distinction, while in Study 2, it was examined as an individual difference. Combining the findings of both studies, the results showed that both field-independent and field-dependent individuals exhibited high levels of processing fluency when the presentation order of information was compatible with their attentional norms in information processing. In such cases, they were more likely to believe the advertised claims.

### 5.2 | Theoretical and practical contributions

This study makes significant academic contributions and offers practical implications. From a theoretical standpoint, the findings advance the research on the truth effect in persuasion theories. Specifically, this study introduces and confirms that congruence is a meaningful driver of the truth effect through processing fluency in marketing communication. While previous research has explored the truth effect by manipulating factors such as information repetition, readability, or background-figure contrast (Koch & Forgas, 2012; Reber & Schwarz, 1999; Unkelbach, 2006, 2007; Unkelbach & Stahl, 2009), the congruence between information presentation and locus of attention remains untested, despite being the most common determinant for inducing processing fluency in communication.

By establishing a connection between the fit and processing fluency theories, this study's findings provide researchers with a potential schema to explore a novel approach to capturing the truth effect. Delving into this unexplored aspect, our research contributes valuable insights and enriches our understanding of the intricate interplay between congruency, processing fluency, and the truth



effect within the literature on persuasion, specifically concerning “fit” in information processing and decision-making.

The present study also extends the literature on variations in thinking styles as an essential construct to consider in devising strategies to strengthen responses in segmented markets by exploring a novel type of response: consumers' perceived convincingness about the advertised claims. Cognitive thinking styles are distinctive factors of cultures (Jang & Shin, 2019; Kim & Yi, 2016; Nisbett et al., 2001; Park et al., 2015; Yoshida & Heere, 2015) and of individuals (Choi et al., 2007; Monga & John, 2008). In general, the dominant thinking style within a particular group of people distinguishes them from other groups by influencing their perception, interpretation, and behavior. Consistent with the theoretical framework of differences in thinking style, this study explains the role of cultural as well as individual variations in the truth effect.

These insights have practical implications that can greatly benefit effective advertising design and communication strategies. Understanding how congruency affects processing fluency and the truth effect empowers marketers to craft more persuasive and convincing messages for consumers. Specifically, the current findings suggest that making alterations to the information appearance order in advertising can address varied interests in targeted markets. Even this minimal adjustment can wield significant power as a market adaptation strategy, especially for multinational corporations employing global integration with centralized decision-making.

Based on these findings, marketers can actively explore more effective layouts and sequences of images and descriptions in advertising, tailoring them to appeal to specific targeted markets while still aligning with global goals. This approach enables marketers to strike a balance between localized relevance and broader brand consistency.

Moreover, the results underscore the importance of processing fluency, which refers to the subjective experience or feeling of ease associated with cognitive operations. Marketers are encouraged to investigate additional methods to enhance processing fluency in their communication efforts. When consumers can process relevant information fluently, it leads to more positive judgments and responses, and an overall improved experience.

By utilizing these practical implications, advertisers can create campaigns that resonate with consumers on a deeper level, foster stronger connections with their target audiences, and ultimately drive higher engagement and conversion rates. Additionally, the ability to adapt advertising strategies to fit diverse markets can enhance brand perception and consumer trust, bolstering the overall success of marketing campaigns.

Overall, this study's theoretical contributions and practical applications are essential steps toward advancing knowledge in the field of consumer psychology and advertising effectiveness.

### 5.3 | Limitations and further research

Despite the significant contributions of the study, there are several limitations to discuss. The first is that only one case (presentation

orders of two information pieces) was manipulated and compared to observe the interaction effects of information presentation order and locus of attention. However, in advertising, multiple visual and verbal cues can be presented within a unit of advertisement, particularly in digital marketing contexts. Therefore, further investigation is necessary to explore how varied content arrangements interact with locus of attention on the truth effect.

Second, the study focused on only one product category, namely, healthy food. While limiting the research to one product category may help to maximize control, future research should consider examining different types of products, such as vice and virtue or high- and low-involvement food products, to strengthen the generalizability of the findings.

In conclusion, this research was exploratory in nature, and there is a strong need for future researchers to build upon these findings. An elaborative study is necessary to better understand the relationships between the focal variables in marketing communication settings.

### CONFLICT OF INTEREST STATEMENT

The author declares no conflict of interest.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## SUPPORTING INFORMATION

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