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Brand Name Fluency Influences Perceptions of Water Purity and Taste

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ABSTRACT

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Extending the logic of processing fluency into the domain of food and beverage perceptions, this study explores whether the fluency of brand names can influence consumer perceptions of bottled-water attributes such as purity, taste, and mineral contents. Forty-four participants, who were presented with twelve unknown foreign brand names of bottled water, indicated their perceptions of water based solely on the brand names. The results revealed that perceptions of water purity and taste changed depending on whether the brand name was easy or difficult to process. Bottled water was more frequently perceived to be very pure when the foreign brand name was short and easy to pronounce. Bottled water was also more frequently perceived to taste "better-than-average" when the brand name was more fluent. Perceptions of mineral contents in the water were not influenced by the brand name fluency. This study expands our knowledge about various extrinsic cue effects on product perceptions by demonstrating the significant role of brand name fluency in forming consumer perceptions of bottled-water attributes.

Keywords: Fluency; Brand name; Bottled water; Purity; Taste



1. Introduction

Bottled water is one of the fastest growing beverages in many countries around the world. The global bottled water market is forecast to have a volume of 311.3 billion liters and a value of \$199 billion in 2019, with an annual growth rate of 6% between 2014 and 2019 (MarketLine, 2015). Also, the Asia-Pacific market volumes are predicted to have doubled between 2010 and 2019. In the United States, bottled water surpassed carbonated soft drinks and became the largest packaged type of beverage by sales volume in 2016 (BMC, 2017). The consistent growth in the bottled-water industry can be attributed to various factors across countries and regions, but the primary contributing factors are known to be convenience, health concerns, risk perceptions, and hedonic qualities like taste and odor (e.g., Doria, 2006; Saylor, Prokopy, & Amberg, 2011; Viscusi, Huber, & Bell, 2015). Also, water quality-related factors are associated with the choice of bottled-water brands as well. For instance, Geissler and Gamble (2002) reported that the most important product characteristics, apart from price, for U.S. consumers' bottled-water selection were purity and taste. Similarly, Heo and Ko (2012) found that Korean consumers consider taste and water source to be very important when they choose between premium brands of bottled water.

Consumers' attitudes and preferences toward water products seem to be strongly affected by their subjective beliefs and perceptions (e.g., Dolnicar, Hurlimann, & Grün, 2014). This is probably why so many brands of bottled water try to construct a "pure and pristine" image via, for example, the use of a brand name, a term written on the label, or a picture that conveys such a desirable image. In fact, there is abundant evidence in the food marketing literature to indicate that various product-extrinsic factors including branding, packaging, labeling, and auditory cues influence consumer perceptions, expectations, and even actual sensory experiences (for a review, see Piqueras-Fiszman & Spence, 2015). For instance, the color of a container influences consumer expectations about mineral-water attributes such as freshness and level of carbonation (Risso, Maggioni, Olivero, & Gallace, 2015), and glass shapes affect perceptions of beer intensity and fruitiness (Mirabito, Oliphant, Van Doorn, Watson, & Spence, 2017). Adding to this growing literature on extrinsic cue effects on food and beverage perceptions, the present study explores how the fluency (i.e., ease of processing) of a new brand name affects consumer

perceptions of bottled-water attributes such as water purity and taste.

According to the literature on fluency, the metacognitive feeling of ease or difficulty that a person experiences in processing a stimulus influences a wide range of human judgments and perceptions (for reviews, see Alter & Oppenheimer, 2009, and Schwarz, 2010). For example, fluency cues are known to influence judgments of frequency, novelty, risk, and truthfulness because of the underlying familiarity-fluency rule (i.e., "familiar things are more fluently processed"). Fluency is also known to affect hedonic and evaluative judgments (e.g., liking) because of the affective signals inherently attached to the fluency feeling. Although various forms of fluency effects (e.g., via names, presentation formats, or exposure frequency) have been tested in many different judgment domains, relatively less attention has been paid to how the fluency of a brand name can affect perceptions of specific product attributes in food and beverages. Hence, this study aims to add to the literature by exploring whether the fluency of an unfamiliar brand name can feed into consumer perceptions of water attributes such as purity, minerals, and taste.

Prior research findings on fluency effects provide some logical grounds for expecting a positive fluency cue effect on water-purity perception. Alter and Oppenheimer (2006) showed that people expect stocks with fluent (e.g., easy to pronounce) ticker code names to perform better than those with disfluent (e.g., hard to pronounce) ticker names, and Song and Schwarz (2009) found that food additives with disfluent names are perceived as being more hazardous than those with fluent names. Similarly, Dohle and Siegrist (2014) showed that pharmaceutical drugs are perceived to be riskier when they have disfluent names. Because the link between high fluency and low risk perception seems robust and water purity is closely related to the perception of health risk (Doria, 2010), a brand name's fluency cue may feed into perceptions of water purity. To test this conjecture, we observed how people form perceptions of water purity when they are presented with unfamiliar, meaningless brand names with different levels of processing fluency. If fluency works as an informational cue, we should observe that water is perceived as being very pure when it has a fluent, rather than disfluent, brand name.

We also explore the possibility that fluency affects perceptions of the mineral content in bottled water. High mineral content contained in drinking water is generally perceived as being better for health than low mineral content (e.g., Ward et al., 2009). However, although high

mineral content is associated with health benefits, low mineral content does not mean health risks. In other words, the disfluency-risk link does not seem very relevant to mineral-content perceptions. Therefore, we will compare how the fluency cue feeds into perceptions of water in terms of two different attributes: water purity, which is more directly related to the safety/risk dimension, and mineral content, which is less related to it.

Last, we examine the link between fluency and taste perceptions as well. Fluency experience is known to elicit affective signals inherently and, because people tend to misread the fluency-generated affect as their true response toward a judgment target, it generally influences people's hedonic or evaluative judgments (Schwarz, 2010). Building upon this logic, Gmuer, Siegrist, and Dohle (2015) has shown that the processing fluency of product label information (e.g., printed in an easy- vs. difficult-to-read font) affected people's taste rating of a wine. Extending this line of research, the current study examines the effect of brand-name fluency on people's perceptions of water taste when no other product information is provided.

2. Methods

2.1. Stimuli selection

Twenty brand names were chosen from www.finewaters.com, a web-site that offers information on many bottled-water brands around the world. The selection was primarily based on the following criteria: (1) brands that are not available in Korea, where the experiment was conducted, to minimize possible interference of prior knowledge, (2) names that are likely to be meaningless to Korean consumers in order to minimize possible interference of meanings, and (3) names that vary in length and likely ease of pronunciation, because the linguistic fluency associated with names has been commonly manipulated with the two features together or independently in prior research. Forty female students at a university in Korea (mean age = 22.4 years) indicated the processing ease level of each brand name as a binary response, choosing between easy and difficult. Then participants were asked to indicate the brand names, if any, they had known before, as well as the names, if any, whose meanings they knew. Three names were dropped because some participants indicated their prior knowledge or felt that they knew about

the name because of similarities in sound or spelling with other known brands. Binomial test ($\alpha = 5\%$) results on the remaining data revealed three groups of brand names that are similar in processing fluency: 5 fluent names, 6 disfluent names, and 6 neutral names². We chose the top four easy-to-pronounce (*Adello, Arso, Calabria, Elomas*) and the top four hard-to-pronounce (*Adelheidquelle, Altmuhltaler, Chvizhepse, Dzhigem*) names that were categorized into the corresponding group by 90% or more of the participants. We also chose four brand names (*Arienheller, Azzurrina, Cathareine, Duncarrig*) from the neutral group as well for the purpose of directional comparisons³.

2.2 Participants, design, and procedure

Forty-four female students (mean age = 22.2 years) at a university in Korea participated in the main study. Participants were randomly assigned to one of the two different judgments, of water purity or mineral content. All participants read a cover story describing the research as a study about consumer perceptions of various foreign brand names and bottled drinking-water products. They were asked to imagine that they were shopping for bottled water in a foreign country and making judgments about some attributes of bottled water. In each judgment task (purity or mineral), twelve brand names were presented on their computer screens, one at a time in a random order, and for each brand name, participants were asked to imagine seeing a bottle of water with that brand name. They were asked to make judgments for each brand as independently as possible. No other information was provided.

Participants who were assigned to the purity judgment were asked to think about the waterpurity level based on the impression given by the brand name. For each brand, they indicated their perception of water purity using a binary response format (likely vs. not likely to be very

The 17 qualified names and their observed percentage frequencies of being categorized as an 'easy' (vs. 'difficult') name are: Adello (100%), Arso (100%), Calabria (97.5%), Elomas (97.5%), Cinciano (87.5%), Arzni (62.5%), Erikli (62.5%), Azzurrina (52.5%), Cathareine (52.5%), Duncarrig (52.5%), Arienheller (50%), Almedijar (27.5%), Dzhela (20%), Adelheidquelle (7.5%), Altmuhltaler (2.5%), Chvizhepse (0%), and Dzhigem (0%).

³ Brand names such as *Calabria*, *Arienheller* and *Chvizhepse* are also the name of a town or region in a country. However, those names do not have any meanings for the people who do not know the place (like the participants of this study).

pure). Participants who were assigned to the mineral-content judgment were asked to think about how much good minerals were likely to be contained in the bottled water. They indicated their perceptions using a binary response format (likely vs. not likely to contain a lot of minerals). After answering the water purity or mineral content questions for all brands, participants were asked to think about water taste and indicate whether the water was likely to have an average bottled-water taste or a very good (better than average) taste. Participants were then presented with each brand name again and asked to indicate whether they would be likely to buy (or not) the water if they saw it in a store they visited to purchase water. Participants' knowledge about the brand names (including meanings) and the study purpose was also checked. Last, the ease of pronouncing each brand name was measured using a binary response format (easy vs. difficult) along with basic demographic information before debriefing.

3. Results

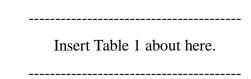
We first checked on the participants' knowledge about the brand-name stimuli and the study purpose. No one indicated knowledge of any brand name, including meanings. Participants wrote some ideas about impressions or feelings associated with foreign or unknown brand names, but none of the speculations were about the fluency-related features of the names. For the ease of processing, participants were very likely to perceive all of the four fluent and the four disfluent names as easy or hard, similar to the pretest result. Three neutral names were identified as easy names by 80% or more of the participants, whereas in the pretest, the same names were identified as easy or hard by no more than 60% of the participants. However, the higher percentage observed in the main study is not likely to accurately reflect the fluency level of those neutral names, considering some methodological artifacts including multiple exposures and the use of a binary-response format⁴. Therefore, in data analyses, those names are treated as belonging to the middle group as originally intended, and results are interpreted focusing on the two opposite groups of fluent vs. disfluent brand names.

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⁴ The perceived fluency measure was taken toward the end after participants had seen the names multiple times. The number of repeated exposures may have been high enough for some neutral names to start to feel easier particularly in the later stage of the study procedure. In addition, the forced-choice binary response format (i.e., having to choose between easy and difficult) might have contributed to some exaggerations in the numbers.

3.1. Water purity perception

For the water-purity judgment, participants indicated their perception of water purity for each of the twelve brand names in a binary categorization task, which produced a total of 264 trials data (88 trials for each fluency level). Data were analyzed using cross tabulations and a Generalized Estimating Equations (GEE) model, which is known to be appropriate for analyzing repeated measurements or other correlated observations. In the GEE analysis, fluency (fluent, neutral, and disfluent levels) and name (4 trials within each fluency level) were treated as withinsubject factors⁵. For 115 (44%) out of the 264 trial times, the bottled water was perceived to be very pure. When the brand names were fluent (n=88), people indicated a high water-purity perception for 59 trial times (67%), whereas they indicated a high water-purity perception for only 25 trial times (28%) when the brand names were disfluent (n=88). Also, proportion tests (α = .05) revealed that the proportion of high water-purity perceptions associated with fluent brand names was significantly larger than for those of neutral and disfluent brand names (see Table 1). The observed upward trend in percentages of high water-purity perceptions from the disfluent name category to the fluent name category is also reflected in the significant main effect of fluency factor on water-purity perceptions revealed in the GEE analysis ($\chi^2(2) = 33.64$, p < .001). The odds of high water-purity perception significantly increased for fluent brand names, compared to disfluent names (B = 1.76, SE = .30, Exp(B) = 5.82, $\chi^2(1) = 33.60$, p < .001). These findings support the prediction that the fluency of a brand name is likely to influence consumer perceptions of water purity.



⁵ Besides the brand name fluency, various other features of names may also affect people's perceptions. As we did not systematically control for those potentially influential features of names, some differences in perceptions of products with different brand names that are *not* explained by the fluency factor also appeared in the GEE analysis results. For parsimony of presentation, those statistically significant but unidentifiable differences across different names are not reported and discussed in the results section, as they have no theoretical meanings in the present study.

3.2. Mineral perception

For the mineral content, an independent group of 22 participants indicated whether the water was likely to contain a lot of good minerals or not. The GEE analysis results did not reveal any significant effect of fluency on perceptions ($\chi^2(2) = 1.53$, p > .4). Out of the 264 judgment trial times, the water was perceived to have high minerals 142 times (54%). Although there was a slight downward trend in proportions from the fluent to the disfluent name groups, it was not significant.

3.3. Taste perception

Out of the 528 taste judgment trial times, the bottled water was expected to have very good (better-than-average) taste for 210 times. About 55% of those 'very-good-taste' responses were associated with fluent brand names (see Figure 1). In specific, cross tabulations between fluency and taste perception data revealed a very similar pattern of significant association regardless of the preceding judgment type (purity or minerals). Participants who made water-purity judgments in the preceding stage expected very good water taste for 100 trial times (38% out of 264), of which 54% were associated with fluent brand names and 19% with disfluent names ($\chi^2(2) = 32.49$, p < .001). Similarly, participants who made mineral-content judgments in the preceding stage expected very good water taste for a total of 110 trial times (42%), where 56% and 19% were associated with fluent and disfluent names, respectively ($\chi^2(2) = 45.85$, p < .001). The GEE analyses revealed a significant main effect of fluency on taste perceptions in both conditions ($\chi^2(2) = 26.42$ and $\chi^2(2) = 23.58$ for the main effects (ps < .001); ps = 1.88, ps < .001 for the parameters of fluent names compared to disfluent names).

Insert Figure 1 about here.

3.4. Purchase intent

Participants' likelihood of purchasing the bottled water in the shopping scenario was also significantly influenced by the brand-name fluency type. Participants who made purity and taste judgments in the preceding stage indicated purchase intent for 60% of the times when brand names were fluent, but they indicated purchase intent for only 26% of the times when brand names were disfluent. Similarly, but with a greater downward pattern, participants who made mineral and taste judgments in the preceding stage indicated purchase intent for 79.5% and 18.2% of the trial times when brand names were fluent and disfluent, respectively ($\chi^2(2) = 17.78$ and $\chi^2(2) = 47.97$ for the main effects (ps < .001); B = 1.55, SE = .37, Exp(B) = 4.71, $\chi^2(1) = 17.63$ and B = 2.91 SE = .43, Exp(B) = 18.29, $\chi^2(1) = 46.29$, ps < .001).

4. Conclusion and discussion

Consumers often develop inferential beliefs about a new brand based on a very limited amount of information, including just a brand name. Our research emphasizes the importance of a brand name in forming consumer perceptions by demonstrating that even a "meaningless" feature of a brand name, like the mere ease or difficulty of reading and saying an unfamiliar brand name, can significantly influence consumer perceptions of important product attributes, particularly when other information is absent. In this study, we found that fluent brand names increased high water-purity and taste perceptions. Fluency also increased the likelihood of purchase intent. Interestingly, fluency significantly fed into expectations for water taste, even when it was not used as information in a preceding judgment about another attribute, mineral content. This study expands our knowledge about how subtle extrinsic cues, such as the fluency of a brand name, can affect consumer expectations for foods and beverages. It suggests that when marketers construct a new brand name, they need to consider the role of fluency in order to communicate and promote desirable product features more effectively. For example, a brand name that is disfluent for target-segment consumers would not be a congruent match with the imagery (e.g., the glacier or the mountain stream) and package designs that are intended to link the brand with high purity.

This study has some limitations that need to be addressed in future work. First, considering the unidentifiable name-specific differences found in the study, future research can extend the study by using a larger set of more diverse brand names and by better controlling for other, potentially influential name features and see whether the effects reported here are generalizable or subject to some joint effects or boundary conditions. Second, this study used a relative small sample of young female participants only. To increase generalizability, future work would be needed with a larger and more representative sample. In addition, as the purpose of this study was to examine whether the fluency cue of a brand name can influence perceptions of bottledwater attributes, we focused on the internal validity by testing for the effect when the brand name was the only available information. Future research is needed to test for the fluency effect in an information-richer context in order to increase external validity of the results. In doing so, we can also investigate how robust the fluency effect is in the presence of other inferential cues (e.g., price, packaging). For example, consumers may use the price information as a cue for inferring the quality of water. If so, would consumers' perceptions of water purity still vary depending on the fluency level of a brand name when the price information is provided? Would the effect change depending on the level of price? It would be worth investigating whether the potentially competing cues interact or are independent in forming consumer perceptions. Future work can also fruitfully explore if the brand name fluency effect on perceptions observed in the present study can be extended to the context of familiar brand names.

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TABLE 1

Perceptions of bottled water and purchase intent (frequency of responses)

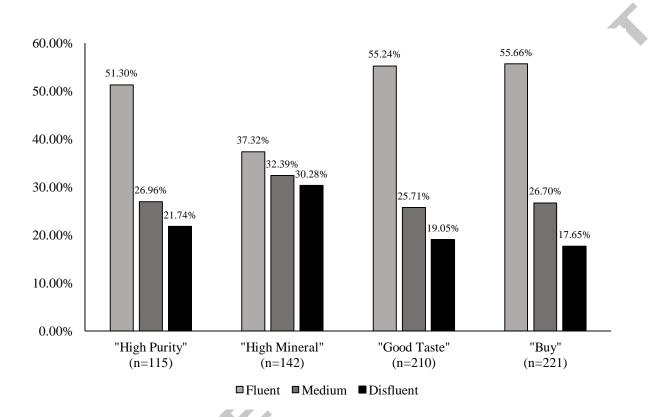
		В			
Purity judgment group		Fluent	Neutral	Disfluent	Sum
Purity	"High"	59 (67.0%) _a	31 (35.2%) _b	25 (28.4%) _b	115 (43.6%)
	"Not"	29 (33.0%) _a	57 (64.8%) _b	63 (71.6%) _b	149 (56.4%)
Taste	"Good"	54 (61.4%) _a	27 (30.7%) _b	19 (21.6%) _b	100 (37.9%)
	"Not"	34 (38.6%) _a	61 (69.3%) _b	69 (78.4%) _b	164 (62.1%)
Purchase	"Buy"	53 (60.2%) _a	32 (36.4%) _b	23 (26.1%) _b	108 (40.9%)
	"Not"	35 (39.8%) _a	56 (63.6%) _b	65 (73.9%) _b	156 (59.1%)

		Brand name fluency						
Mineral judgment group		Fluent	Neutral	Disfluent	Sum			
Mineral	"High"	53 (60.2%) _a	46 (52.3%) _a	43 (48.9%) _a	142 (53.8%)			
	"Not"	35 (39.8%) _a	42 (47.7%) _a	45 (51.1%) _a	122 (46.2%)			
Taste	"Good"	62 (70.5%) _a	27 (30.7%) _b	21 (23.9%) _b	110 (41.7%)			
	"Not"	26 (29.5%) _a	61 (69.3%) _b	67 (76.1%) _b	154 (58.3%)			
Purchase	"Buy"	70 (79.5%) _a	27 (30.7%) _b	16 (18.2%) _b	113 (42.8%)			
	"Not"	$18(20.5\%)_{2}$	61 (69.3%) _b	72 (81.8%) _b	151 (57.2%)			

Note. Each subscript letter denotes a subset of brand name fluency categories whose column proportions do not differ significantly from each other at the .05 level.

FIGURE 1

Observed frequencies (%) of responses by fluency level



Note. The first set of bars represents the frequencies (%) of responses indicating 'high purity' perception by the level of brand-name fluency. Participants chose the 'high purity' response option over 'not' for a total of 115 out of 264 trial times. Out of the 115 'high purity' responses (n=115), 51.30% were associated with fluent brand names. The second, third, and fourth sets of bars correspond to 'high mineral' perception (a total of 142 responses), 'good taste' perception (210 responses), and 'purchase intent' (221 responses), respectively.

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Brand Name Fluency Influences Perceptions of Water Purity and Taste

Highlights

- The fluency of a brand name influences consumer perceptions of bottled water.
- High water purity was more frequently perceived for a fluent (vs. disfluent) brand name.
- Expected water taste and purchase intent were also influenced by the fluency of a brand name.
- Findings highlight the informational role of a fluency cue associated with brand names in consumer perceptions.