

Adolescents' perception of different beverages is more influenced by brands than by eco-labels – a quantitative study.

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## **Adolescents' perception of different beverages is more influenced by brands than by eco-labels – a quantitative study.**

**Assessing the efficacy of eco-label in adolescents has yielded mixed results in the previous literature. To shed more light on this issue, we collected ratings of the perceived taste and healthiness of different beverages from 158 adolescents. Crucially, we paired each beverage with different brands and different eco-labels. Overall, we found that adolescents can correctly identify different eco-labels. Perceived taste and healthiness of beverages are influenced by brand logos, yet the type of beverage plays an important moderating role. However, eco-labels seem to have little to no effect and this effect is not moderated by the type of beverages.**

*Keywords: Beverage consumption; store brands; label awareness; adolescents; perception of tastiness; perception of healthiness*

## 1. Theoretical background

Children and adolescents play an increasingly important role in the modern consumer market, raising the question of whether marketers can address these target groups in the same manner as they address adults or whether they need more specific methods. Previous studies emphasize the relevance of researching such consumer groups and their motives (de Brabandere, Hudders, and van de Sompel, 2022; Kazmierczak-Piwko, Kulyk, Dybikowska, Dubicki, and Binek, 2022) since especially younger generations are more inclined to sustainable consumption behavior (Valentine & Powers, 2013) and play an important role for a more sustainable consumption behavior in the society in general.

One possible gateway to communicate sustainable and/or eco-friendly aspects of products to consumers is the use of eco-labels on food packaging. Eco-labels on food packaging play a critical role in the communication of social, ecological, and ethical values of food products to consumers (Franco & Cicatiello, 2018; Ikonen, Sotgiu, Aydinli, and Verlegh, 2019; Siraj, Guo, Kamran, Li, and Zhu, 2020). Consequently, most empirical research studied the influence of eco-labels on consumers' product perceptions, behavioral intentions, and actual purchase behavior. Yet, empirical evidence on the effects of labels on consumer perceptions is mixed (Majer, Henscher, Reuber, Fischer-Kreer, and Fischer, 2022). Food labels can positively affect perceived taste (Sörqvist et al., 2015a, 2015b), perceived nutritional value (Ellison, Duff, Wang, and White, 2016), and perceived product quality, but can also have a detrimental effect on certain food categories (van Doorn & Verhoef, 2011). Regarding children and adolescents, previous researchers analyzed the efficiency of sustainability labels on food packaging in an experimental study (de Brabandere et al., 2022). In their study, a total of 240 children between the ages of eight and twelve years were tested. Of core interest was whether a verbal sustainability label in combination with a visual cue influences children's brand attitudes and purchase intentions for the packaging of a fictitious food brand. The results show that a verbal sustainability label has no significant influence on the evaluation of the packaging nor on the attitude towards the brand and purchase intention. However, it could be shown that the presence of a visual cue as well as children's level of environmental concern moderate this effect (de Brabandere et al., 2022). Furthermore, children with a low level of consumer consciousness had a higher response to the combination of a visual cue and a verbal sustainability label as compared to only a visual cue. Interestingly, children with high environmental awareness show the opposite effect: The evaluation of the packaging is more positive when a visual cue (and no verbal sustainability label) is used, compared to a combination of a visual cue and verbal sustainability label (de Brabandere et al., 2022). In sum, verbal labels alone seem ineffective neither in influencing children's decisions, nor in changing their evaluation of the product in terms of health, taste, and environmental friendliness of the product (see also Angka, Hémar-Nicolas, Hapsari, and Olsen, 2020; Hémar-Nicolas, Hapsari, Angka, and Olsen, 2021; Nørgaard & Brunsø, 2009).

However, these results do not stand uncontested. Sörqvist et al. (2015a), show that an eco-label can cause a "halo effect", i.e., a positive impact on various product evaluations such as taste and health perception. Possible explanations might be doubt, lack of understanding, or low credibility of eco-labels (Bickart & Ruth, 2012; Grunert, Hieke, and Wills, 2014; Kaczorowska, Rejman, Halicka, Szczybylo, and Gorska-Warsewicz, 2019; Vermeir & Verbeke, 2006). Kazmierczak-Piwko et al. (2022) analyzed children's understanding and knowledge of eco-labels on foods. Eleven popular eco-labels were identified and analyzed in a quantitative survey regarding their identifiability and attribution. The sample included 1326 children between nine and twelve years. The results show that there is a lack of acquired

knowledge about eco-labels in said age group. On average, about six of the eleven eco-labels were recognized correctly. In the group of 13-,14- and 15-year-olds, 75% of the respondents correctly recognized a maximum of eight eco-labels. Furthermore, only 12.2% of the respondents state an eco-label as a decisive factor for the purchase of a food product. To counter this effect, the authors emphasize that more educational measures should be provided for young consumers in order to raise awareness for sustainable consumption. Parents should also be made aware of the importance of children's participation in consumption decisions. This is also backed by research showing that children's sustainable consumption awareness can be built through practical skills and role models regarding responsible consumption patterns (Kazmierczak-Piwko et al., 2022). However, the empirical evidence remains mixed.

Consumers base their buying decision for food products not only on eco-labels but also on brands. Although Rossie et al. (2015) point out that the brand of a product has a less significant impact on consumer perception and buying decisions, they remain an important factor because brands differ considerably in their image. This is especially true for store brands, which are sometimes marketed as regional products. Over the recent decades store brands have become increasingly popular. Store brands are brands owned, sold, and controlled by certain retailers (Wu, Yang, and Wu, 2021) and offer a product alternative to well-established and highly marketed brands (Boyle & Lathrop, 2013). In general, store brands were often positioned as lower-priced, basic-quality alternatives to the competing brands in the respective market (Wang, Torelli, and Lalwani, 2020). However, the popularity of store brands is increasing and rivals in some cases the popularity of well-established brands (Rossi, Borges, and Bakpayev, 2015; Steenkamp, Van Heerde, and Geyskens, 2010). Also, the perceived quality of store brands is essential for consumers' purchase decisions (Steenkamp & Geyskens, 2014) as this quality reduces the functional risk of a purchase (Agarwal & Teas, 2001). Therefore, store brands are an important variable when it comes to consumer's decisions on food purchases.

## **2. Purpose of this study**

The aim of our study is to investigate the efficacy of eco-labels and store brands on adolescents when evaluating the perceived taste and healthiness of beverages. This brings together two lines of previous research outlined in the theoretical background of this paper and extends previous research by testing adolescents.

## **3. Methods**

### *3.1. Participants & Apparatus*

We recruited our participants from two different schools in Lower Austria. In school 1, we recruited 98 participants (from 13 years to 18 years of age;  $M_{age} = 16.2$ ;  $SD_{age} = 1.08$ ) of whom 53 identified as female, 44 as male, and one as divers/other. In school 2, we recruited 60 participants (from 12 to 18 years of age;  $M_{age} = 14.2$ ;  $SD_{age} = 2.39$ ) of whom 40 identified as female, 19 as male and one as divers/other. All participants were pupils of their respective schools, received no monetary compensation, participated voluntarily, and provided informed consent.

All data were collected directly in the schools. However, we tried to emulate a controlled lab setting as closely as possible. Pupils participated in the experiment directly in

the classroom, each on an individual laptop that was provided by the experimenters. In both schools, data collection took place in batches of about 20 students. Teachers were present in the classroom but did not interact with the pupils in any way. The experimenters supervised the data collection of all batches. The experiment was controlled using Qualtrics Version 20 (Qualtrics, Provo, UT, USA).

### 3.2. Stimuli & Procedure

The stimuli presented to the participants were pictures of apple juice, orange juice, non-carbonated water, soft drink, and an energy drink. We took these pictures under standardized lighting conditions via a professional lightbox for photography. All beverages were poured in simple glasses, without a logo or other ornaments. During the experiment, all pictures were shown with a verbal description underneath, indicating the type of beverage. This was done to avoid confusion and to clear any ambiguities caused by the pictures (see Figure 01 first row for examples). In addition to the pictures of different beverages, we also used brand logos to indicate high- and low-quality products (see Figure 01 for examples), as well as eco-labels to indicate product quality, environmentally friendly packaging, or good working conditions during the production process. As quality brands we chose “innocent” (<https://www.innocentdrinks.at/>) for the orange juice, “Römerquelle” (<https://www.coca-cola-oesterreich.at/marken/roemerquelle>) for the non-carbonated water, “Coca Cola” (<https://www.coca-cola-oesterreich.at/marken/coca-cola>) for the soft drink, “Red Bull” (<https://www.redbull.com/at-de/>) for the energy drink and “Rauch” (<https://www.rauch.cc/at/>) for the apple juice. As the store brand, we chose “Clever” (<https://www.cleverleben.at/>) for all beverages, as this is the most-known store brand in Austria. While other store brands do exist, they are mostly much smaller and in part only regionally known. For the eco-labels, we choose “AMA Gütesiegel” (<https://amainfo.at/konsumenten/siegel/ama-guetesiegel>) as an eco-label for product quality, “Blauer Engel” (<https://www.blauer-engel.de/de>) as an eco-label for environmentally friendly packaging, and “Fairtrade” (<https://www.fairtrade.at/>) as an eco-label for good working conditions. These eco-labels are widely known among consumers in Austria except for “Blauer Engel” (Schuldt-Baumgart, Birzle-Harder, Krocke, Klein, and Fischer, 2021). We still included this label to induce more variability and to further assess how well known this eco-label actually is. Furthermore, as a label for packaging, we expected it to have no effect on the ratings of healthiness or taste.

The experiment consisted of three blocks with the same structure: Participants were shown a picture of a beverage and were asked to rate the taste and perceived healthiness of the depicted beverage. These rating scales were shown directly under the picture and the picture remained fully visible until the rating was finished, and participants proceeded to the next picture. Taste was rated on a scale from one (not tasty at all) through ten (very tasty), whereas healthiness was rated on a scale from minus five (very unhealthy) to plus five (very healthy) with the omission of the value zero to avoid a neutral rating option. After their rating, participants could move on to the next picture at their own pace. The order of pictures in each block was fully randomized and counterbalanced across all participants. However, the order of blocks was the same for all participants and was as follows: In the first block, pictures of beverages were shown without a brand or eco-label whereas, in the second block, pictures of beverages were shown with either a high-quality brand or a cheap store brand. In the third block, pictures of beverages were shown with one of the three eco-labels mentioned before.

After these three blocks, participants entered the final block of the experiment, where we asked them to identify what the eco-labels used in the third block of the experiment stand

for. Participants were asked to assign each eco-label to one of the categories “packaging”, “product quality” and “working conditions”. This was done as a manipulation check to ensure that our participants can correctly categorize the respective eco-labels. After this final block of the experiment, participants were asked to indicate their age and sex.

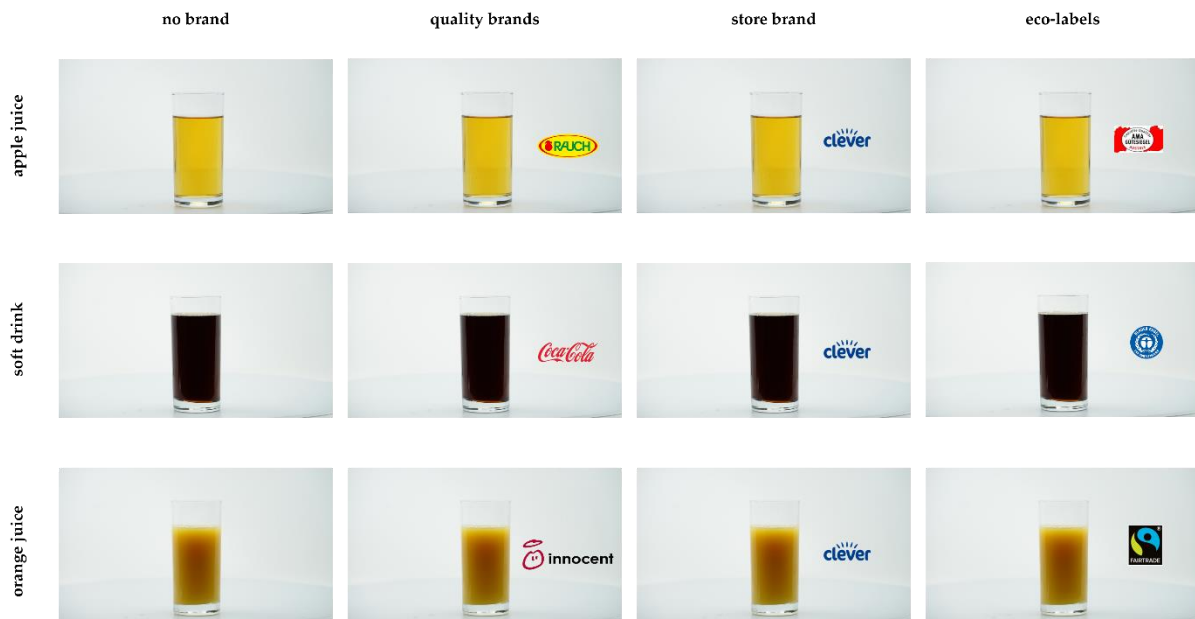


Figure 01. Example pictures from the experiment. In the rows, three out of the five different beverages are shown (from top to bottom: apple juice, soft drink, and orange juice – not depicted are non-carbonated water, and energy drink). In the columns, the experimental conditions are shown. In the first row, beverages are shown without a brand or label. In the second column, beverages bore the label of the in Austria most-known quality brands. In the third column, beverages bore the label of an in Austria widely known store brand. In the last column, beverages bore an eco-label indicating either product quality (AMA Gütesiegel, first row), environmentally friendly packaging (Blauer Engel, second row), or good working conditions during production (fairtrade, third row). Note that in the experiment all beverages were combined with each of these labels. Stimuli are not drawn to scale.

## 4. Results

### 4.1. Manipulation check

First, we wanted to check whether our sample could assign the eco-labels to their respective core claim. Participants could correctly assign the eco-labels and there were no sizeable differences between the eco-labels or the schools. The AMA Gütesiegel label was correctly assigned by 74.49% of participants in school 1 and 74.67% of participants in school 2. The Blauer Engel label was correctly assigned by 74.48% of participants in school 1 and 73.11% of participants in school 2. Finally, the Fairtrade label was correctly assigned by 76.53% of participants in school 1 and 75.54% of participants in school 2.

### 4.2. Rating of taste – effect of brand

We submitted the ratings of taste to a mixed analysis of variance with the within-subject factors beverage (orange juice; apple juice; non-carbonated water; energy drink; soft drink) and brand (no brand; quality brand; store brand) as well as the between-subjects factor school (school 1; school 2). We found a main effect of brand,  $F(2, 304) = 93.45, p < .001, \eta_p^2 = .38$ , a main effect of beverage,  $F(4, 608) = 35.99, p < .001, \eta_p^2 = .19$ , as well as an interaction between brand and beverage,  $F(8, 1216) = 4.31, p < .001, \eta_p^2 = .03$ . No other

effects were found, all non-significant  $F$ -values  $< 1.86$ , all non-significant  $p$ -values  $> .073$ . To break down the interaction between brand and beverage, we conducted pairwise, Bonferroni-corrected  $t$ -Tests separate for each beverage with brand as independent variable. These results can be summarized as follows: For all beverages, the store brand was rated as significantly less tasty (by at least one point on the rating scale) than either the quality brand or when no brand was shown (all  $p$ -values  $< .001$ ). There was no difference in the rating of taste for the quality brand and no brand (all  $p$ -values  $> .480$ ) with the notable exception of the energy drink, where the quality brand ( $M = 6.59$ ) was rated significantly higher than no brand ( $M = 6.09$ ,  $p = .002$ ). The results are illustrated in Figure 02, left side.

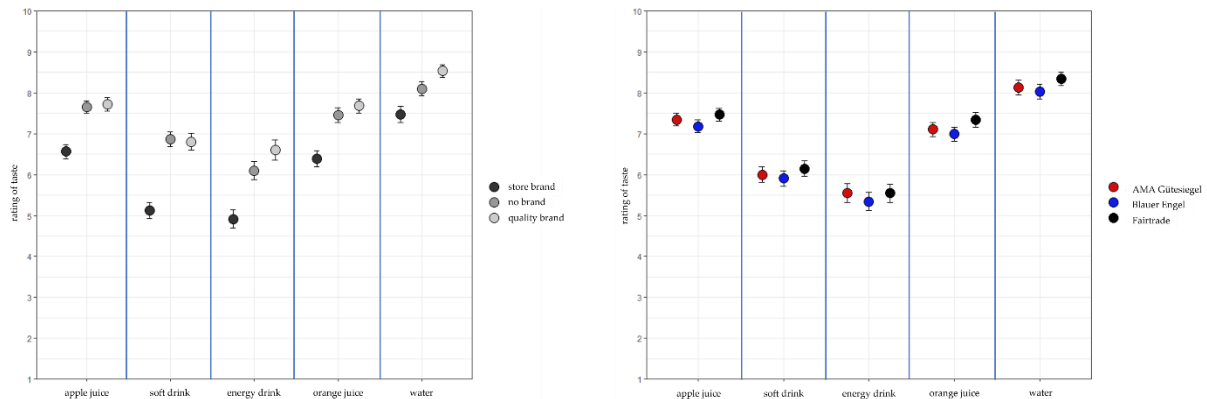


Figure 02. Mean rating of taste (y-axis) as a function of beverage (x-axis) and brand (separate colors, left graph) or eco-label (separate colors, right graph). The error bars indicate the standard error of the mean (SEM).

#### 4.3. Rating of taste – effect of eco-label

We conducted the same analysis as before only with the factor eco-label (AMA Gütesiegel; Blauer Engel; Fairtrade) instead of the factor brand. We found a main effect of eco-label,  $F(2, 304) = 9.83$ ,  $p < .001$ ,  $\eta_p^2 = .06$ , and a main effect of beverage,  $F(4, 608) = 55.86$ ,  $p < .001$ ,  $\eta_p^2 = .27$ . No other effects were found, all non-significant  $F$ -values  $< 1.42$ , all non-significant  $p$ -values  $> .244$ . Pairwise, Bonferroni-corrected  $t$ -Tests showed that beverages bearing the Fairtrade label were rated as marginally tastier ( $M = 6.97$ ) than beverages with the AMA Gütesiegel label ( $M = 6.81$ ,  $p = .033$ ), and the Blauer Engel label ( $M = 6.69$ ,  $p < .001$ ). There was no significant difference between the latter two ( $p > .249$ ). As for the beverages, water was rated as significantly tastier ( $M = 8.15$ ) than all other beverages (energy drink: 5.81; soft drink: 6.01; orange juice: 7.14, apple juice: 7.34; all  $p$ -values  $< .001$ ). There was also a significant difference between all other beverages (all  $p$ -values  $< .048$ ) with the notable exception of orange juice and apple juice ( $p > .249$ ). The results are illustrated in Figure 02, right side.

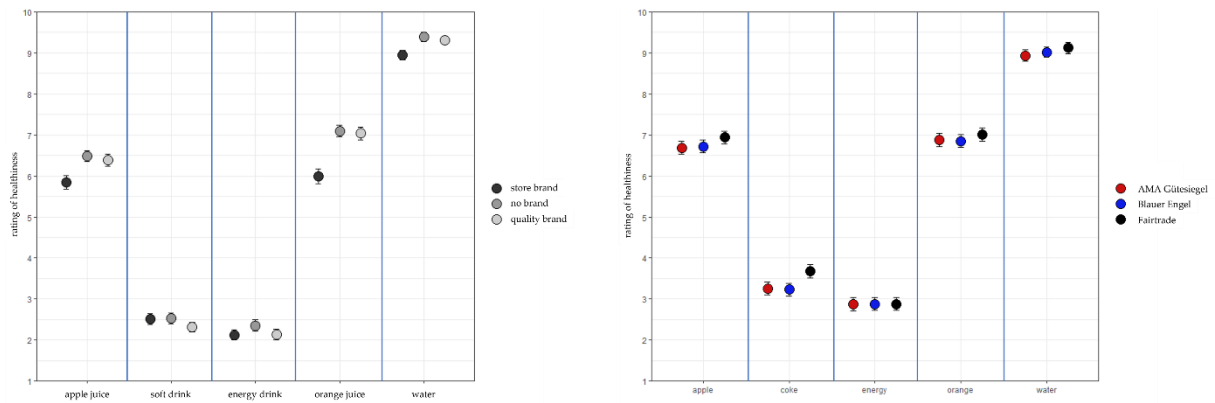


Figure 03. Mean rating of taste (y-axis) as a function of beverage (x-axis) and brand (separate colors, left graph) or eco-label (separate colors, right graph). The error bars indicate the standard error of the mean (SEM).

#### 4.4. Rating of healthiness – effect of brand

We recoded the ratings of healthiness to a scale from one through ten for better comparability with the previous results. The analysis was, as before, a mixed analysis of variance with the factors brand, beverage, and school with the rating of healthiness as dependent variable. Similar to the ratings of taste, we found a main effect of brand,  $F(2, 304) = 14.87, p < .001, \eta_p^2 = .09$ , a main effect of beverage,  $F(4, 608) = 856.38, p < .001, \eta_p^2 = .85$ , as well as an interaction between brand and beverage,  $F(8, 1216) = 8.66, p < .001, \eta_p^2 = .05$ . The results of the pairwise, Bonferroni-corrected  $t$ -Tests separate for each beverage with brand as independent variable can be summarized as follows: For apple juice, orange juice, and water, the store brand was rated as at least one point on the rating scale less healthy than the quality brand or when no brand was shown (all  $p$ -values  $< .001$ ), whereas there was no difference between the latter two (all  $p$ -values  $> .249$ ). This result was not found for the soft drink and the energy drink where there were no significant differences between either of the brands, all  $p$ -values  $> .249$ . The results are illustrated in Figure 03, left side.

#### 4.5. Rating of healthiness – effect of eco-label

The analysis was the same as before and the results are also similar to the rating of taste. We found a main effect of eco-label,  $F(2, 304) = 5.22, p < .001, \eta_p^2 = .03$ , and a main effect of beverage,  $F(4, 608) = 440.05, p < .001, \eta_p^2 = .74$ . No other effects were found, all non-significant  $F$ -values  $< 1.85$ , all non-significant  $p$ -values  $> .158$ . Pairwise, Bonferroni-corrected  $t$ -Tests showed that beverage with the Fairtrade label were rated as marginally healthier ( $M = 5.91$ ) than drinks with the AMA Gütesiegel label ( $M = 5.71, p = .021$ ) and the Blauer Engel label ( $M = 5.73, p = .020$ ). There was no significant difference between the latter two ( $p > .249$ ). As for the beverage, water was rated as significantly healthier ( $M = 9.03$ ) than all other beverages (energy drink: 2.86; soft drink: 3.36; apple juice: 6.77, orange juice: 6.89; all  $p$ -values  $< .001$ ). There was also a significant difference between all other beverages (all  $p$ -values  $< .001$ ) with the notable exception of orange juice and apple juice ( $p > .249$ ). The results are illustrated in Figure 03, right side.

## 5. Implications

Our study yielded several interesting core results: First, adolescents, at least in our sample, rate the store brand, across all beverages, as significantly less tasty than the quality brand and, in part, when no brand is shown. This might indicate a somewhat negative



assessment of the brand “Clever” used as store brand in our experiment. In line with this assumption are the ratings of healthiness, where the store brand was also rated significantly lower. However, these results are more mixed for the different beverages and are especially prominent for apple and orange juice, but also for non-carbonated water.

Second, the type of eco-label influences the perceived taste and healthiness of beverages in general and is not dependent on the specific type of beverage. Ratings of non-carbonated water are as much influenced by the eco-label as apple and orange juice. Although beverages combined with the “Fairtrade” label are rated as both tastier and healthier this difference is relatively small (about 0.2 units on the rating scale) and most likely bears no practical importance. This negligibly small difference could mean that the type of eco-label (and therefore the claim) is of no importance for adolescent consumers.

Third, our result could lead to the assumption that eco-labels lead to a more favorable rating of healthiness for at least soft drinks and energy drinks. Combined with a brand, these beverages were rated as relatively unhealthy (ranging between two and three on a ten-point scale). Yet, combined with an eco-label the healthiness of these beverages was evaluated much more favorably (ranging between five and six on a ten-point scale). For ratings of taste, the opposite is the case. This poses an interesting avenue for future research by assessing in more detail whether some beverages that are usually seen as unhealthy profit from eco-labels in general.

Last, our participants were well able to identify and categorize eco-labels. This is at odds with the findings from Kazmierczak-Piwko et al. (2022) where participants showed a considerably worse performance when it comes to identifying eco-labels. One speculative explanation might be a difference in the sample’s cultural background since in Austria, environmental consciousness and sustainable consumption are, to some degree, taught in school. Our participants might therefore have been more sensitive to eco-labels and their claims. Another possibility is that the manipulation check was too easy, and participants could simply have guessed the correct answer (with a chance of one in three) or could have inferred the core claim of an eco-label from the design of the eco-logo without prior knowledge. It is also interesting that the “Blauer Engel” label was by no means less known than the other two eco-labels. As before however, if participants knew two of the eco-labels used in our study, they could have inferred the claim of “Blauer Engel” by simple exclusion.

In conclusion, our study shows that adolescent consumers are differentially influenced by brands and eco-labels. Both brands and eco-labels influence the perceived taste and healthiness of beverages but to different degrees and partly in different directions.

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