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The "healthy = (un)tasty" intuition concerning colour in organic wine labels

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Abstract

Organic labels certify a product's commitment to ecological balance. However, the association between organic products and health benefits can inadvertently promote overconsumption, particularly in the case of alcoholic beverages such as red wine. In research conducted with participants from the United States, we demonstrate that consumers implicitly link organic wine with health and pleasure, which is explicitly reflected in heightened purchase intentions and anticipated consumption volume. Interestingly, our findings indicate that these effects are moderated by label colour. Implicitly, red organic labels are associated with a less healthy but tastier drink than green labels. Explicitly, organic labels overall stimulate higher purchase intentions regardless of their colour. Nevertheless, our results highlight a moderating role of label colour. Compared to green labels, red organic labels elicit increased purchase intentions, driven by greater expectations of tastiness associated with the red label. Additionally, red labels convey a perception of higher alcohol strength and an intention to consume wine in smaller quantities versus green labels. Thus, the use of a red label may signal both pleasure and potential danger, facilitating organic wine sales without necessarily increasing consumption. These findings have implications for marketers and policymakers interested in supporting responsible wine consumption.

1 | INTRODUCTION

The global organic food market, valued at 227.2 billion USD in 2022, is projected to increase to 437.4 billion USD by 2026, indicating significant growth and a continued upward trajectory. Similarly, the organic wine sector, valued at 8.9 billion USD in 2021, is also showing substantial growth, with a projected compound annual growth rate of 10.2% from 2022 to 2030 (Grand View Research, 2022; Shahbandeh, 2022). However, regional disparities persist: While the United States remains the largest market for organic food, it accounted for only 7.2% of total food sales in 2023, in contrast to Denmark's 15.2% and France's 9.2% (Buchholz, 2024). Discrepancies are even more pronounced in the case of organic wines. In 2021, France held a significant share (26.62%) of the global organic vineyard market, in contrast to the United States' mere 5.14% (Conway, 2024).

Different research disciplines such as agriculture, economics, environmental science, and sociology, offer varied perspectives on organic products (Bellon & Lamine, 2009), and collaboration with social sciences is essential for broadening the discourse beyond agriculture to address the sustainability of organic products in the marketplace. In the context of consumer behaviour, research suggests that consumers often choose organic products because of their perceived health benefits rather than solely for environmental reasons (Hughner et al., 2007; Saliba & Moran, 2010; van Herpen et al., 2012). This expectation can be explained by the ability of individuals to learn from environmental structures. Indeed, it has been reported that organic

foods are, on average, 30% healthier than non-organic foods (Perkovic & Orquin, 2018). Food analyses tend to support the view that organic products may have some health benefits as compared to non-organic products (Mie et al., 2017). This is also true for organic wine. In terms of nutritional value, organic wine may contain higher levels of phenolic compounds and antioxidant activity compared to conventional wine (Laureati & Pagliarini, 2016). However, this expectation of healthiness could potentially hinder the development of the organic wine market, notably in the United States. US consumers have an implicit intuition that healthy items are less tasty, leading them to prefer unhealthy products (Raghunathan et al., 2006), while this intuition is not found in other populations such as the French (Werle et al., 2013).

"Organic" is a designation that signifies that a food or agricultural product has been cultivated using approved standards. In the United States, to be eligible for U.S. Department of Agriculture (USDA) organic labelling, a product must have at least 95% certified organic content. The land must be free of prohibited substances for at least three years, and the use of genetic engineering, ionizing radiation, and sewage sludge is strictly forbidden in organic operations (USDA, n.d.). For wine to be labelled as organic, both grape cultivation and wine production must be certified. Non-agricultural ingredients used in organic wine must be on the national list of allowed substances and cannot exceed 5% of the total product. Additionally, sulphites cannot be added to organic wine under USDA certification standards (2013), in the European Union, sulphites addition is allowed up to specific amounts depending on the style of the wine (2018).

The more ecologically friendly production practices and the health-conscious nature of organic wine should ideally support the advancement of their production and the promotion of their sales compared to non-organic wines. The issue is that some studies indicate that even moderate alcohol consumption, including organic wine, can have a negative impact on the health of consumers (Daviet et al., 2022). For example, adverse associations between alcohol consumption and brain macrostructure and microstructure emerge even in those individuals who consume an average of only one to two daily alcohol units, and these associations intensify with higher levels of alcohol intake (Daviet et al., 2022). Wine consumption during pregnancy, even in small quantities, poses a specific danger to foetuses (Ethen et al., 2009), as well as during childhood and adolescence (Foltran et al., 2011). Thus, although promoting the consumption of organic wine can have some benefits for both the environment and consumer health (Laureati & Pagliarini, 2016), it is important that such promotion does not also stimulate overconsumption (Daviet et al., 2022; Petit et al., 2022).

Organic labels could lead US wine drinkers to consume more of the beverage by creating a health halo effect resulting from the extension of the positive perception of organic product healthiness to consumer assessments of other attributes (Schuldt & Schwarz, 2010). Organic labels have been shown to have a positive effect on expected taste and on the attractiveness of food products among US consumers (Nadricka et al., 2020). However, this health halo effect was observed for healthy products, but not for unhealthy ones. On the contrary, certain studies have demonstrated that the health halo only affects calorie estimation of unhealthy foods (Folwarczny et al., 2023; Zhu et al., 2019). In terms of how it affects the perception of red wine, the health halo effect generated by organic labels needs to be better understood because it applies to a product that is tasty, yet inconclusive in terms of health benefits. It is unclear whether the health halo effect generated by organic labels also applies to red wine, especially among a US population that exhibits an unhealthy = tasty intuition (Raghunathan et al., 2006), but for whom organic labels help reinforce the tastiness of healthy products (Nadricka et al., 2020).

To counteract the potential halo effect of organic labels on the perception of red wine, we analyse the moderating effect of the colour of these labels, which are generally green. It is possible that this colour contributes to generating the halo effect. For example, Schuldt (2013) presents evidence indicating that products are perceived to be healthier when presented with green calorie labels rather than red or white labels. By using labels coloured red, a hue that can be associated with danger (Elliot et al., 2009) as well as tastiness (Spence, 2018; Spence et al., 2015), we were able to produce insights into how the interaction between label and colour can create a halo effect, and potentially, how to help mitigate its effects. This in turn, could offer valuable managerial recommendations for both public authorities and industry professionals in the organic wine sector.

2 | CONCEPTUAL BACKGROUND AND HYPOTHESES

2.1 | The "Healthy = (Un)Tasty" intuition for organic wine

The perception of red wine as a healthy product has evolved over time, with historical and modern contexts shaping consumer beliefs. In ancient Rome, the health benefits of red wine consumption were already well-known, continuing a tradition of associating red wine with health benefits (Lukacs, 2012). This notion was reignited in more recent times by Renaud and de Lorgeril's observation (1992) linking the French paradox—a low mortality rate from heart disease among French consumers despite high saturated fat intake—to regular consumption of red wine. Nowadays, many consumers perceive red wine to offer moderate health benefits, particularly in terms of heart health (Petit et al., 2022; Saliba & Moran, 2010).

Further exploration into red wine's antioxidant properties reveals a broader range of potential health advantages (Castaldo et al., 2019). Characterized by a higher concentration of phenolic compounds (approximately 1800–3000 mg/L; Goldberg et al., 1996) compared to white wine, red wine is believed to impart health benefits primarily due to its antioxidant properties (Logan et al., 2008). While these polyphenols may act as antioxidants, further research is needed to understand their precise impact on human health (Yoo et al., 2010).

While red wine's potential health benefits are linked to its antioxidant-rich composition, the broader benefits of wine consumption may extend beyond the liquid itself. Social aspects such as mood

enhancement, stress reduction, sociability, and social integration reflect the multifaceted nature of the enjoyment and experience surrounding wine consumption (Peele & Brodsky, 2000). In focusing on US consumers, it is essential to understand how these dynamics interact on this population. The complex relationship between perceived healthiness, taste, and consumer behaviour in the US plays a critical role in influencing the perception and purchase intention for organic wine within this market.

In the US, food consumption under a utilitarian lens often prioritizes nutrients, quantity, and value for money, leading to an inverse implicit relationship between "healthy" and "enjoyable" foods in consumer perceptions (Raghunathan et al., 2006; Stearns, 1997). Research by Raghunathan et al. (2006) identified a negative implicit association between taste and health in the US population. The unhealthy = tasty intuition has been replicated several times, not only in the United States, but also Germany (Mai & Hoffmann, 2015) and Austria (Garaus & Lalicic, 2021). The issue is that such an implicit intuition triggers feelings of pleasure, prompting consumers to opt for less healthy food selections (Garaus & Lalicic, 2021; Raghunathan et al., 2006), as the perception of taste is processed more directly, and is thus more prominently considered as a specific benefit of food compared to healthiness (Petit, Basso, et al., 2016; Petit, Merunka, et al., 2016).

The negative implicit association between taste and health in the US is further influenced by societal factors such as Protestant values, where a distinction between "serious" and "trivial" activities shapes perceptions of healthy and palatable foods, potentially contributing to the perception that "unhealthy = tasty" in the American consumer mindset (Fischler & Masson, 2008; Zeller et al., 2014). Additionally, media messages promoting the consumption of nutritionally beneficial but hedonically challenging foods while discouraging overconsumption of palatable, yet unhealthy options further solidify these associations (Petit & Otterbring, 2024; Raghunathan et al., 2006). This nutritional communication about healthy foods is also found in other countries such as Austria, Norway, and Portugal (Wickramasinghe et al., 2021), which may explain why the unhealthy = tasty intuition pertains not only to US consumers (Garaus & Lalicic, 2021; Mai & Hoffmann, 2015). However, some countries, such as France, have a more comprehensive approach to healthy food communication that is less focused on nutritional content (Wickramasinghe et al., 2021). This difference may explain why the unhealthy = tasty intuition is not found in this population (Werle et al., 2013).

Research in France highlights a unique perspective where certain consumer groups exhibit a "healthy = tasty" intuition, reflecting a prioritization of sensory and social enjoyment in food consumption (Stearns, 1997; Werle et al., 2013). In France, the concept of "eating well" transcends mere nutrition, emphasizing gastronomic pleasure and social connection over health concerns, indicating a hedonic view of food consumption that differs from the utilitarian perspective prevalent in the US (Fischler & Masson, 2008; Werle et al., 2013). The contrast in food consumption attitudes observed between individuals in France and the US underscores the cultural divergence in prioritizing hedonic enjoyment over health considerations, providing valuable insights into the variances in consumer behaviours and perceptions regarding food products such as organic wine.

The hedonic approach can challenge the healthy = (un)tasty intuition, especially concerning organic products in the US. Organic labels have been shown to enhance the expected taste and appeal evaluations of healthy foods, impacting purchase intentions positively among US consumers (Nadricka et al., 2020). Additionally, research has noted that the assertion that "organic food tastes better" may vary depending on the product category, and not hold true for unhealthy foods, suggesting more nuanced perceptions (Fillion & Arazi, 2002; Nadricka et al., 2020). Thus, organic red wine, renowned for its perceived health benefits (Saliba & Moran, 2010), may not adhere to the healthy = (un)tasty intuition among US consumers. Specific studies have even indicated that organic labels can positively influence the perceived taste of wine, emphasizing a potential divergence in consumer perceptions of organic red wine (Apaolaza et al., 2017; Wang et al., 2022; Wiedmann et al., 2014).

Previous research has predominantly examined the healthy equals (un)tasty intuition of organic labels explicitly, though this intuition is often implicit (i.e., held on a subconscious level; Garaus & Lalicic, 2021; Haasova & Florack, 2019; Mai & Hoffmann, 2015; Raghunathan et al., 2006; Werle et al., 2013). According to Schacter (1987), memory of a recent event may manifest either explicitly through conscious recollection or implicitly through improved performance on tests, without conscious recollection. The Implicit Association Test (IAT) operates on the principle of implicit memory (Greenwald & Banaji, 2017). By indirectly measuring attitudes and stereotypes, the IAT reveals implicit biases that individuals may not consciously recognize. These implicit attitudes and stereotypes may stem from early formative experiences and cultural influences (Parise & Spence, 2012). For example, Raghunathan et al. (2006) highlighted that US consumers implicitly subscribe to the view that healthiness and tastiness are inversely related, regardless of their level of explicit belief in this relationship. This subconscious association influences their judgments and decisions, suggesting a disconnect between explicit beliefs and implicit behavioural patterns (Garaus & Lalicic, 2021; Raghunathan et al., 2006). For example, Mai and Hoffmann (2015) demonstrated that the unhealthy = tasty intuition works implicitly and independently of health consciousness. Consequently, even consumers who do not overtly believe that food with an organic label will taste better may make decisions as though they hold this belief (Garaus & Lalicic, 2021; Mai & Hoffmann, 2015; Raghunathan et al., 2006). Thus, even US consumers who may not report believing that a food displaying an organic label will be tastier, can nevertheless make judgments and choices as though they subscribed to such a view. Therefore, we postulate that, in the case of US consumers:

H1. Red wine with an organic label is implicitly perceived as healthier than red wine without an organic label.

H2. Red wine with an organic label is implicitly perceived as tastier than red wine without an organic label.

2.2 | The halo effect of label and colour

The perceived healthiness of organic red wine can positively influence purchase intention, but it may also inadvertently lead to overconsumption through the creation of a "health halo." The "halo effect" describes the propensity for one salient attribute of an object to affect the perception of other attributes (Thorndike, 1920). Food companies therefore use implicit package design elements (colours, imagery, material, and shape) to reinforce the health positioning of their products (Festila & Chrysochou, 2018). This is also the case for organic labels, which can positively impact perceived healthiness, regardless of whether the packaged products are objectively any healthier (Ares et al., 2023; see also Ellison et al., 2016; Ruggeri & Samoggia, 2018). By creating a health halo effect, health claims and labels may reduce the perceived calorie content of foods (Schuldt & Schwarz, 2010) and may thus lead to more positive nutritional evaluations (Lee et al., 2013).

The health halo can potentially make consumers choose higher-calorie products and even increase their consumption (Chandon & Wansink, 2007; Petit et al., 2022; Sundar & Kardes, 2015). For example, Petit et al. (2022) found that when a red wine is labelled as "natural," consumers tend to want to consume it more frequently. This aligns with findings indicating that naturalness significantly influences perceptions of food healthiness (Perkovic et al., 2022). Thus, among wine drinkers, wine labelled as organic might generate higher expectations in terms of the frequency and quantity of consumption compared to non-organic wine because it is perceived to be healthier (Mann et al., 2012). This health halo could lead wine drinkers to overconsume (Daviet et al., 2022; Ethen et al., 2009; Foltran et al., 2011; Yoo et al., 2021), which could be particularly significant for red wine compared to other alcohols labelled organic, given that it is often perceived as being healthier (Saliba & Moran, 2010) and because organic labels have been found to enhance the perception of tastiness of healthy products rather than unhealthy ones (Nadricka et al., 2020).

In order not to encourage the overconsumption of organic wine due to its perception as being healthier, without penalizing producers favouring environmentally friendly production methods, we explored the possibility of mitigating the health halo effect of these labels, which for the most part, is potentially linked to their green colour (e.g., USA: USDA Organic; France: AB Certifié Agriculture Biologique; Europe: EU Certified Organic Food). According to colour-in-context theory (Elliot & Maier, 2012), colour transcends mere aesthetics; it encapsulates meaning. Beyond surface-level judgments of pleasantness or unpleasantness, colours have psychological associations, symbolically communicating diverse information (see Spence & Van Doorn, 2022). Colour perception significantly impacts psychological processes aligned with the inherent meaning of the colour (Elliot & Maier, 2012). Colour-in-context theory also suggests that colour acts as an unconscious influence, shaping psychological processes. It serves as an implicit cue, subtly prompting favourable or unfavourable appraisals (Elliot & Maier, 2012). Understanding the psychological impact of colour on consumer perceptions of organic wine labels unveils the potential for strategies to counterbalance the health halo effect, thus enabling informed and balanced decisions without diminishing the commitment to sustainable production practices.

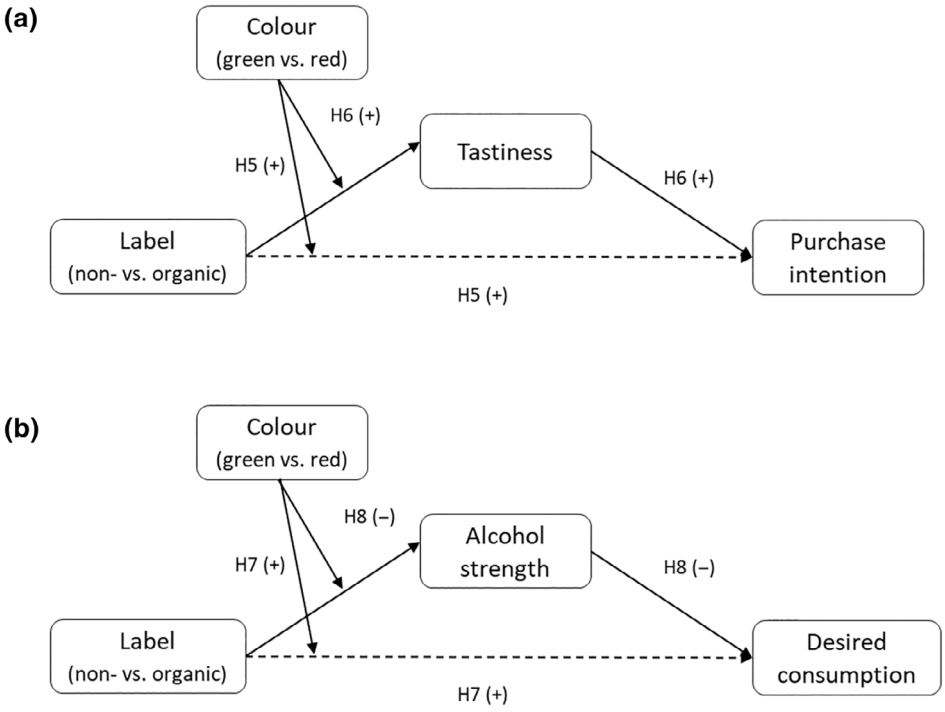
Colours convey meanings through learned associations (Labrecque et al., 2013; Spence & Van Doorn, 2022), and the colour green has positive associations relating to health and nature, which may contribute to create a health halo (Schuldt, 2013; Seo & Scammon, 2017; van Rompay et al., 2016). For example, Schuldt found that food products are typically perceived as healthier by consumers when they are presented with a label that is green. Since the colour green has more positive associations relating to health than red, healthiness perception should be higher for those wines with green organic labels, so that:

> **H3.** Red wine with a green organic label is implicitly perceived as healthier than with a red organic label.

The implicit perception of green as healthy could contribute to creating a health halo for organic wine labels, impacting the frequency and quantity of wine consumed (Petit et al., 2022). Therefore, using a different colour, such as red, for these labels might help reduce the health halo effect. Previous research has shown that consumers can transfer positive spillover effects from their predilections for elements such as a brand logo, to their inferences concerning product design (Bettels & Wiedmann, 2019). Unlike the colour green, the colour red has, at least in certain contexts, negative associations (Elliot et al., 2009). In daily life, red sometimes communicates warning (e.g., on stop signs), which may result in an implicit association between red and danger due to societal conditioning (Pravossoudovitch et al., 2014). Thus, the colour red may prompt consumers to feel some guilt about their consumption, leading them to modify their choices (Lunardo et al., 2021). For instance, the use of traffic-light–coloured labels has been shown to increase the consumption of green-labelled food products and decrease the consumption of red-labelled ones (Temple et al., 2011). Research conducted on organic labels showed that red labels influence people to be more vigilant and attentive and cause them to consider more of the claims shown on food labels, ultimately affecting their willingness to pay (Shen et al., 2018). Thus, using red as the colour for organic wine labels could alert consumers to the consequences of excessive wine consumption.

At the core of the colour-in-context theory is the notion that colour conveys distinct meanings in various contexts, thereby eliciting different consumer responses (Elliot & Maier, 2012). For instance, concerning approach-avoidance processes, a single colour may convey contrasting meanings and thus lead to opposing associations (Elliot & Maier, 2012). Thus, the colour red has also been shown to generate positive associations (e.g., warmth, passion; Bruder et al., 2021; Jacobs et al., 1991) and even generate flavour expectations (Spence, 2018; Spence et al., 2015). For example, by using red lighting (vs. white or green), it is possible to modify wine perception and render it sweeter and tastier for both regular consumers and experts (Spence et al., 2014). In fact, experts tend to be more prone to colour-induced taste changes compared to novices, presumably due to the advanced

FIGURE 1 Theoretical model.



knowledge of the former, leading to stronger sensory expectations (Wang & Spence, 2019). Moreover, the use of a red label on a bottle of wine has been shown to create more fruity and floral flavour expectations than labels of other colours (Lick et al., 2017). It should also be noted that red wines of a good vintage (i.e., ideal weather conditions during the growing season) usually have a deeper and richer red colour compared to poorer vintages (Spence, 2010a, 2010b). Thus, at the implicit level, using red for the label should promote an association with tastiness.

> **H4.** Red wine with a red organic label is implicitly perceived as tasting better than red wine with a green organic label.

At the explicit level, the colour red, due to its effects on expectations regarding sweetness, fruitiness, and floral notes (Lick et al., 2017; Spence, 2018), should enhance the anticipation of tastiness already generated by the organic label, which has been shown to positively impact purchase intention (Nadricka et al., 2020; see Figure 1a).

> **H5.** The presence of organic labels (vs. no organic labels) increases purchase intention for red wine, with the effect being stronger when the organic label is red compared to when it is green, indicating a moderation by colour.

> **H6.** Perceived tastiness positively mediates the effects of red labels on purchase intention so that the increase in perceived tastiness in the presence of the red label has a positive effect on purchase intention.

Red wine, while often considered healthier than other alcoholic beverages, still carries health risks and should be consumed responsibly. While organic labels may positively influence purchase intention by creating a health halo, they may also inadvertently encourage overconsumption (Chandon & Wansink, 2007; Petit et al., 2022; Sundar & Kardes, 2015). The colour red could act as a warning signal in this context (Daviet et al., 2022; Ethen et al., 2009; Foltran et al., 2011; Yoo et al., 2021) and could, for example, affect perceived alcohol strength, which often serves as a warning signal to consumers (Blackwell et al., 2018; Zhao et al., 2020). Research has demonstrated that labelling wine as lower in strength results in an increase in consumption (Vasiljevic, Couturier, Frings, et al., 2018). Therefore, using red (vs. green) colour for the organic label could serve to alert consumers about perceived alcohol strength, potentially leading them to reduce their desired quantity and frequency of wine consumption (see Figure 1b):

> **H7.** Organic labels (vs. no organic labels) increase consumers' desired quantity and frequency of wine consumption. Colour moderates these effects, such that the desired quantity and frequency of consumption is reduced when the organic label is red compared to green.

> **H8.** Estimated alcohol strength negatively mediates the effects of red labels on purchase intention so that the increase in estimated alcohol strength in the presence of the red label has a negative effect on purchase intention.

To test these hypotheses, two studies were conducted. Study 1 comprised four IAT tasks (Greenwald et al., 1998). The IAT has proven effective in assessing implicit associations between tastiness and healthiness (Dimofte, 2010; Greenwald et al., 1998; Raghunathan et al., 2006; Werle et al., 2013). Study 1a tested implicit associations between bottles of wine with organic labels (vs. without organic labels) and healthiness (H1). Study 1b tested the implicit associations between bottles of wine with organic labels (vs. without organic labels) and tastiness (H2). Study 1c focused on testing implicit associations between bottles of wine with organic labels (green vs. red) and healthiness (H3). Study 1d tested implicit associations between bottles of wine with organic labels (red vs. green) and tastiness (H4). Overall, Study 1 aimed to analyse whether, at an implicit level, the organic label can influence the perceived healthiness and tastiness of red wine and if the label colour can modulate these associations. Study 2 tested the effects of label colour on purchase intent (H5), desired quantity and frequency of wine consumption (H7), and the potential mediating effects of tastiness (H6) and alcohol strength (H8). The objective of this second study was to investigate whether, at an explicit level, the organic label can create a health halo effect, influencing the frequency and quantity of wine consumed as well as purchase intention, and whether label colour can moderate this effect.

3 | STUDY 1

3.1 | Materials and methods

According to the meta-analytic mean IAT test–retest of Gawronski et al. (2017), a minimum sample size of 100 participants is necessary for the conduct of an IAT. The IAT consisted of "seven "blocks" (sets of trials) and is used to measure spontaneous associations in memory between concepts (Greenwald et al., 1998). In each trial, participants see a stimulus (e.g., a word or image) in the centre of the screen. Stimuli represent targets (e.g., organic–non-organic wine) or categories (e.g., pleasant-unpleasant). The participant categorises the stimuli as rapidly as possible by pressing a designated key on the keyboard with the designated hand, while the computer records the response speed (see Appendix 1 for procedural details).

In Study 1a, 10 images of red wine bottles were used, presented either without an organic label or with the green-coloured "USDA Organic" label. Attributes included seven words associated with healthiness (e.g., "wholesome") and seven words associated with unhealthiness (e.g., "harmful"). Study 1b used the same targets as Study 1a, with seven words associated with tastiness (e.g., "yummy") and seven words associated with a lack of tastiness (e.g., "bland"). In Study 1c, the identical 10 images of red wine bottles from Studies 1a and 1b were presented with the "USDA Organic" label, coloured either green or red. The attributes remained consistent, with seven words related to healthiness and seven words related to unhealthiness. Lastly, Study 1d used the same targets as Study 1c, with seven words associated with tastiness and seven words associated with a lack of tastiness (see Appendix 2 for stimuli details).

3.2 | Results

3.2.1 | Study 1a: Organic = healthy intuition

A total of 105 US participants (M_{age} = 37.04 years; SD = 11.09; 51% female) were recruited through Prolific to take part in an IAT created using iatgen and integrated in a Qualtrics survey on July 4, 2022 (Carpenter et al., 2019). The IAT data were processed using the D score data cleaning and scoring algorithm (see Appendix 3 for the IAT data processing details; Greenwald et al., 2003).

Six participants were dropped due to their responding faster than 300 ms (considered too fast) on more than 10% of the critical trials, thus resulting in a final sample of 99 participants. The test lasted an average of 6 min, as did the other tests. We used sample t tests for our analyses to analyse whether our IAT D scores significantly differed from zero (Carpenter et al., 2019). A strong IAT effect was observed: scores favoured healthy organic wine ($M_{D\ Score}$ = .57, SD = .47, d = 1.23), which differed significantly from zero (t(98) = 12.26, p < .001, 95% $CI_{D\ Score}$ [.48, .66]; Table 1). This score is interpreted as a relative measure of the perceived healthiness of organic compared to non-organic wine, thus supporting H1.

3.2.2 | Study 1b: Organic = tasty intuition

A total of 104 US participants (M_{age} = 32.82 years, SD = 10.83, 49.6% female) took part in Study 1b on July 4, 2022. Four participants were dropped due to their speed, resulting in a final sample of 100. A strong IAT effect was observed: the score trended toward tasty organic wine ($M_{D\ Score}$ = .45, SD = .52, d = .86), which differed significantly from zero (t(99) = 8.56, p < .001, 95% $CI_{D\ Score}$ [.34, .55]; see Table 1). This score is interpreted as a relative measure of the perceived tastiness of organic as compared to non-organic wine, thus supporting H2.

3.2.3 | Study 1c: Green (vs. red) = healthy intuition

A total of 99 US participants (M_{age} = 36.21 years, SD = 11.18, 51.4% female) took part in Study 2a, on September 7, 2022. One participant was dropped due to excessive speed, resulting in a final sample of 98 participants. A strong effect in the IAT was observed: scores favoured the "healthy" green organic label ($M_{D\ Score}$ = .50, SD = .46, d = 1.09), which significantly differed from zero (t(98) = 10.87, p < .001, 95% $CI_{D\ Score}$ [.41, .59]; see Table 1). This score is interpreted as a relative measure of the perceived healthiness of the green organic label compared to a red organic label, thus supporting H3.

3.2.4 | Study 1d: Green (vs. red) = tasty intuition

A total of 100 US participants (M_{age} = 33.92 years, SD = 10.04, 30.3% female) were recruited through Prolific to take part in Study 2b on September 5, 2022. Two participants were dropped due to

TABLE 1 Implicit association test (IAT) results from Study 1.

	N	M	SD	95% CI	t	d	Rel.	Err.	Drop
Study 1									
Green (vs. control) label-healthy (vs. unhealthy)	105	.57	.47	[.48, .66]	12.26***	1.23	.88	.07	6
Green (vs. control) label-tasty (vs. not tasty)	104	.45	.52	[.34, .55]	8.56***	.86	.87	.08	4
Green (vs. red) label-healthy (vs. unhealthy)	100	.50	.46	[.41, .59]	10.87***	1.09	.91	.09	1
Green (vs. red) label-tasty (vs. not tasty)	100	−.25	.46	[−.34, −.16]	−5.35***	−.54	.84	.09	2

Note: Rel., split-half reliability; Err., error proportion; Drop = number of participants dropped for >10% of responses <300 ms (Greenwald et al., 2003).
***$p < .001$.

excessive speed, resulting in a final sample of 98 individuals. A strong effect was observed in the IAT: scores trended toward the "tasty" red organic label, ($M_{D\ Score} = -.25$, SD = .46, $d = -.54$), which differed significantly from zero ($t(97) = -5.35$, $p < .001$, 95% $CI_{D\ Score}$ [−.34, −.16]; see Table 1). This score is interpreted as a relative measure of the perceived tastiness of wine with a red as compared to a green organic label, thus supporting H4.

3.3 | Discussion

The goal of the four versions of the IAT reported here was to uncover implicit associations generated by organic labels on the perception of healthiness and tastiness of red wines, which are often perceived as healthy by consumers themselves (Hughner et al., 2007; Nadricka et al., 2020; Saliba & Moran, 2010). While US consumers tend to implicitly consider a healthy product as less tasty than an unhealthy one (Raghunathan et al., 2006), it has also been highlighted explicitly that organic labels could impact tastiness perception (Nadricka et al., 2020), potentially resulting in a stronger implicit association for US consumers. The results of Studies 1a and 1b confirmed the hypothesis, indicating that consumers from the US have internalized an intuition that organic red wine = healthy = tasty. Organic wines were more associated with healthiness (H1) and tastiness (H2) than those wines that were presented without organic labels.

Two additional IATs were conducted to investigate whether implicit associations remained the same by changing the colour of the label. The colour green is generally more strongly associated with healthiness (Schuldt, 2013; Seo & Scammon, 2017; van Rompay et al., 2016), while red is often associated with tastiness (Spence et al., 2014, 2015). The results of Studies 1c and 1d revealed different implicit associations for red organic labels than for their green counterparts, confirming H3 and H4. Wines with a green organic label were more associated with healthiness (H3), while red organic labels were more associated with tastiness (H4). Given these results, Study 2 was conducted to determine whether these intuitions translate at the explicit level, and particularly to observe the impact of label colour on purchase intent (H5) and desired quantity and frequency of wine consumption (H7). Study 2 also explored the mediating effect of perceived tastiness (H6) and alcohol strength (H8).

4 | STUDY 2

4.1 | Materials and methods

Four hundred participants from the United States were recruited through Prolific. In terms of sensitivity, the power calculator revealed that a sample size of 180 (each group: 45 participants), which provides a statistical power of .804. with an α of .05. On average, participants took 1 min 25 s to complete the survey, with a maximum completion time of 13 min. Six participants were excluded for exceeding this time limit, resulting in a final sample of 394 participants ($M_{age} = 39.20$ - years, SD = 10.05, 193 female). This study used a between-participants experimental design with a 2 (label: organic label vs. no organic label) × 2 (colour: green vs. red) factorial design. Participants were presented with an image of a bottle of red wine featuring either a green or red label, with or without the USDA Organic label (see Appendix 2).

We used convenience (first come, first served basis) sampling in Prolific to get a random selection of participants in a predefined group of US citizens aged between 18 and 60 years and excluded those participants who had taken part in Study 1. The order in which the items of each scale were presented was randomized. The participants completed the following scales in the following order: In particular, the participants were asked how often they would like to drink the wine displayed (from 1 = 2 to 3 times a year; to 7 = every day), how many glasses they would like to drink (from 1 = 1; to 7 = 7 or more glasses), and whether they wanted to purchase it on a four item scale ($\alpha = .86$; White et al., 2012). The items included: "I would likely purchase this wine," "I would be willing to buy this wine," "I would likely make this wine one of my first choices in this product category," and "I would exert a great deal of effort to purchase this wine." They were then asked to indicate their expectations regarding the wine's tastiness (from 1 = not very tasty; to 7 = very tasty). For alcohol strength, participants first read the following instructions: "How would you rate the strength of this wine, considering that the average strength of wine is 12.9% ABV (alcohol by volume)?" (Vasiljevic, Couturier, & Marteau, 2018). Then, the perceived alcohol strength was recorded using a slider ranging from 0% ABV to 26% ABV. Lastly, demographic questions were presented.

4.2 | Results

4.2.1 | Purchase intention

We conducted a 2 (label: non-organic vs. organic) × 2 (colour: green vs. red) two-way analysis of variance (ANOVA) on purchase intention.

TABLE 2 Descriptive Statistics from Study 2 (Means and SDs).

	Label			
	Non-organic		Organic	
Colour	Green	Red	Green	Red
Purchase intention	3.83 (1.37)	3.80 (1.31)	4.07 (1.21)	4.12 (1.28)
Frequency	2.45 (1.59)	2.33 (1.57)	2.57 (1.65)	2.54 (1.72)
Quantity	2.11 (1.29)	1.93 (1.09)	2.28 (1.48)	1.95 (1.16)
Tastiness	4.83 (1.30)	4.56 (1.31)	4.86 (1.21)	5.09 (1.18)
Alcohol strength	11.70 (2.97)	12.30 (3.00)	11.70 (2.93)	12.35 (2.77)

Only the main effect of label was significant ($F(1, 393) = 4.70$, $p = .031$, $\eta p2 = .01$). Neither the main effect of colour ($p = .98$), nor the interaction between the two factors, was significant ($p = .73$; see Table 2, Figure 2).

4.2.2 | Frequency and quantity

A 2 (label: organic label vs. no organic label) × 2 (colour: green vs. red) two-way ANOVA was conducted on expected frequency and quantity of wine consumption. For frequency, neither the main effect of label ($p = .31$), nor the main effect of colour ($p = .65$), nor the interaction between the two factors was significant ($p = .79$). For quantity, only the main effect of colour was significant ($F(1, 393) = 3.98$, $p = .047$, $\eta p2 = .01$). Neither the main effect of label ($p = .48$), nor the interaction between the two factors, was significant ($p = .57$; see Table 2, Figure 2).

4.2.3 | Tastiness and alcohol strength

A 2 (label: organic label vs. no organic label) × 2 (colour: green vs. red) two-way ANOVA was conducted on tastiness and alcohol strength. In terms of tastiness, the main effect of label ($F(1, 393) = 4.97$, $p = .026$,

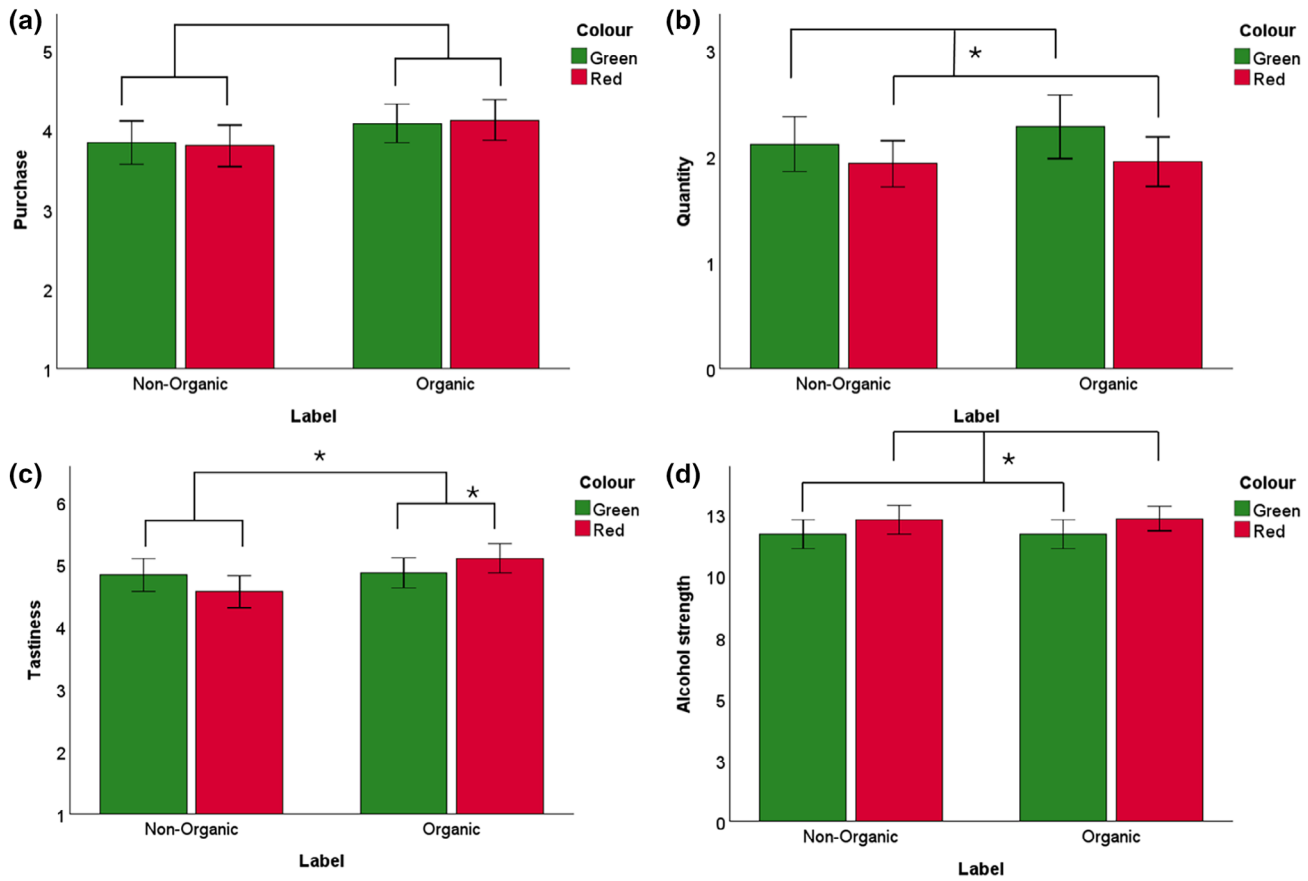


FIGURE 2 Study 2 means: (a) purchase intention; (b) number of glasses of wine; (c) tastiness expectation; (d) alcohol strength estimation. Error bars represent standard errors (*$p < .05$).

$\eta p2 = .01$) and the interaction between the two factors were significant ($F(1, 393) = 3.95$, $p = .048$, $\eta p2 = .01$). The main effect of colour was not significant ($p = .90$). Post hoc Bonferroni-corrected tests revealed that the expected tastiness was higher for the wine with a red organic label ($M = 5.09$, SD = 1.18) than for the wine with a green organic label ($M = 4.86$, SD = 1.21; $t = 8.94$, $p = .003$). For estimated alcohol strength, only the main effect of colour was significant ($F(1, 393) = 4.61$, $p = .032$, $\eta p2 = .01$). Neither the main effect of label ($p = .94$), nor the interaction between the two factors, was significant ($p = .94$) (see Table 2, Figure 2).

4.2.4 | Mediation analyses

To further explain the effect of label on purchase intention, we tested for possible mediation in this process. We focused on expected tastiness as the key mediator and on purchase intention as the main outcome variable. Given that we previously observed an interaction effect of label and colour on tastiness, colour was also included as a moderator in our model. We ran Model 7 (PRO-CESS v4.0) with label as the independent variable (0 = non-organic, 1 = organic) and colour (0 = green, 1 = red) as the moderator. The indirect effects of the label on purchase intention through expected tastiness were significant for the red label ($\beta = .37$, 95% CI [.13; .60]) but not for the green ($\beta = .02$, 95% CI [−.22; .26]). The moderated mediation index was significant (index = .35, 95% CI [.01; .67]).

To further explain the effect of colour on expected wine consumption, we tested for possible mediation in this process. We focused on estimated alcohol strength as the key mediator, and on expected quantity of wine consumption as the main outcome variable. We ran Model 4 (PRO-CESS v4.0), with colour as the independent variable (0 = green, 1 = red). The indirect effects of colour on expected quantity through estimated alcohol strength was significant but weak ($\beta = .04$, 95% CI [.001; .095]).

4.3 | Discussion

Study 1 revealed that organic labels generated implicit associations of healthiness and tastiness, with stronger implicit associations of healthiness for green labels and stronger implicit associations of tastiness for red labels. In Study 2, we tested whether these implicit associations translated into explicit behavioural intentions. The results demonstrated that organic labels had a positive effect on wine purchase intention compared to no organic labels, and while colour did not directly moderate the effect of the label on purchase intention (H5), the expectation of tastiness did. Furthermore, the effect of the label on tastiness was moderated by colour (H6) as red enhanced the expectation of tastiness of organic-labelled wines compared to green. No effect of label colour on consumption frequency was observed (H7), and likewise, no effect of label on expected quantity consumed was found (H7). However, we did find an effect of colour on expected quantity consumed (H7), with red leading to a reduction in the expected number of glasses consumed compared to green. We did find a mediating effect of perceived alcohol strength (H8), but it was very weak and did not align with our expectations. While red colour did increase the estimation of alcohol strength, the increase led to a higher expected quantity of wine consumed.

5 | GENERAL DISCUSSION

The results of the two studies conducted on consumers from the United States demonstrate that organic labels can have different influences on implicit attitudes and behavioural intentions, depending on the colour of the label. Green organic labels (vs. no label) are implicitly associated with healthiness and with better taste. However, red organic labels are more strongly implicitly associated with tastiness than green ones. At the explicit level, this study demonstrates that organic labels, compared to no organic labels, have a positive impact on consumer purchase intentions for red wines. Furthermore, when compared with green, red label colour positively moderates these effects by increasing expectations of tastiness. Additionally, the results indicate that it is not the organic label itself that influences the quantity of wine expected to be consumed, but rather green label colour. Changing the colour from green to red leads to a decrease in the expected volume consumed, regardless of whether the wine was presented with an organic label.

5.1 | Theoretical implications

This research makes important contributions to the literature on organic labels and the unhealthy = tasty intuition. While the literature on organic labels highlights a positive effect of organic labels on the perceived healthiness and expected tastiness of food products (Hughner et al., 2007; Nadricka et al., 2020), studies conducted on the unhealthy = tasty intuition overturn these positive associations. Our studies align with research carried out on organic labels showing that for red wine, organic labels are implicitly associated with healthiness and tastiness. The fact that organic wine is associated with tastiness, despite the tasty = unhealthy intuition, can be attributed to the perception of red wine as a healthy beverage option (Saliba & Moran, 2010), as the positive effects of organic labels on taste perception have only been observed for products that are considered healthy (Nadricka et al., 2020).

The literature on the health halo effect demonstrates that elements such as labels can reduce the perceived calorie content of food products (Schuldt & Schwarz, 2010), leading to more positive nutritional evaluations (Lee et al., 2013), and resulting in unhealthy food choices (Chandon & Wansink, 2007). Petit et al. (2022) reported that presenting a wine as "natural" can increase expectations related to frequency and quantity of consumption. However, other research has documented that people who perceive wine to be healthy have a higher frequency but do not consume more per drinking occasion (Saliba & Moran, 2010). Our research extends

these findings by showing that organic labels can lead people to expect to consume more glasses per drinking occasion, without affecting the frequency of consumption. According to Saliba and Moran (2010), this result suggests that organic labels may serve not as a motive to drink wine, but rather as an excuse to drink more. Interestingly, our research highlights that the health halo effect of organic labels could be mostly linked to the green colour of the labels. The results show that the expected quantity of wine consumed is higher when the label is green than when it is red, regardless of whether the term "organic" appears on the label.

Furthermore, the fact that a red label positively influences purchase intent while also allowing the regulation of desired consumption quantity reinforces the claims of colour-in-context theory (Elliot & Maier, 2012). While it had previously been demonstrated that colours could carry different meanings depending on the product (Elliot & Maier, 2012), our research suggests that a single product can evoke multiple meanings of a colour (such as both danger and flavour for the colour red). Our results demonstrate that the effect of the organic label on purchase intention is moderated by red colour and its positive impact on tastiness expectation. Furthermore, although the mediating effects of perceived alcohol strength on the quantity of wine expected to be consumed were not observed, the fact that the red label leads to a perception of higher alcohol strength and a lower desired wine consumption quantity compared to green suggests that this colour also acts as a warning signal for consumers.

5.2 | Managerial implications

This research has numerous important managerial implications. First, the findings highlight that green labels produce a health halo effect (Chandon & Wansink, 2007) by influencing the desired consumption quantity. While the effect on expected consumption may be beneficial for the consumption of fruits and vegetables, these effects are potentially harmful when it comes to the consumption of wine (Yoo et al., 2021). In the current study, participants indicated that they wanted to consume more when they were exposed to a red wine with a green label than when they were presented with the same wine with a red label. This highlights the importance of reducing the health halo effect of green labels on wine.

Another managerial implication is that the use of red for the organic label might be relevant when it comes to helping consumers regulate their wine consumption. Our results show that when the organic label is red, US participants expect to consume less wine. Moreover, they have higher purchase intent for red wine with a red organic label. The results suggest that the red label acts as a warning signal (Elliot et al., 2009), while also reinforcing tastiness expectations (Lick et al., 2017). Using a red label could be advantageous for public health authorities promoting more responsible consumption, and for the wine industry by potentially boosting sales. Several studies have indeed shown that product-extrinsic colour influences both consumer intention and behaviour, influencing factors such as the intensity or fruity character of wine (Spence et al., 2014; see Spence, 2015 for a review). Additionally, colour can create a health halo effect, leading individuals to consume more when a label is green, but reducing consumption when it is red (Temple et al., 2011).

While organic labels are typically green (e.g., France, and Europe), some are black (e.g., Soil Association Organic Standard in the UK), and others are multicoloured (BioGro New Zealand Ltd, represented in blue, black, green, and brown), much like the United States (green, black), suggesting flexibility regarding the potential modification of their colour to red. Furthermore, it is conceivable to consider altering the colour or font of the entire wine label, aiming to mitigate the impact of the organic label colour on consumer behaviour (Spence & Velasco, 2018). However, further research is needed to ascertain the effectiveness of the colour change on actual consumption, as environmental factors in retail, as well as demographic and psychological factors, can influence both purchasing and consumption behaviour.

5.3 | Limitations & future research

This research has some limitations that pave the way for further research. First, our study focuses on expectations rather than on actual consumption. Our reliance on online experiments with attitudes and purchase intentions as the principal outcomes means that there are still unknowns as to whether our conclusions are strong enough to actually result in a change in consumers' purchase or consumption behaviours. Many factors contribute to the overconsumption of alcohol, including parental habits (Sternberg et al., 2018); permissive societal norms (Fairman et al., 2019); psychological features (Hardee et al., 2014); as well as genetic factors (Hendershot et al., 2017). Furthermore, research based on the Theory of Planned Behaviour has already revealed that the effects of nutritional warning labels on consumer behaviour can be moderated by psychological factors such as subjective norms and perceived behavioural control (Aliaga-Ortega et al., 2019). Hence, additional research is required to examine the variations in associations generated by label colour on actual behaviour, and to ascertain whether psychological factors such as subjective norms and perceived behavioural control can moderate these effects (Aliaga-Ortega et al., 2019; Otterbring et al., 2020).

Second, although we followed the standard procedure for collecting and analysing the IAT tasks (Carpenter et al., 2019; Greenwald et al., 1998), it is important to acknowledge the inherent limitations of the IAT. Despite being more reliable than many other implicit measures, the test–retest reliability of the IAT still falls below self-report standards (Fiedler et al., 2006; Gawronski et al., 2017; Oswald et al., 2013). Moreover, the IAT solely evaluates relative associations between targets and lacks the ability to discern absolute associations (Lane et al., 2007). Nevertheless, when these constraints are considered, the IAT retains its significance as an important tool for marketing researchers (Greenwald & Banaji, 2017).

Third, our study focused solely on US consumers. Previous research highlights the existence of significant differences between France and the United States, concerning the (un)healthy = tasty intuition (Raghunathan et al., 2006; Werle et al., 2013), which could

reduce the halo effect of organic labels on desired wine consumption quantity. According to Werle et al. (2013), US culture focuses on consumption quantity and nutrition. Moreover, the Protestant work ethic should make it easier for American consumers to "de-guilt" from drinking something healthy, potentially making US consumers more sensitive to the health halo than those in France. Further studies should be conducted between these countries to compare the effects of organic labels and their colour on wine consumption. It should also be noted that we selected US participants for our study without controlling for their state of residence. The United States spans four time zones, and it is possible that the timing of the assessment may have influenced participants' evaluations.

Fourth, our research focused on a specific alcoholic product, namely red wine, which is already perceived as healthy by many consumers (Saliba & Moran, 2010). This may have reinforced the health halo effect produced by the organic label. Furthermore, the congruence of the red label colour with that of the wine may have fostered an implicit association of the product with tastiness (Elliot & Maier, 2012). Future studies should therefore be conducted on other alcohol beverages that do not benefit from such positive associations. Research carried out on unhealthy foods (e.g., cookies, chips) showed that organically labelled products are perceived as being lower in calories, lower in fat, and also less enjoyable, with a worse flavour than products without the organic label (Lee et al., 2013). This is in line with the unhealthy = tasty intuition (Raghunathan et al., 2006), and it would be interesting to see if red organic labels would also affect the perceived taste of these "unhealthy" food products, especially if such an effect would encourage consumers to be more vigilant about their consumption.

In conclusion, a promising future direction for research in organic wine labelling lies in investigating the moderating role of individual differences in consumer susceptibility to front-of-package (FOP) food labelling. The efficacy of FOP labelling systems has yielded inconsistent findings across academic and non-academic domains (Folwarczny et al., 2024; see also Orquin, 2014). These findings demonstrate varied impacts on consumer behaviour and offer a valuable tool for advancing our understanding of consumer behaviour in response to labelling interventions.

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CONFLICT OF INTEREST STATEMENT

All authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

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

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Kedge Business School ethics committee. Written informed consent to participate in this study was provided by the participants.

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APPENDIX 1: Procedure Details

Targets and categories are assigned to the left/right sides for sorting, with hand assignments varying by block and displayed in the upper corners of the IAT window. For example, in some sections, a participant might respond with the left hand for all organic + pleasant stimuli and with their right hand for all non-organic + unpleasant stimuli. People typically sort stimuli more rapidly when pairings are compatible with associations in the IAT (referred to as a "compatible" block). Conversely, response speeds are expected to be slower when category pairings are reversed (known as an "incompatible" block). Participants complete the procedure under both conditions, and response speeds are compared within participants to indicate the degree of implicit association (Carpenter et al., 2019).

The complete IAT procedure takes approximately five minutes and comprises practice blocks alongside compatible and incompatible blocks. Block 1 involves a practice block (20 trials) of targets, and Block 2 is a practice block (20 trials) of categories, familiarizing participants with procedures and stimuli. Subsequently, the first combined block (Block 3 and Block 4, which uses data from both blocks) is either compatible or incompatible, depending on randomized left/right assignments. Block 5 (40 trials) is another practice block involving only categories, but with the sides swapped. Finally, the participant completes a second set of combined blocks (Block 6 and Block 7) with categories in their new positions. The order of presentation (compatible or incompatible block first) is consistent with the initial setup. Similar to before, this includes 20 practice trials (Block 6) and 40 critical trials (Block 7).

The IAT was implemented in Qualtrics. Each IAT block were created using a modified text entry question through JavaScript and HTML/CSS code, ensuring high precision in capturing online reaction times, especially for within-subject comparisons (Carpenter et al., 2019). The code loaded all stimuli before each block, submitting data back to Qualtrics only after each block completion, avoiding any impact on task performance during data transfer. To accommodate left/right starting positions, the full IAT in Qualtrics integrated seven sequential questions, with four permutations implemented to counterbalance starting positions and block order, ensuring randomness and balance across participants (Carpenter et al., 2019).

Considering that an IAT can only handle two targets and two categories at a time (Greenwald et al., 1998), we conducted four IATs to analyse the implicit associations between the targets: Organic-non-organic wine, and the attributes: Healthy-unhealthy (Study 1a); the targets: Organic-non-organic wine, and the attributes: Pleasant-unpleasant (Study 1b); the targets: Organic green-organic red, and the attributes: Healthy-unhealthy (Study 1c); and the targets: Organic green-organic red, and the attributes: Pleasant-unpleasant (Study 1d). We conducted the tests one after the other and exclude participants from previous studies to prevent participant duplication across multiple studies.

APPENDIX 2: Stimuli

APPENDIX 3: IAT Data Processing Details

Before initiating the cleaning process, counterbalancing permutations of the Implicit Association Test (IAT) were consolidated into four variables, representing the combined blocks (consisting of practice and critical versions of compatible and incompatible blocks). Subsequently, individual trials over 10,000 ms were automatically deleted, along with any IAT data from a participant with more than 10% of responses less than 300 ms. Following this, difference scores were calculated—one for practice combined blocks, one for critical combined blocks—by subtracting each participant's mean latency in the incompatible block from the mean latency in the compatible block. These scores were divided by pooled standard deviations to form standardized difference scores. Finally, these scores were averaged to create the D-score, representing the IAT effect for each participant. D-score of 0 signifies equal speed in both conditions, indicating no implicit preference. A positive D-score suggests faster response times in the compatible block, while a negative D-score indicates faster response times in the incompatible block. The D-score algorithm has been empirically validated by Greenwald et al. (2003).