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Negative halo effects of sustainable packaging

Monin Techawachirakul^{1,2}  | Abhishek Pathak³  | Kosuke Motoki⁴ | Gemma Anne Calvert¹

¹Nanyang Business School, Nanyang Technological University, Singapore, Singapore

²Department of Psychology, Thammasat University, Bangkok, Thailand

³Department of Marketing, School of Business, University of Dundee, Dundee, UK

⁴Department of Management, The University of Tokyo, Tokyo, Japan

Correspondence

Abhishek Pathak, Department of Marketing, School of Business, University of Dundee, Dundee DD1 4HN, UK.
Email: a.z.pathak@dundee.ac.uk

Abstract

More firms are adopting “green packaging” due to regulatory and environmental concerns. The alcoholic beverage industry has recently joined the lobby and major producers have introduced creative paper bottles for their alcoholic drinks. Previous research on sustainable labeling (e.g., eco-friendly labels) has shown the *positive* halo effect where sustainable labeling induces positive evaluations. In contrast, our research aims to reveal the *negative* halo effects of sustainable packaging in the case of paper-bottled alcoholic beverages. Across three studies, we explore consumers' perceptions toward alcoholic drinks packed in innovative paper bottles. Studies 1–2 demonstrate that consumers hold inferior expectations (i.e., sensory attributes, price, and purchase likelihood) toward alcoholic beverages packed in paper bottles. Study 3 demonstrates that the enforced messaging and attractive packaging can mitigate the negative halo effect for self-consumption and gifting. These findings contribute to the literature on sustainable packaging, especially in the novel space of paper-bottled alcoholic drinks.

KEYWORDS

alcoholic beverages, green packaging, negative halo effect, paper packaging, sustainable packaging

1 | INTRODUCTION

Environmental, regulatory and public concerns around packaging waste are driving more food and beverage manufacturers to embrace “green packaging.” Taking bold steps in this field, alcoholic manufacturers (e.g., beer; *Carlsberg* (see Figure 1), whisky; *Johnnie Walker*, and wine; *Cantina Goccia*) have recently launched a new and innovative range of paper bottles (i.e., fully plant-based and recyclable paper bottles) for packaging. Paper bottles provide a promising and sustainable solution by significantly reducing, (1) the environmental burden, (2) the supply chain costs, (3) the carbon footprint by up to six times (when compared with glass or recycled plastic wine bottles and are also five times lighter than regular glass bottles)

(Gilbert, 2023). Although research and development investments (e.g., “Green Fiber Bottle” project; Bogers et al., 2020) are being successfully made toward these “green bottles/packaging,” are consumers ready for alcoholic beverages in innovative paper bottles? The current research investigates this question.

Although paper bottles for numerous Food & Beverage (F&B) products are now quite common in the marketplace, and research in green marketing has been a topic of interest in the past few decades (Wang et al., 2023), paper bottling in the alcoholic sector is still in the nascent stages. Our understanding of consumers' attitudes toward these novel packaging methods containing alcohol per se is limited, leaving a potential gap in this research stream. The extant literature available on alcoholic beverages has so far revealed that the shape

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FIGURE 1 Carlsberg's paper beer bottle (<https://www.carlsberg.com/en/green-fibre-bottle/>).

and weight of the container can significantly modulate consumer judgment of the content's quality (Barnett et al., 2016; Piqueras-Fiszman & Spence, 2012a; Spence & Piqueras-Fiszman, 2012), yet there is no research examining whether consumers would perceive the alcoholic beverages bottled in the paper as different from those in conventional glass bottles. Although the research available on sustainable packaging has demonstrated that paper packaging often connotes positive attributes toward the content within (e.g., freshness and healthiness) (Donato et al., 2021; Fernqvist et al., 2015; Koenig-Lewis et al., 2022; Rebollar et al., 2017), the same may not be true for paper packed alcoholic drinks. Here we would like to point out that paper bottling in the alcoholic sector is still new and the advantages/perceptions of paper packaging revealed so far in the F&B sector might not be equally transferable to the alcoholic beverage sector (Sokolova et al., 2023). Indeed, in the alcoholic beverage industry, where the heaviness of packaging is a cue for premiumness (Piqueras-Fiszman & Spence, 2012a), the lightweight nature of these novel paper bottles might lead to negative consumer expectations of the beverage inside compared with conventional glass bottles.

Therefore, based on the halo effect, the present study attempts to test this prediction by investigating (1) the explicit and implicit sensory perceptions associated with paper bottles and (2) how to diminish the anticipated inferiority bias toward paper-bottled alcoholic beverages. Across three studies, the findings confirm our predictions by demonstrating the “paper-based negative halo” effect on consumer judgment at both explicit and implicit levels. Compared with glass bottles, consumers perceive alcoholic beverages in paper bottles to be of inferior quality in terms of sensory expectations, purchase likelihood, and expected price. Further, the results reveal that packaging esthetics and a message assuring the “same great taste” can improve taste expectations and purchase likelihood.

This research makes several contributions to literature and practice. First, we provide novel findings on alcoholic beverages by

revealing the role of packaging materials (sustainable paper vs. conventional glass) in altering consumer expectations of the beverage attributes (i.e., sensory and marketing). Second, we advance the literature on packaging by demonstrating that the effect of sustainable packaging varies by product category. While paper packaging can signal desirable superior attributes of the food within (e.g., Donato et al., 2021; Koenig-Lewis et al., 2022), it instead connotes inferiority in alcoholic beverages due to the negative bias toward paper-packed alcoholic drinks. Further, this study points out that the attractiveness of bottle design and a message to reassure the customer of the original taste can reduce inferior bias toward paper packaging and alter purchase behavior.

Lastly, this study contributes to practice by suggesting a win-win strategy for all stakeholders: consumers, alcoholic manufacturers, and the environment. Brands should explicitly communicate with consumers regarding the unchanged taste of the beverages in novel packaging (e.g., by incorporating a clear message of “same great taste” in advertising). They also can make the packaging more attractive by using visual art, for example, rather than presenting a plain paper appearance (which ironically is the norm in the new, nascent designs of paper-packed products introduced in the market). By making positive attributes salient, firms can minimize negative bias toward innovative paper bottles and encourage consumers to participate in “green” alcoholic consumption.

2 | LITERATURE REVIEW

2.1 | The halo effect

The influence of extrinsic information (e.g., packaging and labeling) on consumer's experience of foods and beverages has been extensively reported across research domains of marketing, neuroscience, and sensory science (see Skaczkowski et al., 2016 for a review). Product packaging can influence a consumer's affective and semantic associations toward packaged goods (Barnett et al., 2016; Sester et al., 2013). For instance, consumers prefer alcoholic drinks in bottles over cans, although they are not able to detect these overt packaging preferences in blind tasting conditions (Barnett et al., 2016). While the transference of sensory attributes cued by the extrinsic cue to actual experiences of the product was coined as sensation transference (Cheskin, 1957; Krishna & Morrin, 2008), the subset of this phenomenon also has been referred to halo effect (Seo & Hummel, 2011; Skaczkowski et al., 2016).

The halo effect is a cognitive bias that occurs when people make an overall judgment by transferring their assessment of one attribute to other unrelated attributes of a stimulus, often without being aware of the source of this inference (Nisbett & Wilson, 1977; Richetin et al., 2021; Thorndike, 1920). The impression is formed in two directions; halo and horn (negative halo) effect (Richetin et al., 2021). The halo effect refers to when the presence of a positive (or favorable) attribute results in a positive evaluation of other attributes; whereas the horn effect occurs when a negative evaluation is

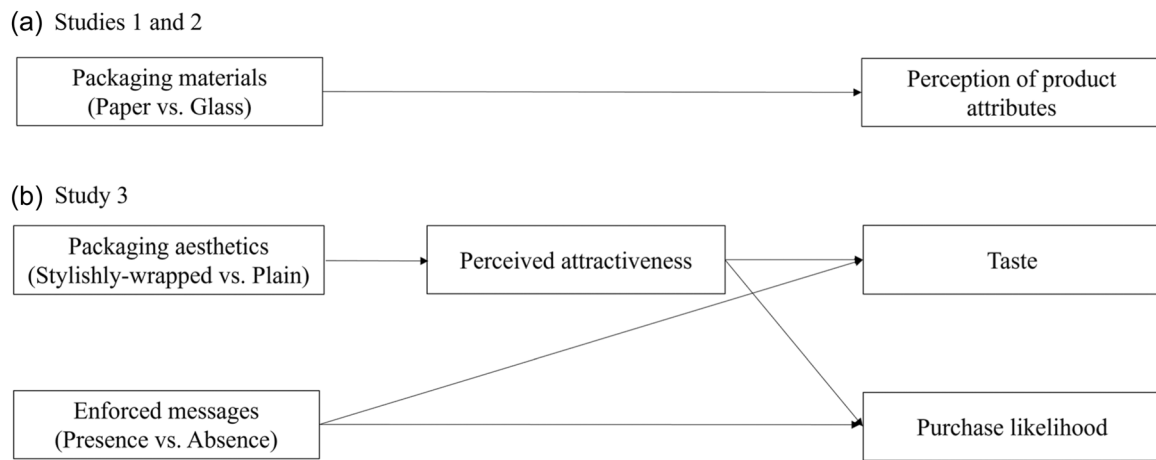


FIGURE 2 Conceptual framework of Studies 1 and 2 (a) and Study 3 (b).

influenced by the presence of a negative attribute. Such effect of the heuristic perception applies to several circumstances including food evaluation. For example, consumers evaluated cheese that was produced by a “traditional” (vs. “industrial”) production process as tastier and healthier due to the traditional halo and industrial horn effect (Richetin et al., 2021).

Moreover, previous work has demonstrated that a halo effect derived from the goodness of packaging/sustainability biases consumers' perception toward foods packaged within (e.g., food packaged in paper packaging is considered of superior quality compared with those in nonsustainable packaging) (Donato et al., 2021; Sokolova et al., 2023). Similarly, fruits and vegetables in paper packaging are considered fresher, nicer, and healthier (Fernqvist et al., 2015). Food products in sustainable (vs. non-sustainable) packaging are also perceived as more satiating (Donato et al., 2021; Koenig-Lewis et al., 2022). In a similar vein, consumers tend to regard snacks (crisps, raisins, and chocolate bars) packed in recycled cardboard (vs. plastic) as of higher quality (Magnier et al., 2016; Rebollar et al., 2017). Moreover, consumers are willing to pay more for food products (e.g., granola bars and honeycombs) packed in paper (vs. plastic) packaging due to their perceived environmental friendliness (Sokolova et al., 2023).

In contrast to the existing evidence on the *positive* halo effects of sustainable food packaging, we predicted the *negative* halo effects of sustainable packaging in alcoholic beverages. Research on alcoholic beverages has suggested that the drinking experience is sensitive to a variety of external cues (e.g., shape, weight, and haptic properties) (Barnett et al., 2016; Spence & Piqueras-Fiszman, 2012). Specifically, consumers often rely on the weight of alcoholic beverages to estimate their quality and price (e.g., heavier wine bottles are generally perceived as more expensive and of better quality than lighter wine bottles) (Piqueras-Fiszman & Spence, 2012a). Conversely, the light weightiness of wine bottles can minimize the perceived premiumness of even an expensive wine (Piqueras-Fiszman & Spence, 2012a). Taken together, we assumed that when consumers evaluate packaged beverages, their feelings toward the

packaging material would be transferred toward the judgment of the quality of the alcoholic beverages. Given that the weight of paper (vs. glass) material is generally lighter and considered haptically inferior (especially for alcoholic beverages) (Cavazzana et al., 2017; Krishna & Morrin, 2008), it is plausible to propose that the inferiority of paper packaging would be transferred to the contained alcoholic content which in turn would be perceived as inferior (see Figure 2 for conceptual framework). Thus, we hypothesized as follows.

H1. Paper-bottled (vs. glass-bottled) alcoholic beverages would be rated as lower on perceived sensory attributes (e.g., flavor, mouthfeel, and aroma/appearance¹).

H2. Paper-bottled (vs. glass-bottled) alcoholic beverages would be rated as lower on marketing attributes (purchase likelihood and expected price).

2.2 | The implicit association of packaging materials

Given the differences in processing between explicit and implicit attitudes, this study also aimed to measure the association of packaging material at an implicit level. Unlike self-reported measures, implicit attitude measures (e.g., Implicit Association Test [IAT], Greenwald et al., 1998) allow researchers to examine evaluative associations without requiring participants to consciously reflect on their feelings (Nosek et al., 2007). This is consistent with the notion that besides cognitive reasoning, consumers often rely on emotions when assessing food packaging (Otto et al., 2021), and use food packaging elements as heuristic shortcuts when evaluating food products (Chan & Zhang, 2022). The halo effect has been proposed as

¹These attributes have been considered most important for alcoholic drinks (Ivanova et al., 2022).

evidence of this unawareness (Nisbett & Wilson, 1977; Richetin et al., 2021).

In support of this argument, another research suggested that the evaluation of hedonic products is positively influenced by consumers' emotions (Yeung & Wyer, 2004). Tingchi Liu et al. (2017) explained that when consumers are exposed to a hedonic product (i.e., alcoholic beverages) for the first time, they judge the product from its packaging appearance based on global beliefs. This emotional reaction influences their evaluation of the product and is independent of the given product information (Tingchi Liu et al., 2017). Thus, the feeling toward the alcoholic beverage packaging could evoke a positive or negative first impression of the product (Tingchi Liu et al., 2017).

Given this, results obtained using implicit measures could provide further support to the findings at the explicit level (Study 1). Prior research has time and again used the IAT to enhance our understanding of consumers' food and beverage-related decisions, judgments and choices, and sustainability consumption (Cliceri et al., 2018; Koenig-Lewis et al., 2022; Kraus & Piqueras-Fiszman, 2016; Mai & Hoffmann, 2017; Mai et al., 2015; Richetin et al., 2021; Songa & Russo, 2018; van der Heijden et al., 2020). Thus, we believe that IAT can explore the nature of the implicit associations people hold for novel packaging and can help us better understand the underlying mechanism of the halo effect in consumer (un)acceptance. If the implicit and explicit results concur, this would confirm the account of the negative halo effect for the perceived inferior quality of alcoholic beverages bottled in paper packaging. Therefore, we hypothesized as follows.

H3. The paper-bottled (vs. glass-bottled) alcoholic beverages would be associated with negative (positive) attributes at an implicit level.

2.3 | The enhancement of paper-bottled alcoholic beverage judgment

A recent review (Wang et al., 2023) has demonstrated that the purchase of sustainable products is determined by various factors. The perception of poor product quality is one of the main obstacles to sustainable product consumption (Gleim et al., 2013; Tanner & Wölfing Kast, 2003). Specifically, consumers tend to perceive that green products are inferior to comparable nongreen products in many aspects, such as strength and fragrance (Gleim et al., 2013; Wang et al., 2023). Consistent with the current research, consumers associated alcoholic beverages in sustainable paper bottles as lower in flavor and mouthfeel compared with those packaged in glass bottles. This negative evaluation could be attributed to the lack of understanding of sustainable packaging (Gleim et al., 2013), given the unfamiliarity with paper bottles for alcoholic beverages. Having said that, the presentation of detailed information regarding the product attribute could diminish the negativity of paper packaging and enhance the purchase intention (Gleim et al., 2013).

Much in line with research on food and beverage, prior research has demonstrated that explicit messaging regarding a food's unchanged taste and nutritive qualities could reduce bias in product perception/evaluation (Mookerjee et al., 2021). For instance, brand names of soda water incorporating "Vita" (i.e., Vita soda) are perceived as healthier than those with some other words (e.g., Bubble soda) (Verrill et al., 2020). The explicit messaging about a product's qualities could frame or reinforce the desired attributes of the products, which in turn could make the attribute salient/meaningful and could shape a favorable perception (Entman, 1993). Given that, we predicted that if consumers were reassured that the paper packaging would not taint the taste of beer, the inferior evaluations toward paper packaging would be attenuated and purchase likelihood improved. Thus, we hypothesized as follows.

H4. The presence (vs. absence) of the enforced messaging would improve the taste expectations of paper-bottled beer.

H5. The presence (vs. absence) of the enforced messaging would improve the purchase likelihood of paper-bottled beer.

Besides, the attractiveness of sustainable packaging also plays a role in driving positive evaluation and purchase decisions (Popovic et al., 2019). Since the perception of a product attribute can shape the overall evaluation of the product (i.e., the halo effect) (Nisbett & Wilson, 1977; Rebollar et al., 2017), we assumed that the packaging esthetics might change the perception of the paper-bottled beers and influence purchase likelihood (Popovic et al., 2019) through the perceived attractiveness of the packaging. Thus, we hypothesized that

H6. A stylishly-wrapped (vs. plain) paper bottle would induce positive expectations of the beer taste, and the perceived attractiveness of the bottle would mediate this relationship.

H7. A stylishly-wrapped (vs. plain) paper bottle would enhance purchase likelihood, and the perceived attractiveness of the bottle would mediate this relationship.

3 | OVERVIEW OF STUDIES

Participants in all three studies were recruited from the Amazon Mechanical Turk (M Turk). Each of them was allowed to take part in only one study and the research was approved by the ethics committee of a large northern university in the United Kingdom. Participants were told that—a well-known company had recently launched new and innovative glass/paper bottles for its range of beers/wines and the company was interested in finding out their perceptions toward new packaging materials (innovative paper vs. glass bottles) for beers/wines. These new bottles were environmental-friendly, light in weight, and easier to recycle than the traditional packaging materials. Participants were asked to

imagine themselves drinking beer/wine from the innovative paper and glass bottles while participating in the study. Using G*Power 3.1.9 (Faul et al., 2007), a sample size of $n \approx 120$ (Study 1) and $n \approx 100$ (Study 2) was found to be sufficient to detect a medium-sized effect (0.33) with 95% power at $\alpha = 0.05$ in the analysis of variance (ANOVA) and paired-sample t -tests, respectively. Moreover, given power = 0.80, $\alpha = 0.05$ in between-subject mediation analysis, a sample size of $n \approx 170$ (Study 3) was estimated to detect an indirect effect ($\beta_a\beta_b = (-0.22)(-0.34) = 0.075$) and direct effect of ($\beta_c = 0.32$) using MedPower (Das et al., 2019; Kenny, 2017; Montoya, 2023). Studies 1 and 3 were designed on the Qualtrics online survey platform and Study 2 (IAT study) was on the Inquisit 6 platform of Millisecond.com.

4 | STUDY 1: EXPLICIT ASSOCIATION OF PRODUCT ATTRIBUTES AND PACKAGING MATERIALS

This study aimed to provide initial evidence of an explicit association between packaging materials and perceived product attributes.

4.1 | Method

4.1.1 | Participants

One hundred and twenty one participants (*Male* = 70, *Females* = 45, and *Unspecified gender* = 2; age range = 21–67 years, $M_{\text{age}} = 37.86$, $SD = 9.78$) took part. Data from four participants who provided the same response to all the questions were excluded from further analyses.

4.1.2 | Procedure

A 2 (material: paper vs. glass) \times 2 (beverage: beer vs. wine) between-participants study was designed. Participants were assigned randomly to one of the conditions. Instructions as mentioned in the overview of studies were then provided. A generic image of the beer/wine bottle was presented and half the participants were told that it was a paper bottle (the other half that it was a glass bottle) (see Figure 3). Participants then evaluated the bottles on three sensory modalities (flavor, mouthfeel, aroma/appearance/other; Ivanova et al., 2022) related to the alcoholic drinks and marketing attributes (purchase likelihood, expected price). The evaluations were made on Visual Analogue Scale (VAS) from 1 to 100: flavor (flavor, aftertaste; 1 = *Not at all good*, 100 = *Very good*; $\alpha = 0.86$), mouthfeel (smoothness, thickness, astringency, fizziness²; 1 = *Not at all smooth/thick/astringent/fizzy*, 100 = *Very smooth/thick/astringent/fizzy*; $\alpha = 0.59$), aroma/appearance/other (aroma, color, appearance, quality, freshness, overall taste; 1 = *Not at all good*, 100 = *Very good*; $\alpha = 0.92$),



FIGURE 3 Image of beer (left) and wine (right) bottles used in Study 1. Both bottles were presented on a white background with the same resolutions (140 \times 350 pixels). They were filled with the same green color adopted from the innovative bottle advertisement of a well-known beer brand using Adobe Photoshop 2022.

purchase likelihood (1 = *Not at all willing*, 100 = *Very willing*), and expected price (1 = *Not at all high*, 100 = *Very high*). The numbers on scales (1 and 100) were hidden and only text was labeled on the left (i.e., *Not at all*) and the right (i.e., *Very*) of the scales, so the participants could freely place the slider anywhere on the line. The presentation of questions was randomized within-participants. After the main task, participants were asked about their familiarity with the new packaging material and the frequency of consumption of alcoholic drinks.

4.2 | Results

A two-way multivariate analysis of variance (MANOVA) was conducted to investigate the effect of the type of material (paper vs. glass bottle) and type of beverage (beer vs. wine) on expectations of product attributes followed by multiple independent-sample t -tests to examine the differential expectations between product materials on each attribute.

4.2.1 | Sensory modalities

The results supported H1 and all the modalities of flavor, mouthfeel, and aroma/appearance were rated as significantly lower in the paper (vs. glass) bottle condition (see Figure 4 and Table 1) (Flavor: $F(1,113) = 15.16$, $p < 0.001$, $\eta_p^2 = 0.12$; $M_{\text{Paper}} = 50.85$, $SD = 23.67$; $M_{\text{Glass}} = 67.39$, $SD = 22.12$; Mouthfeel: $F(1,113) = 10.28$, $p = 0.002$, $\eta_p^2 = 0.08$; $M_{\text{Paper}} = 50.62$, $SD = 17.18$; $M_{\text{Glass}} = 59.68$, $SD = 13.12$; aroma/appearance: $F(1,113) = 13.02$, $p < 0.001$, $\eta_p^2 = 0.10$; $M_{\text{Paper}} = 57.55$, $SD = 21.98$; $M_{\text{Glass}} = 70.87$, $SD = 17.48$). No significant difference in the beverage category (i.e., beer vs. wine) was observed for any of the modalities (i.e., participants rated paper bottles as lower for both beers and wines).

²Only for the beer condition.

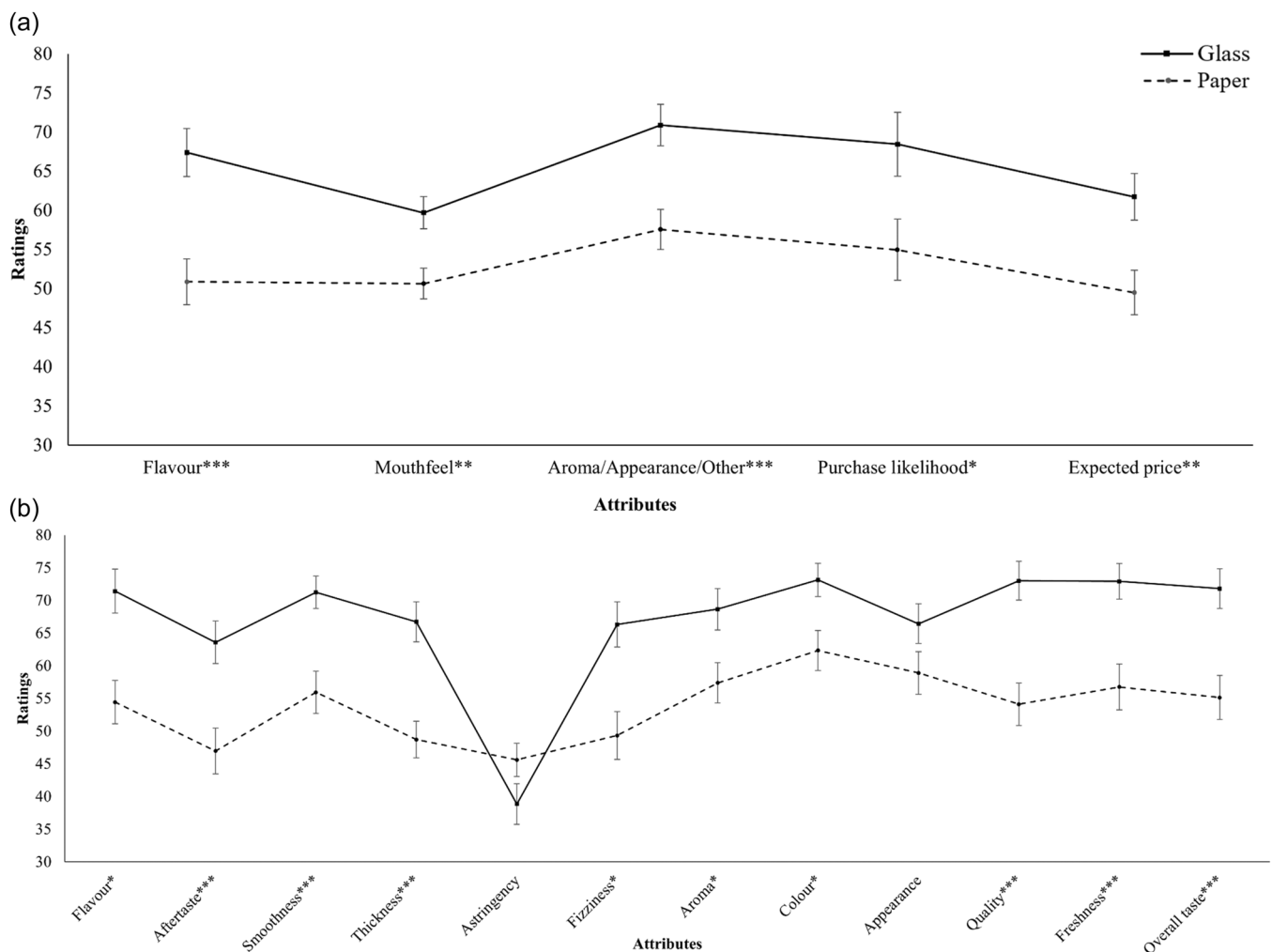


FIGURE 4 Figures represent the ratings of the expected product attributes of alcoholic drinks (beers and wines) in paper versus glass bottles. Error bars denote the SE of the means. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

4.2.2 | Marketing attributes

The results supported H2 and purchase likelihood and expected price were rated as significantly lower in the paper (vs. glass) condition (Purchase likelihood: $F(1,113) = 5.69$, $p = 0.019$, $\eta_p^2 = 0.05$; $M_{\text{Paper}} = 54.95$, $SD = 32.61$; $M_{\text{Glass}} = 68.43$, $SD = 27.81$; Price: $F(1,113) = 8.78$, $p = 0.004$, $\eta_p^2 = 0.07$; $M_{\text{Paper}} = 49.48$, $SD = 23.71$; $M_{\text{Glass}} = 61.71$, $SD = 20.38$). No significant difference in the beverage category (i.e., beer vs. wine) was observed for any of the marketing attributes.

Since there were no differences due to the type of alcoholic drinks (i.e., beer vs. wine), the ratings were averaged together as one entity (i.e., paper vs. glass bottle) and t -test analyses were performed for each sensory attribute. False discovery rate (FDR) corrections were also performed across multiple comparisons to decrease the false discovery rate of p values (<https://www.sdmproject.com/>, Radua et al., 2010). The results revealed that the alcoholic drinks in the paper (vs. glass) bottles were rated as significantly lower in all the attributes except astringency and appearance (see Figure 4b and Table 1; see also Appendix A for statistical values).

4.3 | Discussion

The results of Study 1 revealed that consumers evaluated alcoholic drinks in paper (vs. glass) bottles to be lower in all sensory modalities (flavor, mouthfeel, and aroma/appearance/others), purchase likelihood, and expected price. Study 2 then was conducted to further investigate whether the associations exist at an implicit level.

5 | STUDY 2: IMPLICIT ASSOCIATION OF PRODUCT ATTRIBUTES AND PACKAGING MATERIALS

Study 1 used self-reported measures to demonstrate consumers' explicit attitudes toward paper packaging. In Study 2, we adopted a performance-based measure (i.e., IAT) to gauge the implicit attitudes of consumers toward paper versus glass packaging in the context of alcoholic beverages.

TABLE 1 Results of Study 1: Expected product attributes of the paper and glass bottles for alcoholic beverages.

Product attributes	Paper bottle M (SD)	Glass bottle M (SD)	<i>p</i> value*	Dimensions	Paper bottle M (SD)	Glass bottle M (SD)	<i>p</i> value
Flavor	54.44 (26.06)	71.41 (25.17)	0.002	Flavor ^b	50.85 (23.67)	67.39 (22.12)	<0.001
Aftertaste	46.97 (27.38)	63.59 (24.41)	<0.001				
Smoothness	55.95 (25.33)	71.23 (18.63)	<0.001	Mouthfeel ^c	50.62 (17.18)	59.68 (13.12)	0.002
Thickness	48.72 (21.75)	66.73 (22.88)	<0.001				
Astringency	45.62 (19.90)	38.84 (23.30)	0.096				
Fizziness ^a	49.34 (28.57)	66.31 (25.93)	0.022				
Aroma	57.39 (23.91)	68.66 (23.64)	0.017	Aroma/Appearance/Other ^d	57.55 (21.98)	70.87 (17.48)	<0.001
Color	62.34 (23.93)	73.13 (18.93)	0.012				
Appearance	58.90 (25.51)	66.43 (22.71)	0.096				
Quality	54.11 (25.54)	73.00 (22.25)	<0.001				
Freshness	56.75 (27.46)	72.91 (20.33)	<0.001				
Overall taste	55.15 (26.19)	71.80 (22.75)	<0.001				
				Purchase likelihood	54.95 (32.61)	68.43 (27.81)	0.019
				Expected price	49.48 (23.71)	61.71 (20.38)	0.004

Note: Bold figures represent significantly different results.

^aThis attribute was measured in the beer condition only.

^bThe average means of sensory attributes (flavor and aftertaste).

^cThe average means of sensory attributes (smoothness, thickness, astringency, and fizziness).

^dThe average means of sensory attributes (aroma, color, appearance, quality, freshness, and overall taste).

*Adjusted *p* values were reported using false discovery rate (FDR) correction.

5.1 | Method

5.1.1 | Participants

One hundred and two participants took part in the study. Ten participants were excluded as more than 10% of their responses were faster than 300 ms; Greenwald et al., 2003). The data of the final 92 participants were analyzed (age range = 23–74 years, *Males* = 44, *Females* = 48, M_{Age} = 42.20 years, SD = 11.76; 90.73% of the final responses were found to be correct, SD = 7.25%). Forty-six participants were randomly assigned to each of the wine versus beer conditions.

5.1.2 | Procedure

Participants were informed that on their computer screens, they would see words belonging to either two types of packaging (i.e., glass vs. paper bottles) or two types of attributes (i.e., positive vs. negative) (words used for glass bottles = glass bottle, glass beer-bottle, glass-bottled beer; words used for paper bottles = paper bottle, paper beer-bottle, paper-bottled beer (the presentation of beer vs. wine was randomized between participants for both glass/paper bottles); positive attributes = full-bodied, high quality, rich taste, full of flavor, pricey, exciting, cheerful, thick, smooth, fresh,

clear; negative attributes = light-bodied, low quality, poor taste, lacks flavor, cheap, boring, dull, watery, coarse, stale, turbid). The positive and negative attributes were derived from Study 1 and prior research linked to IAT in the F&B sector.

Before the IAT, participants were familiarized with the types of bottles and attributes used in the study. Participants were then asked to complete the task where they had to sort the type of packaging (glass vs. bottle) and attributes (positive vs. negative) into two categories by pressing either the E or I key on the computer keyboard. Throughout the experiment, the pairing of the keys was displayed on top of the screen (e.g., E = positive and I = negative). The first block consisted of 20 practice trials for the target sorting task (e.g., E = glass bottles and I = paper bottles). The second block consisted of 20 practice trials each for the attribute sorting task (e.g., E = positive attributes and I = negative attributes). The third and fourth blocks consisted of a combined task presenting both the target and attributes (20 and 40 trials, respectively) (e.g., E = glass bottles + positive attributes and I = paper bottles + negative attributes; also called compatible blocks) (e.g., Wang-Jones et al., 2017) (see Figure B1 for a sequential representation of IAT blocks). The fifth, sixth, and seventh blocks repeated the same task as in the first, second, third, and fourth blocks, however, with a swapped key association (e.g., E = paper bottles + positive attributes and I = glass bottles + negative attributes; also called incompatible blocks). The presentation of compatible versus incompatible blocks was

counterbalanced between subjects (i.e., half of the participants started the IAT with the compatible block, whereas the other half started with the incompatible) (see Table 2).

The strength of an association between concepts (e.g., glass/paper bottles with positive/negative attributes) was measured by the standardized mean difference score of one set of pairings (i.e., glass bottles with positive attributes and paper bottles with negative attributes) with the other set of pairings (i.e., paper bottles with positive attributes and glass bottles with negative attributes) (Greenwald et al., 2003). In general, the higher the *D*-score the stronger the association toward one set of concepts (also called the target-attribute pairings).

5.2 | Results

The results were analyzed in two ways, (1) following the approach of scoring suggested by Greenwald et al. (2003), and (2) by comparing the error rates and correct response latencies (within 2 SD) in the combined tasks (i.e., third and fourth blocks vs. sixth and seventh blocks) (e.g., Crisinel & Spence, 2009). *D*-scores are computed as the mean difference between the two types of target-attribute pairings, divided by the pooled standard deviation. In the current study, *D*-scores were automatically calculated by the script using the improved algorithm and the errors were handled by requiring the respondents to correct their responses (both procedures as described by [Greenwald et al., 2003]). A one-sample *t*-test on the *D*-scores revealed significant differences from zero (Beer: $M = 0.35$, $SD = 0.35$, $t(46) = 6.93$, $p < 0.001$, $d = 1.02$; Wine: $M = 0.37$, $SD = 0.43$, $t(46) = 5.81$, $p < 0.001$, $d = 0.86$), which suggests a stronger association of the glass (vs. paper) bottles with positive (vs. negative) attributes. As there were no differences between the results of the wine and beer IATs ($t(90) = 0.81$, $p = 0.42$), the data of both were merged and are further reported as a single entity.

A paired *t*-test of the correct latencies (in milliseconds [ms]) within 2 SD of the combined task blocks showed that participants were significantly faster [in milliseconds (ms)] in compatible blocks (i.e., glass-bottles with positive attributes and paper-bottles

with negative attributes; GB-Pos/PB-Neg) when compared with incompatible blocks (i.e., glass-bottles with negative attributes and paper-bottles with positive attributes; PB-Pos/GB-Neg) ($M_{\text{Compatible}} = 817.01$ ms, $SD = 170.74$, $M_{\text{Incompatible}} = 940.16$ ms, $SD = 230.26$, $t(92) = 7.26$, $p < 0.001$, $d = 0.76$), suggesting a stronger association of glass-bottled (vs. paper-bottled) alcoholic drinks with positive (vs. negative) attributes (See Figure 5 and Table 3). A Wilcoxon sign-rank test (note that the error rate data were non-normal) revealed that participants made significantly less number of errors in the compatible blocks (i.e., GB-Pos/PB-Neg) compared with incompatible blocks (i.e., PB-Pos/GB-Neg) ($M_{\text{ErrorsCompatible}} = 7.33\%$, $SD = 7.37$, $M_{\text{ErrorsIncompatible}} = 11.65\%$, $SD = 8.30$, $Z = 5.03$, $p < 0.001$, $r = 0.53$). The results supported H3.

5.3 | Discussion

The results of Study 2 confirmed the stronger association of the paper (vs. glass) bottles with negative (positive) sensory attributes than vice versa at the implicit level. This indicates automatic and unconscious processing (i.e., a negative halo effect) that infers alcoholic beverage quality from its packaging material. Next, Study 3 was conducted to

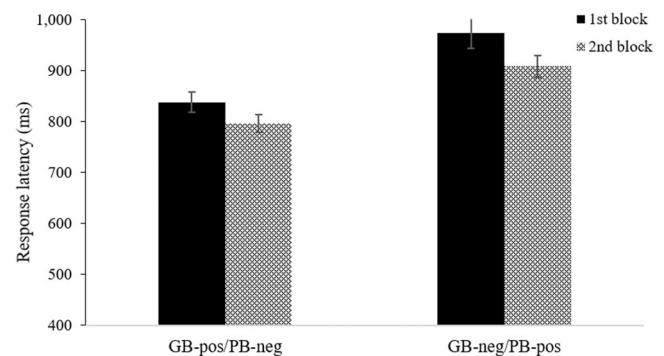


FIGURE 5 Correct response latencies (within 2 SD) in the combined tasks. 1st & 2nd blocks represent the first and second blocks of the combined tasks. Error bars denote the SE of means.

TABLE 2 Summary of the IAT blocks.

Block	Task	E key response	I key response	No. of trials
1	Practice to categorize targets	Glass bottles	Paper bottles	20
2	Practice to categorize attributes	Positive attributes	Negative attributes	20
3	Combined task	Glass bottles + positive attributes	Paper bottles + negative attributes	20
4	Combined task	Glass bottles + positive attributes	Paper bottles + negative attributes	40
5	Practice to categorize targets with reversed keys	Paper bottles	Glass bottles	20
6	Combined task with reversed keys	Paper bottles + positive attributes	Glass bottles + negative attributes	20
7	Combined task with reversed keys	Paper bottles + positive attributes	Glass bottles + negative attributes	40

Abbreviation: IAT, Implicit Association Test.

Note: Half of the participants started the IAT with the compatible block and the other half started with the incompatible block.

investigate how marketing communication tools could improve the messaging related to paper-bottled alcoholic beverages.

6 | STUDY 3: EFFECT OF THE ENFORCED MESSAGING AND PACKAGING ESTHETICS ON THE PERCEIVED SENSORY ATTRIBUTES

So far, we have identified that consumers tend to hold inferior implicit and explicit evaluations toward paper-bottled alcoholic beverages. This is possible as consumers deem glass to be superior for alcoholic beverages (when compared with paper or plastic) and associate the qualities of superior packaging with the contained beverages. This study thus aimed to investigate whether manipulations of external cues (e.g., framing of message or packaging esthetics) could improve the perceptions of paper-bottled beers. To test the hypotheses, we used the message “New look. Same great taste,” and we manipulated the packaging esthetics with a paper bottle wrapped in a stylish art design (i.e., more attractive) versus a plain paper bottle (i.e., less attractive) (here note that most paper-bottled beers available currently in the market are packaged plainly). Since Studies 1 and 2 showed no significant difference in the evaluations of beer and wine, we focused only on beer in this study.

TABLE 3 Correct response latencies (within 2SD) and overall error rates in the combined blocks.

	Block	Mean RT (ms)	Mean error rate (%)
GB-Pos/PB-Neg	First	827.86 (185.58)	6.61 (8.41)
	Second	796.16 (170.92)	7.69 (8.58)
PB-Pos/GB-Neg	First	972.63 (275.02)	13.72 (10.72)
	Second	907.69 (207.98)	10.61 (8.41)

Note: Figures in parentheses denote the SD.

Abbreviations: GB-Pos/PB-Neg, Glass-bottled alcoholic drinks with positive attributes and Paper-bottled alcoholic drinks with negative attributes; PB-Pos/GB-Neg, Paper-bottled alcoholic drinks with positive attributes and Glass-bottled alcoholic drinks with negative attributes; RT, response time.

6.1 | Method

6.1.1 | Participants

One hundred and seventy-one participants (aged > 21 years due to minimum legal drinking age laws in the United States) with normal color vision were recruited (Males = 95, Females = 71, and Unspecified gender = 3; $M_{\text{age}} = 39.73$ years old, $SD = 11.76$, age range = 21–81 years old). Data from two participants who provided the same answers to all the questions were excluded from the analyses.

6.1.2 | Procedure

A 2 (bottle type: plain vs. stylishly-wrapped) \times 2 (enforced messaging: present vs. absent) between-subjects design was used. A pretest was conducted to verify the higher (i.e., stylishly wrapped) and lower attractiveness (i.e., plain) of the bottles ($t(49) = 3.23$, $p = 0.002$, $d = 0.46$; $M_{\text{wrapped}} = 64.10$, $SD = 24.38$; $M_{\text{plain}} = 47.36$, $SD = 30.92$).

Like Study 1, participants were assigned randomly to one of the four conditions and presented with the corresponding ad of beer (see Figure 6 for the stimuli used); they then rated the beer on taste, the attractiveness of the bottle, and purchase likelihood for self-consumption and gifting (Mo et al., 2018). The evaluations were made on VAS scaling from 1 to 100. The taste was measured using the scales of favor and mouthfeel as in Study 1 (flavor and aftertaste: 1 = *Not at all good*, 100 = *Very good*; smoothness, thickness, fizziness: 1 = *Not at all smooth/thick/fizzy*, 100 = *Very smooth/thick/fizzy*). Attractiveness was anchored by 1 = *Not at all attractive*, 100 = *Very attractive*. Purchase likelihood was measured using scenarios adapted from Yang and Raghubir (2005) (for purchase likelihood for self-consumption—“You are celebrating a special occasion and have invited a small group of friends home. You want to celebrate the occasion with a special beer for the event. How likely are you to buy this beer for your own consumption?” (1 = *Not at all*, 100 = *Very much*); for purchase likelihood for gifting—“Your friend is celebrating a special occasion and has invited you and a small group of friends home. You cannot attend the event, however, you want to gift your

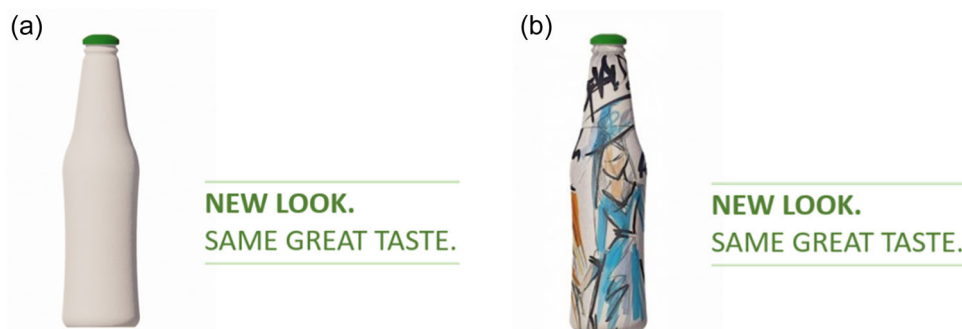


FIGURE 6 The images represent the conditions of presence versus absence of the enforced messaging for (a) a plain paper bottle and (b) a stylishly-wrapped paper bottle. In the “message-absent” condition, participants saw the bottles without the message.

friend a special beer for the event. How likely are you to buy this beer for gifting?" [1 = *Not at all*, 100 = *Very much*]).

Lastly, they indicated whether they noticed the product claim (e.g., New look. Same great taste.) with the beer image (0 = No, 1 = Yes).

6.2 | Results

6.2.1 | Manipulation check

An independent samples *t*-test revealed that participants rated the stylishly-wrapped (vs. plain) paper bottles as more attractive ($t(167) = 3.25$, $p = 0.001$, $d = 0.50$; $M_{\text{wrapped}} = 59.99$, $SD = 32.84$; $M_{\text{plain}} = 44.12$, $SD = 30.64$). A χ^2 test showed that participants were aware of the presence (vs. absence) of the enforced messaging about the original taste ($\chi^2(1, N = 169) = 84.11$, $p < 0.001$, Cramer's $V = 0.71$; present = 88.1%, absent = 88.4%).

We performed four two-way analysis of covariances (ANCOVAs) to investigate the effect of the type of bottle and enforced messaging on taste, purchase likelihood for self-consumption and gifting, and attractiveness with the covariates of age and drinking frequency. Since none of the covariates was significant in all analyses ($ps > 0.07$), we focused on significant effects.

6.2.2 | Tastes

The results revealed the effect of enforced messaging on taste, whereas the effect of the type of bottle on taste was not observed ($p = 0.63$) (see Table 4). Specifically, the perceived taste of beers was rated as significantly higher in the presence of enforced-messaging (vs. absent) condition; $F(1, 163) = 4.67$, $p = 0.032$, $\eta_p^2 = 0.03$; $M_{\text{Present}} = 59.40$, $SD = 21.59$; $M_{\text{Absent}} = 52.08$, $SD = 22.39$), supporting H4. As

expected, the findings imply that the enforced messaging could improve the expectations of the taste of paper-bottled beers.

6.2.3 | Purchase likelihood

The results revealed that the effect of enforced messaging on purchase likelihood for self-consumption ($p_{\text{Message}} = 0.07$) and gifting ($p_{\text{Message}} = 0.07$) was not significant, rejecting H5. The significant effect of the type of bottle on purchase likelihood for self-consumption ($p_{\text{Bottle}} = 0.10$) and gifting ($p_{\text{Bottle}} = 0.08$) was not significant. The interaction effect between the enforced messaging and the type of bottle was not found ($p_{\text{Self-consumption}} = 0.24$; $p_{\text{Gifting}} = 0.38$).

6.2.4 | Attractiveness

The results revealed that the effect of the type of bottle on attractiveness was significant; no effect of the enforced messaging was not observed ($p = 0.09$). Specifically, the stylishly-wrapped (vs. plain) paper bottles were rated as more attractive; $F(1, 163) = 10.94$, $p = 0.001$, $\eta_p^2 = 0.06$; $M_{\text{Wrapped}} = 59.99$, $SD = 32.84$; $M_{\text{Plain}} = 44.12$, $SD = 30.64$).

Next, a mediation analysis (PROCESS model 4 with 5000 bootstrap samples; Hayes, 2017) was conducted to investigate whether attractiveness mediates the effect of the type of bottle on taste and purchase likelihood for self-consumption, and gifting (see Figure 7).

6.2.5 | Tastes

The direct effect of the type of bottle on taste was significant ($b = -5.75$, $SE = 2.72$, $t(166) = -2.12$, $p = 0.036$). The indirect effect of the type of bottle on taste through attractiveness was significant ($b = 1.71$, $SE = 2.27$,

TABLE 4 Results of Study 3: Expected attributes of the plain versus stylishly-wrapped paper bottles for beers.

Package	Message	M (SD)				n
		Tastes	Self-consumption	Gifting	Attractive	
Plain	Absence	53.71 (21.95)	44.88 (34.73)	37.28 (35.02)	43.07 (30.85)	43
	Presence	56.34 (22.86)	49.76 (36.16)	40.62 (34.09)	45.19 (30.76)	42
	Total	55.01 (22.31)	47.29 (35.32)	38.93 (34.40)	44.12 (30.64)^{b**}	85
Wrapped	Absence	50.40 (22.98)	48.33 (33.36)	40.05 (33.76)	52.81 (34.39)	42
	Presence	62.46 (20.06)	62.40 (28.67)	55.90 (33.62)	67.17 (29.92)	42
	Total	56.43 (22.28)	55.37 (31.72)	47.98 (34.43)	59.99 (32.84)^{b**}	84
Total	Absence	52.08 (22.39)^{a*}	46.59 (33.90)	38.65 (34.23)	47.88 (32.82)	85
	Presence	59.40 (21.59)^{a*}	56.08 (33.05)	48.26 (34.52)	56.18 (32.12)	84
	Total	55.72 (22.24)	51.31 (33.72)	43.43 (34.61)	52.01 (32.64)	169

Note. Paired superscripted letters (e.g., a, b) in each column represent significant mean differences in each dimension. Bold figures represent mean differences.

a* = $p < 0.05$.

b** = $p < 0.01$.

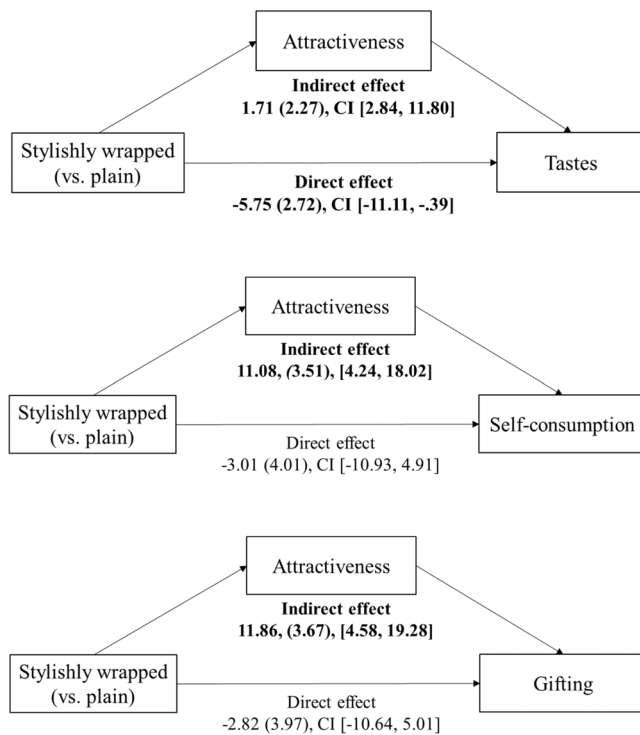


FIGURE 7 The figures illustrate the mediating effect of attractiveness on the relationship between the type of paper bottle (stylishly wrapped vs. plain) and taste, purchase likelihood for self-consumption, and gifting in Study 3. Unstandardized coefficients are represented. The values in parentheses indicate the standard error. The values in bold show significant effects at $p < 0.05$.

95% confidence interval [CI]: [2.84, 11.80], supporting H6. Specifically, the stylishly wrapped bottle was rated as more attractive ($b = 15.87$, $SE = 4.89$, $t(167) = 3.25$, $p = 0.001$), and the attractiveness was positively related to taste ($b = 0.45$, $SE = 0.04$, $t(166) = 10.83$, $p < 0.001$). This implies that attractiveness partially mediated the relationship with taste.

6.2.6 | Self-consumption

The direct effect of the type of bottle on self-consumption was not significant ($p = 0.45$). The indirect effect of the type of bottle on self-consumption through attractiveness was significant ($b = 11.08$, $SE = 3.51$, 95% CI: [4.24, 18.02], supporting H7. Specifically, the stylishly wrapped bottle was rated as more attractive ($b = 15.87$, $SE = 4.89$, $t(167) = 3.25$, $p = 0.001$), and the attractiveness was positively related to self-consumption ($b = 0.70$, $SE = 0.06$, $t(166) = 11.34$, $p < 0.001$). This implies that attractiveness fully mediated the effect of the type of bottle on self-consumption.

6.2.7 | Gifting

The direct effect of the type of bottle on gifting was not significant ($p = 0.48$). The indirect effect of the type of bottle on gifting through

attractiveness was significant ($b = 11.86$, $SE = 3.67$, 95% CI: [4.58, 19.28], supporting H7. Specifically, the stylishly wrapped bottle was rated as more attractive ($b = 15.87$, $SE = 4.89$, $t(167) = 3.25$, $p = 0.001$), and the attractiveness was positively related to gifting ($b = 0.75$, $SE = 0.06$, $t(166) = 12.27$, $p < 0.001$). This implies that attractiveness fully mediated the effect of the type of bottle on gifting.

6.3 | Discussion

This study demonstrates that the enforced messaging and packaging esthetics can alter the perceived sensory attribute and purchase likelihood of paper-bottled alcoholic drinks. Specifically, the presentation of enforced messaging can improve the expected tastes of paper-bottled beers. Moreover, wrapping the paper bottles with a stylish design led to enhanced attractiveness which could enhance the expectations of taste and purchase likelihood for self-consumption and for gifting on special occasions.

7 | GENERAL DISCUSSION

While many alcoholic beverage manufacturers are embracing “green bottles,” the current research reveals the negative halo effects of sustainable packaging in terms of alcoholic beverages packaged in innovative paper bottles. The results demonstrate that consumers implicitly and explicitly tend to hold the “paper negative halo” effect while judging the quality of the beverage within. Specifically, they perceive alcoholic beverages (i.e., beer and wine) packed in paper bottles to be of inferior quality (i.e., inferior flavor, mouthfeel, aroma/appearance/others) than those packed in glass bottles. They also exhibited a lower purchase likelihood (and expected lower prices) for the beverages packed in paper bottles.

The phenomenon is possible because consumers use their impressions of packaging materials to make an inference about the beverage's qualities. Prior research has demonstrated that holding and sipping cold tea from a glass cup leads consumers to perceive the tea as more pleasant (e.g., sweeter) than from a plastic and paper cup (Tu et al., 2015), which is consistent with our study that the beverages packed in glass (vs. paper) bottles are perceived as higher mouthfeel, better taste, and flavor. Previous studies suggest that foods and beverages in heavier (vs. lighter) product packaging are perceived as more dense and carbonated (Maggioni et al., 2015; Piqueras-Fiszman & Spence, 2012b). The effect is also reflected in our study where beverages packed in glass (vs. paper) bottles are expected thicker and fizzier in mouthfeel. Moreover, a heavier wine bottle is perceived as higher in quality and price (Piqueras-Fiszman & Spence, 2012a). This is in line with our findings that beer and wine packed in glass bottles are expected to be better quality and priced higher than paper bottles, and consumers are more willing to purchase those.

We further demonstrate that presenting a claim about the original taste of the new product can minimize such a negative halo effect. We argue that highlighting “same great taste” makes the original taste of the product salient (over the inferior paper packaging) leading to a decline of inferior feeling toward paper materials. As expected, participants perceived paper-bottled beer with (vs. without) enforced messaging claims as tastier. Besides, packaging esthetics also play a significant role in facilitating perceived taste and purchase likelihood via the mediating effect of attractiveness. One possible explanation relates to the halo effect (Nisbett & Wilson, 1977). Consumers may subconsciously project positive feelings toward the stylishly-wrapped bottle to the overall evaluation of beverages, resulting in the perception of a better taste and purchase likelihood for their own consumption as well as gifting.

7.1 | Theoretical contributions

This study contributes to the extant literature in three ways. First, we advance previous literature on alcoholic beverages by examining the effect of packaging materials (paper vs. glass) on the perception of product quality, which is yet unexplored. To the best of our knowledge, this study provides the first evidence of consumer perception of alcoholic beverages in sustainable packaging. While prior studies demonstrated that a variety of external cues (e.g., container shape, Barnett et al., 2016; beverage color, Carvalho et al., 2017; weight, Piqueras-Fizman & Spence, 2012a) can set expectations regarding sensory properties of the beverages, the influence of sustainable packaging is under-researched. Our findings enrich this research stream by linking novel sustainable packaging in the alcoholic beverage sector with consumer expectations of sensory and marketing attributes.

Second, we provide novel findings on the sustainable packaging literature in marketing. While extensive research has suggested the positive effect of sustainable packaging on food evaluation, our findings argue that this is not the case for alcoholic beverages. Previous research has demonstrated that consumers hold a positive bias toward environmentally friendly packaging that is (absolutely and partially) made of paper due to the “paper = good” belief (Sokolova et al., 2023). Food products packaged in paper packaging are often judged as of better quality than identical/similar products in plastic packaging (Donato et al., 2021; Magnier et al., 2016; Rebollar et al., 2017). However, our results show that the opposite holds true for paper packaging in alcoholic beverages, where paper-bottled alcoholic beverages are expected to be of lower quality and thereby have a lower purchase likelihood than glass-bottled drinks. Further, recent research using the IAT paradigm suggested positive associative linkages between sustainable (i.e., compostable) food packaging and food healthiness (Koenig-Lewis et al., 2022). In contrast, our IAT results revealed negative associations of sustainable (i.e., paper) bottles (compared with regular glass bottles) in the alcoholic beverage sector. Given the consistency of negative explicit and implicit associations toward sustainable paper packaging, our findings indicate that the effect of paper packaging on consumer evaluations might be dependent on the type of product.

Lastly, we enrich previous literature on food and packaging perception (Mookerjee et al., 2021; Popovic et al., 2019) by shedding light on how to attenuate the negative halo effect driven by paper packaging. Previous research demonstrated that an explicit message regarding food quality could reduce bias in perception toward unattractive food products (Mookerjee et al., 2021). We further reveal that the claim of the “same old taste” can potentially improve judgments toward paper-bottled alcoholic beverages. Moreover, prior research has demonstrated that packaging esthetics is an important antecedent of consumers' behavior toward food in sustainable packaging (Popovic et al., 2019). We support this notion and demonstrate that the attractiveness of packaging design can improve the perceived taste of alcoholic beverages and purchase likelihood.

7.2 | Managerial implications

The findings of this study have significant managerial implications. While alcoholic beverage manufacturers have successfully developed sustainable green bottles, their attempts might be challenged by negative attitudes toward this innovative packaging. Given that alcoholic beverages are hedonic products, taste is likely to be a critical attribute in determining consumer purchase likelihood. Although consumers are willing to engage in green consumption, they may hesitate to adopt alcoholic beverages in sustainable green bottles unless the expected quality (e.g., taste) is comparable to those in glass bottles. Our findings suggest that brands should emphasize that the change of packaging does not impact the quality of the content within, together with presenting information on how innovative the packaging is and how it benefits the environment. This is to ensure consumers that the beverage retains the same taste they liked. For instance, brands can display the explicit message “same great taste” when advertising their alcoholic beverages and on retail shelves where they are placed.

Although the brownish-like cardboard packaging (as it is the norm currently) possibly signals the sustainability of products, consumers deem it unattractive when it becomes packaging for alcoholic beverages. Our findings revealed that consumers viewed paper bottles with visual artwork as more attractive than plain paper bottles. The halo effect of packaging appeal prevails so that the visually attractive paper bottles could induce the superior expectation of beer quality compared with the plain paper bottles. Therefore, we suggest alcoholic manufacturers collaborate with packaging designers to design a visually attractive bottle, which is a critical factor that plays a role when evaluating the content within (Otto et al., 2021). This tactic will help direct consumers' attention toward the packaging attractiveness when sustainable alcoholic beverages are presented. The impression toward the packaging then would influence positively the expectation of the tastes and purchase likelihood.

Here note that the communication strategy and packaging esthetics reduce not only the bias in consumer perception but also attenuate the psychological reactance that often comes with a new

product/package design (Mowen, 1988). Once consumers are reassured that they can have paper-bottled alcoholic beverages with desirable quality, the paper bottles will be more welcomed and have a positive impact on the environment accordingly. Therefore, implementing such marketing strategies, would subsequently help reduce the environmental burden and conserve energy resources. That is, compared with traditional glass bottles, paper bottles cause less carbon footprint throughout their life cycle (Gilbert, 2023). Also, they consume less fuel/energy during transportation to market due to their lighter load than a load of glass bottles (Gilbert, 2023). Thanks to their recyclability, they help reduce the level of waste in society which is crucial for environmental sustainability. Overall, we believe that our findings would be a fundamental step toward the path of environmental protection by providing strategies to promote the “green bottles.”

7.3 | Limitations and future research

There are some limitations in the current research which suggest avenues for future research. First, in this article, we did not explore consumers' actual behavior. Although we used the actual packaging designs introduced by manufacturers (*Frugalpac* and *Carlsberg*) as stimuli (see Figure 6), we did not measure consumers' actual responses to the products. This leaves room for future research which could include a field experiment and improve the external validity of this research (Viglia et al., 2021).

Second, while our findings suggest that consumers associated paper-bottled alcoholic beverages with negative attributes due to the inferior connotation of paper materials when used for alcohol, one may argue about the unexplored role of product novelty. Alcoholic beverages rarely appeared in paper bottles until they were first introduced at the beginning of 2023 (Gilbert, 2023). In contrast, paper-packaged foods are familiar to consumers, which might have allowed them to link the positive attributes of sustainable packaging with the food within. Prior research suggested that a new product often triggers consumers' psychological reactance (Mowen, 1988), leading to negative evaluations (which might be the case for paper-bottled alcoholic beverages). We predict that in the future when paper bottles become familiar for alcoholic beverages, this effect might be attenuated; future research can explore further.

Third, this study specifically tested the differences between paper versus glass-packaged alcoholic beverages. Alcohol is packed in a wide variety of materials (e.g., aluminium, steel) and future research can explore whether our findings could be extended to other packaging materials in alcoholic beverages. Similar to our findings, prior research has demonstrated inferior attitudes toward cans versus bottled beers (Barnett et al., 2016); given our findings, this research stream can be explored further.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

ORCID

Monin Techawachirakul  <http://orcid.org/0000-0002-8407-1572>

Abhishek Pathak  <http://orcid.org/0000-0003-2779-9265>

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APPENDIX A: MULTIPLE COMPARISONS FOR EACH SENSORY ATTRIBUTE IN STUDY 1

A series of *t*-tests were performed to demonstrate the differences in sensory attributes between a paper and a glass bottle.

Flavor: Participants rated the expected flavor of alcoholic drinks packaged in a paper bottle as significantly inferior/lower than that in a glass bottle (Flavor: $t(115) = 3.58$, $p = 0.002$, $g = 0.66$ ³; Aftertaste: $t(115) = 3.68$, $p < 0.001$, $g = 0.64$).

Mouthfeel: Participants rated the expected mouthfeel of alcoholic drinks packaged in a paper bottle as significantly inferior/lower (except for astringency) than that in a glass bottle (Smoothness: $t(109.91) = 3.74$, $p < 0.001$, $g = 0.68$; Thickness: $t(115) = 4.37$, $p < 0.001$, $g = 0.81$; Astringency: $t(115) = 1.70$, $p = 0.096$; Fizziness¹: $t(59) = 2.42$, $p = 0.022$, $g = 0.62$).

Aroma/appearance/other: Participants rated the expected aroma/appearance of the alcoholic drinks packaged in a paper bottle as

significantly inferior/lower (except for the appearance) than that in a glass bottle (Aroma: $t(115) = 2.56$, $p = 0.017$, $g = 0.47$; Color: $t(115) = 2.69$, $p = 0.012$, $g = 0.50$; Appearance: $t(115) = 1.68$, $p = 0.096$, $g = 0.31$; Quality: $t(115) = 4.25$, $p < 0.001$, $g = 0.79$; Freshness: $t(110.18) = 3.64$, $p < 0.001$, $g = 0.66$; Overall taste: $t(115) = 3.66$, $p < 0.001$, $g = 0.68$).

APPENDIX B: IAT BLOCKS IN STUDY 2

We designed the IAT study on the Inquisit 6 platform of Millisecond.com. Table B1 represents categories and target words used in Study 2. Participants in the wine condition were presented with "wine" instead of "beer." In each trial, the target words were presented in the center of the screen until participants pressed one of the two keys (E or I) on the computer keyboard. All the target words appeared in each block as displayed in Figure B1.

TABLE B1 Categories and target words for measuring implicit associations between packaging type and alcoholic beverage attributes.

Category	Target words
Glass bottles	Glass bottle, Glass beer-bottle, Glass-bottled beer
Paper bottles	Paper bottle, Paper beer-bottle, Paper-bottled beer
Positive attributes	Full-bodied, High quality, Rich taste, Full of flavor, Pricey, Exciting, Cheerful, Thick, Smooth, fresh, Clear
Negative attributes	Light-bodied, Low quality, Poor taste, Lacks flavor, Cheap, Boring, Dull, Watery, Coarse, Stale, Turbid

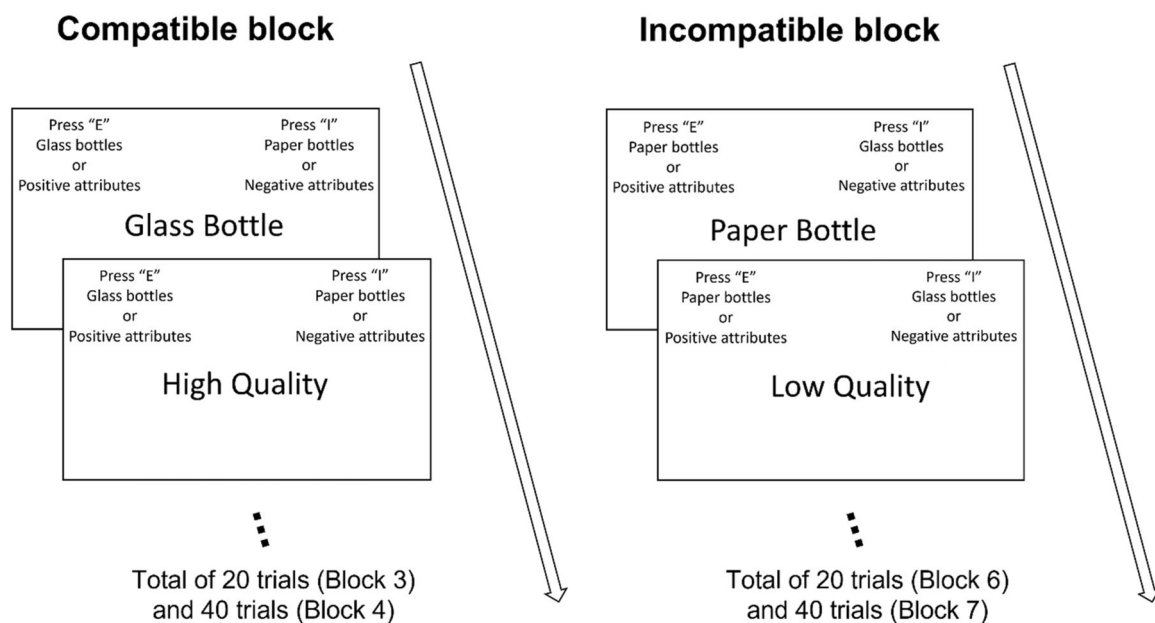


FIGURE B1 A schematic diagram of the Implicit Association Test (IAT) task.

³Hedges' *g* was calculated for the effect size because of different sample sizes of the paper bottle condition ($n = 61$) and of the glass bottle condition ($n = 56$).