# On-Pack Communication: Ingredients Information Containing Metaphorical Cues Increases Processing Confidence, Product Evaluations and Purchase Intentions

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**Abstract:** Information on the back of packaged consumer goods, such as the ingredients list, is increasingly becoming a purchase-decision influencer in informed consumer markets. However, processing such content is mainly challenging due to metacognitive impairment caused by technical terminology use (e.g., *Ascorbic Acid* instead of *Vitamin C*), which affects the purchase decision-making process. Therefore, this study examines whether metaphorical-cue use (e.g., *"dispatches an elite nano-coating force with heavy defensive armament"* for a sunscreen—metaphor italicised) influences consumer product evaluations and purchase intentions by increasing their confidence in processing the ingredients information. Two experiments, using a 2 (metaphorical cue: yes, no) × 3 (packaged consumer good: food, drink, drug) between-subjects factorial design, recruited samples comprising student surrogates ($N_{experiment\ 1}$ = 1326) and supermarket shoppers ($N_{experiment\ 2}$ = 956). Ingredients panels containing metaphorical messages elevated consumers' confidence in processing the ingredients information even when it was only partially understood. Such confidence yielded more favourable product evaluations and higher purchase intentions. These results show that supplementing the ingredients panel with metaphorical cues could turn this less-understood section into a seller by resolving consumers' metacognitive impairment.
**Keywords:** metaphorical cues, on-pack ingredients panel, information processing, product evaluation, purchase intention.

## 1. Introduction

The more aesthetic and friendly side of a product's package (i.e., the consumer-facing front) fails to achieve its persuasion goal fully in health-conscious and informed consumer markets. Such consumers increasingly turn to read the information on a package's back before reaching a purchase decision. However, despite this growing behavioural tendency, many consumers only partially comprehend the information disclosed on the reverse side (Cummings, 2017). This is typical for the sections on a consumer good's package-back where technical jargon is used, such as nutrition panels for drinks (Drichoutis et al., 2006; Mandle et al., 2015) and ingredients lists for foods (Chambers et al., 2018), drugs and cosmetics (Fowler et al., 2019). Some may even find it

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challenging to process the on-pack content in sections that communicate in relatively plain language, such as precautionary allergen advice (Marchisotto et al., 2017). Consumers' incapacity to process such on-pack information could be resolved by education (Ayaz et al., 2020). However, it seems economic incentives (e.g., discounts) could nullify that effect even after a 6-month nutrition training (Blakely et al., 2011); and overrule even health motivations for food purchases (Yin & Özdinç, 2018).

The backside of a consumer good's package typically discloses mandatory information about the product. Although the front and back of a product's package are usually identical in size, the latter is characteristically cramped by a sectioned layout and crowded content that mainly discloses information using scientific terms printed in smaller font sizes. However, the relatively less consumer-friendly design of the back could be improved to facilitate the purchase decisions of health-conscious and informed consumers. In particular, the present study investigates consumers' confidence in processing the relatively technical content on the back of a product's package when metaphorical aids are present. It also examines whether using metaphorical aids influences product judgements and purchase intentions. Prior research in advertising has shown that consumers process product messages more quickly and form more positive evaluations when they contain a metaphor, such as "puts a padlock on freshness" for a slider bag or "bulldozes tough stains" for a dishwasher detergent (McQuarrie & Phillips, 2005). This study, therefore, tests whether such effects are transferable to the section on the back of a consumer good's package that is perhaps the most challenging to process for many consumers – the ingredients list. If our expectation is correct, then the content on a package's back could not only be made more customer-friendly by helping shoppers utilise such content's informative (e.g., facts about the product) and educative functions (e.g., reference data such as daily intakes), but also a sales booster through metaphor use. Unfortunately, our knowledge of how consumers utilise metaphorical cues on the reverse side remains limited to date.

The following sections explain the research topic's theoretical grounds and articulate predictions. The paper then presents an overview of the experiments. Methodological details, results and discussions for each experiment follow subsequently. Finally, a general discussion section discusses the implications of findings for research and practice.

## 2. Hypothesis development

The present work investigates the impact of a supplementary metaphorical message on consumer confidence in processing the ingredients panel of three packaged goods (i.e., food, drink, and drug) and their product evaluations and purchase intentions. Broadly, we expect a metaphor to stimulate confidence by helping consumers optimise their information processing and evoke positive product evaluations. Our attribution to these effects is the optimising and simplifying utilities of aids to information processing

(Bettman et al., 1998; Wright, 1975). We also attribute our expectations to research indications in the food packaging (e.g., Burton et al., 2015; Sharf et al., 2012; Wills et al., 2012).

More specifically, the metacognitive model of information processing suggests that people evaluate how confident and sure they feel about their decision-making experiences [i.e., also known as *secondary cognition* (Petty et al., 2007)]. Such a process underlies judgement of various metacognitive experiences of knowing and learning and their psychosocial implications, such as liking, truth, and attitudes (Schwarz, 2015). The type of metacognitive experience relevant to the present experimental design is processing fluency. Processing fluency, or *accessibility experience* as referred to in various sources (e.g., Bullock et al., 2019), refers to people's affective judgements of how simple or difficult information processing is. Prior research in the contexts of food (Moore et al., 2018), energy-dense food and drink (Monteiro et al., 2018), and cosmetic products (Fowler et al., 2019) have indicated that consumers underutilise the ingredients information disclosed on product packages due to limited processing fluency (Todd & Variyam, 2008). Shulman et al. (2020) have shown that disclosing product information using field-specific terminology impedes consumers' processing fluency and causes metacognitive impairment. Thus, we expect the technical jargon disclosing a product's ingredients to impair consumers' fluency in processing the ingredients information. For example, the information about *soy lecithin* – a food additive used as an emulsifier in packaged food products such as chocolate bars and *sodium chloride* in sports drinks (Aron, 2019), could make a supermarket consumer experience metacognitive impairment when reading the ingredients information. Research has shown that the latter of those ingredients, more commonly known as *salt*, is often confused by consumers with sodium (Grimes et al., 2009). Similarly, *tocopherol* in drugs (e.g., sun blocks) and cosmetics (e.g., moisturisers), which is an antioxidant more commonly known as *Vitamin E*, further exemplifies the technical jargon used in ingredients panels that could impair consumers' processing fluency and product evaluations (Özdinç, 2022). Our expectation that such technical jargon will impair processing fluency also stems from the cognitive load theory (Sweller, 1988). According to this theory, working memory is loaded when people engage in cognitive tasks such as information processing. Mentally demanding information about a product, such as the ingredients list, causes information redundancy for the more comprehensive cognitive tasks they require (Schüler et al., 2013).

In the same context, the study posits that supplementary metaphorical cues to the ingredients information will reduce consumer metacognitive impairment and cognitive-task overload. In addition to their wide use in marketing communications in the forms of pictorial metaphors (Forceville, 1994; Jeong, 2008) and textual metaphors (Morgan & Reichert, 1999), our argument is both theoretically and empirically substantiated. As the conceptual metaphor theory puts forward, a metaphor is a cognitive device that facilitates understanding a concept by describing it using a superficially different one (Lakoff, 1993). Whether presented in images or words, consumers process a product message cursorily when it contains a metaphor and form more positive product judgements

(McQuarrie & Phillips, 2005). Theoretically, this is because a metaphor makes a difficult-to-understand target concept easily grasped by using a source concept (Landau, Zhong, & Swanson, 2018). Testing the theory in a controlled lab experiment, Landau, Arndt and Cameron (2018) documented that people's intention to buy a suntan lotion elevated when the experimental stimulus presented the sun as an enemy (i.e., source concept) that strikes their skin with dangerous ultraviolet rays (i.e., target concept). Practically, though, there is limited use of metaphors on the ingredients panel of packaged consumer products. Among rare examples is the Old Spice high endurance deodorant. The product's ingredients panel informs customers, for instance, that it contains *atomic robots* that replace their *stench monsters* with fresh and clean *scent elves* (metaphors italicised), along with its chemical ingredients (Old Spice, 2022). Nevertheless, little research has examined the effect of metaphorical aids on resolving consumer metacognitive impairment in the ingredients panel context (e.g., Özdinç, 2022). Thus, whether using metaphorical messages on the ingredients panel of packaged consumer products impacts consumers' processing confidence, product evaluations, and purchase intentions remains unanswered.

Accordingly, we hypothesise in the light of this literature that consumers' confidence with their processing of product ingredients, product evaluations and purchase intentions will depend on the metaphorical aid to processing. Stated methodically:

$H_1$: An ingredients panel with a supplementary metaphorical cue (versus no cue) will increase consumer confidence in processing the ingredients information.

$H_2$: (a) Metaphorical cues supplementing ingredients information will lead to more favourable product evaluations irrespective of the product, and (b) will stimulate higher purchase intentions.

## 3. Overview of studies

The converging results of a pair of 2 (metaphorical cue) × 3 (packaged consumer good) experiments document a significant effect of cue assistance on consumer product evaluations and purchase intentions. The findings reveal that such an effect is dependent on perceived confidence in processing the ingredients information, optimised by a fictional aid (i.e., metaphor) supplementing factual information (i.e., ingredients list). Experiment 1, conducted in a controlled laboratory with a large student sample, returned results that support the arguments in $H_1$, $H_{2a}$ and $H_{2b}$. Although student surrogates reportedly generate responses similar to non-student samples in consumer studies (Beltramini, 1983; Bergmann & Grahn, 1997), a second experiment (i.e., Experiment 2), conducted in retail settings with shoppers, replicated the first experiment and returned similar results, providing further support for the theorising behind hypotheses. The replication also served for the external validity of the metaphorical-cue effect that Experiment 1 had detected. Overall, the study's theory-driven interventions indicate that using supplementary metaphorical messages on the ingredients panel of packaged

consumer goods could turn the ingredients information into a consumer-friendly on-pack sales-boosting agent even when the ingredients are only partly understood.

## 4. Experiment 1

### 4.1. Methods

A 2 (metaphorical cue: yes, no) × 3 (packaged consumer good: food, drink, drug) laboratory experiment recruited 1326 volunteering students at a New Zealand university (52% male; $M_{age}$ = 21.88 ±1.67 years, 83% ranging from 18 to <24 years, max. 34 years) in the first semester of 2021. Calls for participating in the university's knowledge-creation process were hung on campus noticeboards. Anonymised participants were 100% volunteers, no benefit was given in exchange. The balanced factorial design (i.e., 221 subjects in each of the six experimental conditions) randomly exposed participants to one of the three product conditions. Randomisation checks by subject demographics with chi-square confirmed that gender and metaphorical cue were independent in all three product groups [.33 (for food) < $X^2$ (df = 1) < .45 (for drink), *p*s > .51], so were age and metaphor [1.20 (for food) < $X^2$ (df = 1) < 2.04 (for drug), *p*s > .15]. The products were a protein bar choc-fudge, an energy drink, and a high SPF sunscreen. These products were considered appropriate for their high accessibility through vending machines (where all of the three products are sold), cafés (where two of the three products are sold) and convenience stores (selling all of the three products) across the campus. Students comprise about a third of the target market for the former two products (Aron, 2019), and sun protector creams are in demand in New Zealand due to the country's high rate of melanoma (Cancer Society New Zealand, 2020). A preliminary check before analysis discarded 119 returns that suffered from various respondent errors (e.g., unanswered questions). Participants' use of a similar product was common ($M_{Food}$ = 4.65 ±1.53, n = 442; $M_{Drink}$ = 4.71 ±1.67, n = 442; $M_{Drug}$ = 4.39 ±1.88, n = 442; 1: hardly ever, 7: almost always) but only unvarying between the food and drink products [single-factor $F(2, 1323) = 4.38$, $p < .02$, $\eta^2 = .007$]. When shopping, reading the ingredients list on the back of these products was an occasional consumer behaviour across the sample (M = 3.99 ±2.04; 1: hardly ever, 7: almost always).

Depending on the metaphorical cue condition, participants were administered an ingredients panel that informed them of the product's contents either metaphorically and literally (cue: yes) or only literally (cue: no). Of the participants in the cue conditions, the stimuli panel provided those assigned to the food and drink products with these products' ingredients and a fictional cue; and those set to the sun protector cream with the product's active and inactive ingredients accompanied by a fictional cue. Others in the no-cue conditions saw either a panel displaying only the ingredients information (for the packaged food and drink products) or active and inactive ingredients (for the sunscreen). Table 1 illustrates the experimental design, and the appendix provides the stimuli for all experiments.

**Table 1.** The 2 (metaphorical cue: yes, no) × 3 (packaged consumer good: food, drink, drug) between-subjects experimental design

| Metaphorical cue | Packaged consumer good | | | Total |
|---|---|---|---|---|
| | Food | Drink | Drug | |
| Yes | 221 (160) | 221 (151) | 221 (154) | 663 (465) |
| No | 221 (164) | 221 (159) | 221 (168) | 663 (491) |
| Total | 442 (324) | 442 (310) | 442 (332) | 1326 (956) |

*Notes*. Numbers (in parentheses) show the group sizes in Experiment 1 (Experiment 2). The packaged consumer goods are a protein bar choc-fudge, an energy drink, and a high SPF sunscreen.

The online instrument adapted measures from and formed the stimuli metaphorical cues around similar works on metaphors in advertising (McQuarrie & Phillips, 2005) and cosmetics contexts (Landau, Arndt, & Cameron, 2018; Özdinç, 2022). A trial to assess the stimuli figurative expressions was not common in those experimental works, including others in health contexts (Landau, Zhong, & Swanson, 2018). The landing screen of the instrument briefed participants on the research, outlined the terms of participation, and obtained their informed consent. A participant's click to proceed with the questions randomly took them to one of the three product pages where they saw the name of the product stimuli and its ingredients panel. On this arrival screen, participants first indicated their frequency of consuming a similar product, then expressed how often they read the ingredients list of that item when shopping (both measured on the aforementioned 7-point scales), and later rated their confidence in understanding the information about the product's ingredients on a sliding scale (0: hardly confident, 100: very confident). The next screen asked participants to write what aspect of the panel information their stated processing confidence primarily relied upon. Moving onto another screen, participants determined how much they had considered their experience of using a similar product when evaluating their processing confidence (1: not at all, 7: very much). The second unstructured item on the next screen wanted the participants to type in as many elements as they recall from their exposure to the ingredients panel. The last two pages of the instrument asked the sample first to rate their product evaluations (1: not good at all, 7: very good) and then to indicate whether they would consider buying the product (1: hardly consider, 7: consider very much). All products (and their ingredients information) were actual market offers (on-pack information); their brand names were removed for experimentation.

### 4.2. Results and discussion

A between-subjects ANOVA revealed no main effect of product on participants' confidence in processing the ingredients panel [$M_{Food}$ = 61.29 ±12.54, n = 442; $M_{Drink}$ =

65.72 ±13.23, n = 442; $M_{Sunscreen}$ = 57.30 ±14.71, n = 442; $F(2, 1320) = 1.20$, $p > .05$, $\eta^2 = .004$], but a main effect of metaphor [$F(2, 1320) = 48.49$, $p < .01$, $\eta^2 = .304$]. Participants in the metaphorical cue conditions expressed that they were more confident with their processing of the ingredients information (M = 75.55 ±10.77, n = 663) than their counterparts in the no-cue conditions (M = 46.04 ±17.05, n = 663). There was no interaction between product and metaphor [$F(2, 1320) = 1.01$, $p > .05$, $\eta^2 = .004$], suggesting that the presence of a fictitious cue on the ingredients panel had the same effect on processing confidence irrespective of the product type. Planned contrasts showed that participants in the metaphorical cue conditions expressed their level of confidence in processing the ingredients panel homogeneously across the food (M = 72.31 ±11.30, n = 221), drink (M = 77.14 ±10.52, n = 221), and sunscreen products (M = 68.66 ±12.98, n = 221). Similarly, in the no-cue conditions, product did not cause a difference in participants' processing confidence [$M_{Food}$ = 47.98 ±16.95, n = 221; $M_{Drink}$ = 51.07 ±15.87, n = 221; $M_{Sunscreen}$ = 43.74 ±18.60, n = 221; $F(2, 1320) = .87$, $p > .05$, $\eta^2 = .003$].

A between-subjects ANOVA on subjective considerations discovered that participants had considered their consumption experience of a similar product when assessing their confidence in processing the product ingredients. There was a main effect of a similar product use on subjects' assessment of their processing confidence [$F(2, 1320)_{Similar\ product\ use} = 4.97$, $p < .02$, $\eta^2 = .031$]. Those in the drink condition indicated that their consideration relied more on having used a similar product (M = 5.89 ±1.28) than their counterparts in the food (M = 3.43, SD = 1.73) and sunscreen conditions (M = 3.28 ±2.15). There were no significant interactions (all *p*s > .19). These results showed that having used a similar product influences consumers' processing confidence with the product ingredients.

Participants' justifications for their processing confidence with product ingredients were also examined to complement this self-report measure. Two referees, who were unaware of the experimental manipulations, grouped unstructured answers into two by their relevance to metaphor and product (0: no, 1: yes, for both). Their judgement converged significantly (97%; Noseworthy, Di Muro, and Murray 2014; Sevilla, Isaac, and Bagchi 2018). The few unanalysable responses were discarded. The results ran parallel with our assumption, 91.05% (21.97%) of responses grounded their confidence in processing on metaphor (product) [$\chi^2(1) = 98.83$, $p < .01$]. All other conditions had a similar distinction (all *p*s < .01). Additionally, recall rates were checked to better understand participants' rating of their own confidence in processing—another pair of coders, unaware of the experiment, judged the acceptability of recalled answers by content. Contents that sufficiently conveyed an intended message were deemed acceptable, such as those containing spelling errors. Also, some incomplete inputs were deemed sufficient attempts in recalling, for instance, "glucose" as a good recall for *'glucose syrup'* (for food), "potasium phosfate" as a conventionally correct reminiscence of *'monopotassium phosphate'* (for drink), and "alcohol" as a sufficient attempt in recalling *'SD alcohol 40-B'* (for sunscreen). However, coders did not accept, for example,

"cocoa" unless the input specified it as either *'cocoa butter'*, *'cocoa mass'* or *'cocoa powder'* in the food conditions. Similarly, they deemed a recall attempt insufficient if a participant reported "sodium" ("avon") instead of *'sodium chloride'* (*'avobenzone'*) in the drink (sunscreen) conditions. Coder judgements were homogeneous (91%; the few causing disagreements were discarded), but there was little resemblance between participant recall rates and their self-report processing-confidence scores. Recall performance in all experimental conditions was uniformly low across not just the no-cue conditions [ranging from 16.03% (sunscreen) to 27.14% (drink)] but the cue conditions as well [ranging from 19.62% (sunscreen) to 33.37% (drink)]. In sum, not only participants' reasoning behind their confidence in processing, but also the rate of their recalls was as anticipated ($H_1$). Participants' assessments of their self-assurance in understanding ingredients may be driven by metaphorical cue, regardless of how much of a product's ingredients information they recall.

When further checking participants' product evaluations, a 2 (metaphorical cue) × 3 (product) between-subjects ANOVA did not show a main effect of product type on subjects' evaluations of the product [$M_{Food}$ = 5.19 ±1.23; $M_{Drink}$ = 5.30 ±1.04; $M_{Sunscreen}$ = 4.81 ±1.59; $F(2, 1320) = 1.01$, $p > .05$, $\eta^2 = .003$], but it revealed a significant main effect of cue [$F(2, 1320) = 22.46$, $p < .01$, $\eta^2 = .140$]. Participants in the metaphorical cue conditions (M = 5.87 ±1.00) evaluated the product more positively than their counterparts in the no-cue conditions (M = 4.52 ±1.27). There was no interaction between the product and cue [$F(2, 1320) = 1.94$, $p > .05$, $\eta^2 = .005$], which suggested that the metaphorical cue's effect on product evaluations remained homogeneous across the three products. Planned comparisons proved that suggestion correct, as in the cue conditions product evaluations were statistically uniform among the protein bar (M = 5.88 ±1.08), energy drink (M = 6.05 ±0.88) and high SPF sunscreen (M = 5.61 ±1.54). In the no-cue conditions, we observed a similar pattern between the food (M = 4.46 ±1.37), drink (M = 4.77 ±1.16) and sunscreen products [M = 4.31 ±1.73; $F(2, 1320) = .92$, $p > .05$, $\eta^2 = .003$]. On the whole, these findings suggest that when the ingredients panel contains a metaphorical cue, people may be inclined to elicit more favourable product evaluations, regardless of product type. In sum, therefore, these results are in line with our hypothesis ($H_{2a}$) that theorised packaged products of various types could evoke favourable consumer judgements when their ingredients panel presents product contents together with a companion metaphorical aid.

Finally, a 2 × 3 between-participants ANOVA examined participants' purchase intentions and found no main effect of product thereon [$M_{Food}$ = 5.11 ±1.30; $M_{Drink}$ = 5.24 ±1.22; $M_{Sunscreen}$ = 5.01 ±1.37; $F(2, 1320) = .89$, $p > .05$, $\eta^2 = .002$]. Contrarily, a significant main effect of metaphor on purchase intentions appeared [$F(2, 1320) = 29.50$, $p < .01$, $\eta^2 = .184$]. Those in the cue conditions (M = 6.00 ±1.01) expressed higher purchase intentions than their counterparts in the no-cue conditions (M = 4.52 ±1.25). The indication was that such effect of metaphor invariably existed in all product conditions because an interaction between product and metaphorical cue was not present. A comparison of participants' purchase intentions across the food (M = 5.96 ±1.04), drink

(M = 6.11 ±0.93) and sunscreen products (M = 5.89 ±1.10) in the cue conditions revealed homogeneity between scores [$F(2, 1320) = .41$, $p > .05$, $\eta^2 = .001$]. Scores on purchase intentions were similarly unvarying in no-cue conditions [$M_{Food} = 4.30 \pm 1.86$; $M_{Drink} = 4.32 \pm 1.45$; $M_{Sunscreen} = 4.07 \pm 1.84$; $F(2, 1320) = .33$, $p > .05$, $\eta^2 = .001$]. As a result, these observations of purchase intentions support our assumption ($H_{2b}$) and suggest that using a metaphorical cue on the back of a product's package along with its ingredients list could persuade consumers to buy the product.

A multivariate analysis of variance (MANOVA) provided an overview of the entire model that factorial designs have revealed. Using Pillais' trace ($V$), test results confirmed a significant effect of metaphorical cue on confidence in processing product ingredients, product evaluations, and purchase intentions, $F(6, 1320) = 5.47$, $p < .05$, $V = .583$.

## 5. Experiment 2

In Experiment 1, we found evidence in a controlled lab environment that fictitious messages subordinating the authentic ingredients information on the back of a product package could bolster consumer product evaluations and purchase intentions by establishing processing fluency over the ingredients panel. Now, we test whether our hypotheses would also hold for non-student consumers in natural shopping environments. We, therefore, replicate our Experiment 1 with such shopper groups.

### 5.1. Methods

Soon after the first study was over, a second experiment was conducted. The second study intercepted consumers at the branches of a large warehouse and supermarket chains operating on the north island of New Zealand. Over two months, Experiment 2 recruited 956 anonymously volunteering shoppers. A typical shopper in the sample was an income-generating (71%) female (58%) in their 30s or 40s (73%) [age distribution: 18% < 30s (44%) < 40s (29%) < 50+ years (9%); M = 37.71 ±11.57 years]. Participants took part in the study on tablets; they were randomly assigned to the experimental conditions. Randomisation checks with chi-square confirmed that gender and metaphorical cue were independent in all three product groups [.45 (for drug) < $X^2$ (df = 1) < .64 (for food), $p$s > .05]. Similarly, age and metaphor were independent in food [$F(7, 316) = 1.12$], drink [$F(7, 302) = 1.76$], and drug [$F(7, 324) = 1.27$, all $p$s > .05] conditions. Unlike the first controlled experiment, the second experiment was an unbalanced design (see Table 1). The use of a similar product was occasional among the sample and uniform across the food (M = 3.38 ±1.16, n = 324), drink (M = 3.42 ±1.59, n = 310), and sunscreen conditions [M = 3.27 ±1.52, n = 322; $F(2, 952) = .75$, $p > .05$, $\eta^2 = .001$]. The shoppers who volunteered to participate in the experiment typically read the ingredients list on the back of these products before making a purchase decision (M = 5.51 ±1.47).

### 5.2. Results and discussion

A 2 (metaphorical cue) × 3 (product) between-subjects ANOVA did not reveal a main effect of product on processing confidence [$M_{Food}$ = 67.15 ±10.71, 324 subjects; $M_{Drink}$ = 62.29 ±13.25, 310 subjects; $M_{Sunscreen}$ = 60.88 ±12.40, 322 subjects; $F(2, 950) = .97$, $p > .05$, $\eta^2 = .002$]. A main effect of metaphorical cue, however, occurred on participants' processing confidence with product ingredients [$F(2, 950) = 37.51$, $p < .01$, $\eta^2 = .211$]. Those exposed to cue conditions (M = 72.98 ±12.80, 465 subjects) scored higher on their confidence with understanding the product ingredients than their counterparts who were exposed to no-cue conditions (M = 51.61 ±14.54, 491 subjects). Such metaphor effect endured across all product groups as there were no product-fictitious cue interactions. Planned comparisons revealed that subjects exposed to the metaphorical cue stimuli were similarly confident with their processing of the ingredients panel for the protein bar (M = 79.28 ±11.85, 160 subjects), energy drink (M = 73.36 ±13.57, 151 subjects) and high SPF sunscreen products (M = 71.66 ±12.91, 154 subjects; $F(2, 950) = 1.15$, $p > .05$, $\eta^2 = .002$]. In the no-cue conditions, subjects' processing confidence did not vary significantly over the ingredients lists of the three products [$M_{Food}$ = 55.96 ±11.60, 164 subjects; $M_{Drink}$ = 53.31 ±14.22, 159 subjects; $M_{Sunscreen}$ = 50.78 ±14.40, 168 subjects; $F(2, 950) = 1.02$, $p > .05$, $\eta^2 = .002$].

A between-subjects ANOVA explored the influences of using a similar product on participants' self-evaluation of their confidence in processing the product ingredients. Results revealed a significant main effect of a similar product use on one's assessment of their processing confidence [$F(2, 953) = 10.33$, $p < .01$, $\eta^2 = .022$]. Participant considerations of their prior experience with a similar product when assessing their processing confidence in both food (M = 4.45 ±1.75) and drink conditions (M = 4.39 ±1.94) were lower than those in the high SPF sunscreen condition (M = 4.95 ±1.27). There were no significant interactions (all *p*s > .62). These results mirrored our earlier observations and suggested that a similar product use influences one's self-assessment of confidence in processing the ingredients panel.

The same sorting process as in Experiment 1 (coder agreement: 90%) discovered that 77.14% (30.91%) of rationales that participants provided for their self-report processing confidence indicated metaphorical cue (product) [$\chi^2(1) = 73.68$, $p < .01$]. This difference endured in all other conditions (all *p*s < .05). Recall rates were universally moderate (referee agreement: 84%) ranging from 51.95% (i.e., sunscreen) to 64.35% (i.e., drink) not just in the cue conditions but also in no-cue conditions [ranging from 49.61 (i.e., sunscreen) to 57.13 (i.e., drink)]. On the whole, we were expecting these results. When the ingredients panel provided a complimentary metaphorical message alongside the product contents, consumers felt confident with their processing of the ingredients panel regardless of their capacity to recall from memory. So far, these results converge with those of Experiment 1; thus, they further support our hypothesis ($H_1$) that consumer confidence increases when the ingredients panel delivers factual information and some fictitious cues to aid processing.

When a 2 (metaphorical cue) × 3 (product) between-subjects ANOVA examined participants' evaluation of the packaged products, there was no main effect of product type on participants' product evaluations [$M_{Food}$ = 4.19 ±1.25; $M_{Drink}$ = 4.12 ±1.32; $M_{Sunscreen}$ = 4.08 ±1.36; $F(2, 950) = .72$, $p > .05$, $\eta^2 = .002$]. However, there was a significant main effect of cue [$F(2, 950) = 36.92$, $p < .01$, $\eta^2 = .276$] such that subjects in the cue conditions (M = 5.03 ±1.11) evaluated the product more positively than those in the no-cue conditions (M = 3.26 ±1.67). There was no interaction, though, suggesting that the metaphorical cue effect remained unchanged across the three product conditions. Planned comparisons proved such a suggestion correct. Participants who were assigned to the cue conditions evaluated the product similarly moderately [$M_{Drink}$ = 5.10 ±1.08; $M_{Drink}$ = 4.99 ±1.17; $M_{Sunscreen}$ = 4.94 ±1.28; $F(2, 950) = 1.64$, $p > .05$, $\eta^2 = .004$]. In the no-cue conditions, participant evaluations were uniform, as well, between those exposed to the food (M = 3.30 ±1.35), drink (M = 3.32 ±1.84) and sunscreen products [M = 3.24 ±1.89; $F(2, 950) = .33$, $p > .05$, $\eta^2 = .001$]. In sum, these findings from Experiment 2 echoed those from Experiment 1 as they indicated that the effect of a fictitious message subordinating the authentic ingredients information on a product's package has a hold over consumer evaluations of products. Overall, the second experiment supported our hypothesis ($H_{2a}$) with further evidence that suggests consumers form more favourable judgements about a packaged product if the ingredients panel lessens meta-cognitive impairment through metaphorical cue use along with the product's contents.

Later, a 2 × 3 between-subjects ANOVA explored purchase intentions. There was not a main effect of product on purchase intentions [$M_{Food}$ = 4.63 ±1.63; $M_{Drink}$ = 4.59 ±1.44; $M_{Sunscreen}$ = 4.56 ±1.78; $F(2, 950) = .13$, $p > .05$, $\eta^2 = .001$]. However, there was a significant main effect of metaphorical cue on purchase intentions [$F(2, 950) = 46.28$, $p < .01$, $\eta^2 = .351$], so we expected metaphor's effect to resonate between the three product conditions. Those in the cue conditions (M = 5.81 ±1.35) expressed significantly higher purchase intentions than their counterparts in the no-cue conditions (M = 3.41 ±1.77). No interaction occurred between the product and metaphorical cue. Planned contrasts showed that participants' expressed similarly high purchase intentions for the protein bar ($M_{Food}$ = 5.91 ±1.11), energy drink ($M_{Drink}$ = 5.83 ±1.39) and sunscreen ($M_{Sunscreen}$ = 5.78 ±1.22) in the cue conditions [$F(2, 950) = .43$, $p > .05$, $\eta^2 = .001$]. Purchase intentions were homogeneously low across the products in no-cue conditions [$M_{Food}$ = 3.39 ±1.65; $M_{Drink}$ = 3.44 ±1.76; $M_{Sunscreen}$ = 3.35 ±1.87; $F(2, 950) = .57$, $p > .05$, $\eta^2 = .001$]. Overall, Experiment 2 results provided evidence for our theorising ($H_{2b}$) that consumer purchase intentions could also be amplified by using a fictitious cue on the ingredients panel of a packaged product, irrespective of product type.

For an overview of the entire model in Experiment 2, a MANOVA was performed with Pillai's trace ($V$). Findings revealed a significant effect of metaphor use on confidence in processing ingredients, product judgements, and intentions to purchase, $F(6, 950) = 4.90$, $p < .05$, $V = .478$.

## 6. Conclusion

Similar on-pack communication and pricing strategies such as messages offering functional benefits (e.g., 'fuel' claims on protein bars/energy drinks) and tags offering a bargain (e.g., 'on special' tags), respectively, seem to clutter shelves in retail environments (Consumer NZ, 2021). Thus, health-conscious and informed consumers are increasingly turning a package's back for some clue that would assist them in their decision-making. However, unfortunately, the back of a product's package is not designed as appealing, inviting or customer-friendly as its front. It is, on the contrary, typically crowded with the information presented in, for instance, technical jargon (e.g., ingredients list) and printed in relatively smaller font sizes (than the front) for compliance with relevant laws that mandate firms to disclose product-related information (e.g., nutritional facts) along with others (e.g., recycling). Therefore, reading the information on the back of a product's package often leaves consumers empty-handed for their insufficient capacity to process the disclosed information entirely. At this point, our study offers a practical solution for the manufacturers of such products by documenting that metaphorical cues could turn the relatively less inviting backside of a package into a more customer-friendly reference and a sales-boosting agent by elevating consumer's confidence in processing its poorly understood sections such as ingredients panel. Such a confidence boost also elicits favourable product judgements and increases purchase intentions irrespective of how much ingredients information is understood.

Findings from our experiments provide converging evidence and prove our expectations correct. Metaphorical aids to information processing in our study's on-pack ingredients context eased metacognitive impairment significantly. The more consumers felt confident with their information processing fluency, the more positive and higher their product evaluations and purchase intentions became. To assess these effects by size and strength, we performed a single-paper meta-analysis (McShane & Böckenholt, 2017) of the metaphorical cue and product. The meta-analysis of our two experiments showed significant contrasts when a metaphor was present (estimate = .75, SE = .28; $z$ =5.37, $p <$ .001) or absent (estimate = .64, SE = .25; $z$ = 4.83, $p <$ .001).

### 6.1. Limitations and future research

Despite their robustness, some factors might have thwarted the utility of our findings. For example, theoretical (Schüler et al., 2013; Sweller, 1998) and empirical evidence (Özdinç, 2022) on cognitive load indicate that longer texts harden information processing. However, our decision to use different products available on the market exposed our experimental groups to ingredient panels of different lengths. This might have caused relatively higher (lower) recall rates we observed for the drink (sunscreen) product because of its ingredients list being the shortest (longest) in length. Moreover, our experiments used untested metaphors, neglected consumer knowledge of ingredients and their functional benefits and considered only one of the sections of a package's back (i.e.,

the ingredients panel). Other informational sections on the back of a product's package (e.g., health and recycling advice sections) could also help consumers become more informed and protective of their health and the environment when metaphors supplement their respective messages. Also, examining the metaphorical-cue effect together with sensory [e.g., physical dimensions (Krishna et al., 2017), visual (Gil-Pérez et al., 2020)] or cognitive elements of packaging [e.g., on-pack claims such as 'organic' (Chrysochou & Festila, 2019)] could further the utility of our findings in the contexts of multiple routes to persuasion (Petty & Cacioppo, 1986). Finally, the processing-confidence, product evaluations, and purchase intentions foci of our design could also be explained by other psychological (e.g., self-confidence), social (e.g., being swayed by peers), promotional (e.g., discounts), health-related (e.g., lactose intolerance) and relational motivations (e.g., brand loyalty) for the consumption of packaged products, as prior works suggest (e.g., Burton et al., 2015; Cummings, 2017). Future research might address these areas and whether our findings hold for intangible market offers.

### 6.2. Implications

Our findings also offer implications for management and public policy-making. We have shown that the backside of a package could become more customer-friendly for the informed shopper by allowing them to utilise its informative (e.g., facts about the product) and educative functions (e.g., reference data such as daily intakes) through metaphor use. Therefore, presenting ingredients together with metaphorical cues could aid consumers in their decision-making when shopping for packaged products, irrespective of product type. In sum, metaphorical expressions could serve for the manufacturers of packaged products as a tool to practice their social responsibility strategies more powerfully on their targets. Of course, consumers empowered by their mobile phones can also obtain information on technical words or phrases commonly used on the backside of a regular product's package. However, the uncertainty around the credibility of online consumer reviews (Maslowska et al., 2017) and specialist suggestions could make an informed purchase decision costly—if not risky—for shoppers. For instance, online consumer reviews could be triggered by unethical motivations [e.g., revenge (Lis & Fisher, 2020)]. Moreover, authority suggestions could be a columnist or a social media celebrity who choses to describe their title more sientifically as an 'expert'. Therefore, the cost of an informed (or misinformed) purchase decision could be, for instance, metabolic (e.g., allergy, constipation) besides financial burden and distress for the wider public, which in turn could escalate claims for healthcare services. As a result, subordinating metaphorical messages on the back of product packages could be a more reliable source for consumers through manufacturers' voluntarily taken social responsibility movement. Nevertheless, some consumers may not possess the literacy skills to process and interpret compact information presented on a product's package-back that also contains metaphors. Schools or educational community practice sessions could then consider delivering relevant literacy skills to minors (e.g.,

youth, foreign-born bi/multilingual residents) to interpret the literal meaning in figurative language marketing communications use.

## References


Aron, N. M. (2019). Functional beverages in health promotion, sport, and disease prevention: An overview. In A. M. Grumezescu & A. M. Holban (Eds.), *Sports and energy drinks* (pp. 269–296). Woodhead Publishing. https://doi.org/10.1016/B978-0-12-815851-7.00009-7

Ayaz, A., Dedebayraktar, D., Inan-Eroglu, E., Besler, H. T., & Buyuktuncer, Z. (2021). How does nutrition education contribute to the consumers' use and attitudes towards food labels? *Nutrition & Food Science*, *51*(3), 517–528. https://doi.org/10.1108/NFS-05-2020-0174

Beltramini, R. F. (1983). Student surrogates in consumer research. *Journal of the Academy of Marketing Science*, *11*(4), 438–443. https://doi.org/10.1007/BF02721926

Bergmann, T., & Grahn, J. (1997). The credibility of using students as surrogates in empirical research: A new perspective on an old issue. *Journal of Marketing Management*, *7*(2), 106–112.

Bettman, J. R., Luce, M. F., & Payne, J. W. (1998). Constructive consumer choice processes. *Journal of Consumer Research*, *25*(3), 187–217. https://doi.org/10.1086/209535

Blakely, T., Ni Mhurchu, C., Jiang, Y., Matoe, L., Funaki-Tahifote, M., Eyles, H. C., Foster, R. H., McKenzie, S., & Rodgers, A. (2011). Do effects of price discounts and nutrition education on food purchases vary by ethnicity, income and education? Results from a randomised, controlled trial. *Journal of Epidemiology & Community Health*, *65*(10), 902–908. https://doi.org/10.1136/jech.2010.118588

Bullock, O. M., Colón Amill, D., Shulman, H. C., & Dixon, G. N. (2019). Jargon as a barrier to effective science communication: Evidence from metacognition. *Public Understanding of Science*, *28*(7), 845–853. https://doi.org/10.1177/0963662519865687

Burton, S., Cook, L. A., Howlett, E., & Newman, C. L. (2015). Broken halos and shattered horns: Overcoming the biasing effects of prior expectations through objective information disclosure. *Journal of the Academy of Marketing Science*, *43*(2), 240–256. https://doi.org/10.1007/s11747-014-0378-5

Cancer Society New Zealand. (2021, March 2). *Mandatory sunscreen standards*. https://www.cancer.org.nz/about-us/latest-news/mandatory-sunscreen-standard

Chambers, E., Chambers, E., & Castro, M. (2018). What is "natural"? Consumer responses to selected ingredients. *Foods*, *7*(4), 65–72. https://doi.org/10.3390/foods7040065

Chrysochou, P., & Festila, A. (2019). A content analysis of organic product package designs. *Journal of Consumer Marketing*, *36*(4), 441–448. https://doi.org/10.1108/JCM-06-2018-2720

Consumer NZ. (n.d.). *Supermarket survey: Shoppers doubt 'discounts' are real*. https://www.consumer.org.nz/articles/supermarket-consumer-survey

Cummings, C. L. (2017). Comprehension of products and messages. In G. Emilien, R. Weitkunat, & F. Lüdicke (Eds.), *Consumer perception of product risks and benefits* (pp. 153–173). Springer International Publishing. https://doi.org/10.1007/978-3-319-50530-5_8

Drichoutis, A. C., Lazaridis, P., & Nayga R. M. (2006). Consumers' use of nutritional labels: A review of research studies and issues. *Academy of Marketing Science Review*, *9*(9), 1–22.

Forceville, C. (1994). Pictorial metaphor in advertisements. *Metaphor and Symbolic Activity*, *9*(1),

1–29. https://doi.org/10.1207/s15327868ms0901_1

Fowler, J. G., Carlson, L., & Chaudhuri, H. R. (2019). Assessing scientific claims in print ads that promote cosmetics: How consumers perceive cosmeceutical claims. *Journal of Advertising Research*, *59*(4), 466–482. https://doi.org/10.2501/JAR-2018-048

Gil-Pérez, I., Rebollar, R., & Lidón, I. (2020). Without words: The effects of packaging imagery on consumer perception and response. *Current Opinion in Food Science*, *33*, 69–77. https://doi.org/10.1016/j.cofs.2019.12.006

Grimes, C. A., Riddell, L. J., & Nowson, C. A. (2009). Consumer knowledge and attitudes to salt intake and labelled salt information. *Appetite*, *53*(2), 189–194. https://doi.org/10.1016/j.appet.2009.06.007

Jeong, S. (2008). Visual metaphor in advertising: Is the persuasive effect attributable to visual argumentation or metaphorical rhetoric? *Journal of Marketing Communications*, *14*(1), 59–73. https://doi.org/10.1080/14697010701717488

Krishna, A., Cian, L., & Aydınoğlu, N. Z. (2017). Sensory aspects of package design. *Journal of Retailing*, *93*(1), 43–54. https://doi.org/10.1016/j.jretai.2016.12.002

Landau, M. J., Arndt, J., & Cameron, L. D. (2018). Do metaphors in health messages work? Exploring emotional and cognitive factors. *Journal of Experimental Social Psychology*, *74*, 135–149. https://doi.org/10.1016/j.jesp.2017.09.006

Landau, M. J., Zhong, C., & Swanson, T. J. (2018). Conceptual metaphors shape consumer psychology. *Consumer Psychology Review*, *1*(1), 54–71. https://doi.org/10.1002/arcp.1002

Lakoff, G. (1993). The contemporary theory of metaphor. In A. Ortony (Ed.), *Metaphor and thought* (pp. 202–251). Cambridge University Press. https://doi.org/10.1017/CBO9781139173865.013

Lis, B., & Fischer, M. (2020). Analyzing different types of negative online consumer reviews. *Journal of Product & Brand Management*, *29*(5), 637–653. https://doi.org/10.1108/JPBM-05-2018-1876

Mandle, J., Tugendhaft, A., Michalow, J., & Hofman, K. (2015). Nutrition labelling: A review of research on consumer and industry response in the global South. *Global Health Action*, *8*(1), 25912. https://doi.org/10.3402/gha.v8.25912

Marchisotto, M. J., Harada, L., Kamdar, O., Smith, B. M., Waserman, S., Sicherer, S., Allen, K., Muraro, A., Taylor, S., & Gupta, R. S. (2017). Food allergen labeling and purchasing habits in the United States and Canada. *The Journal of Allergy and Clinical Immunology: In Practice*, *5*(2), 345–351. https://doi.org/10.1016/j.jaip.2016.09.020

Maslowska, E., Malthouse, E. C., & Bernritter, S. F. (2017). Too good to be true: The role of online reviews' features in probability to buy. *International Journal of Advertising*, *36*(1), 142–163. https://doi.org/10.1080/02650487.2016.1195622

McQuarrie, E. F., & Phillips, B. J. (2005). Indirect persuasion in advertising: How consumers process metaphors presented in pictures and words. *Journal of Advertising*, *34*(2), 7–20. https://doi.org/10.1080/00913367.2005.10639188

Mcshane, B. B., & Böckenholt, U. (2017). Single paper meta-analysis: Benefits for study summary, theory-testing, and replicability. *Journal of Consumer Research*, *43*(6), 1048–1063. https://doi.org/10.1093/jcr/ucw085

Monteiro, C. A., Cannon, G., Moubarac, J.-C., Levy, R. B., Louzada, M. L. C., & Jaime, P. C. (2018). The UN Decade of Nutrition, the NOVA food classification and the trouble with ultra-processing. *Public Health Nutrition*, *21*(1), 5–17. https://doi.org/10.1017/S1368980017000234

Moore, S., Donnelly, J., Jones, S., & Cade, J. (2018). Effect of educational interventions on

understanding and use of nutrition labels: A systematic review. *Nutrients*, *10*(10), 1432. https://doi.org/10.3390/nu10101432

Morgan, S. E., & Reichert, T. (1999). The message is in the metaphor: Assessing the comprehension of metaphors in advertisements. *Journal of Advertising*, *28*(4), 1–12. https://doi.org/10.1080/00913367.1999.10673592

Noseworthy, T. J., Di Muro, F., & Murray, K. B. (2014). The role of arousal in congruity-based product evaluation. *Journal of Consumer Research*, *41*(4), 1108–1126. https://doi.org/10.1086/678301

Old Spice. (n.d.). *Original high endurance deodorant*. https://oldspice.com/original-high-endurance-deodorant

Özdinç, Y. (2022). Meta-cognitive impairment in processing ingredients: The effects of jargon, list length and aids on young consumers' evaluations of cosmetic products. *Young Consumers*, *23*(1), 129–143. https://doi.org/10.1108/YC-03-2021-1286

Petty, R. E., Briñol, P., & DeMarree, K. G. (2007). The meta–cognitive model (Mcm) of attitudes: Implications for attitude measurement, change, and strength. *Social Cognition*, *25*(5), 657–686. https://doi.org/10.1521/soco.2007.25.5.657

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In R. E. Petty & J. T. Cacioppo (Eds.), *Communication and Persuasion: Central and Peripheral Routes to Attitude Change* (pp. 1–24). Springer. https://doi.org/10.1007/978-1-4612-4964-1_1

Schüler, A., Scheiter, K., & Gerjets, P. (2013). Is spoken text always better? Investigating the modality and redundancy effect with longer text presentation. *Computers in Human Behavior*, *29*(4), 1590–1601. https://doi.org/10.1016/j.chb.2013.01.047

Schwarz, N. (2015). Metacognition. In M. Mikulincer, P. R. Shaver, E. Borgida, & J. A. Bargh (Eds.), *APA handbook of personality and social psychology, Vol. 1. Attitudes and social cognition* (pp. 203–229). American Psychological Association. https://doi.org/10.1037/14341-006

Sevilla, J., Isaac, M. S., & Bagchi, R. (2018). Format neglect: How the use of numerical versus percentage rank claims influences consumer judgments. *Journal of Marketing*, *82*(6), 150–164. https://doi.org/10.1177/0022242918805455

Sharf, M., Sela, R., Zentner, G., Shoob, H., Shai, I., & Stein-Zamir, C. (2012). Figuring out food labels. Young adults' understanding of nutritional information presented on food labels is inadequate. *Appetite*, *58*(2), 531–534. https://doi.org/10.1016/j.appet.2011.12.010

Shulman, H. C., Dixon, G. N., Bullock, O. M., & Colón Amill, D. (2020). The effects of jargon on processing fluency, self-perceptions, and scientific engagement. *Journal of Language and Social Psychology*, *39*(5–6), 579–597. https://doi.org/10.1177/0261927X20902177

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, *12*(2), 257–285. https://doi.org/10.1207/s15516709cog1202_4

Todd, J. E., & Variyam, J. N. (Eds.). (2008). *The decline in consumer use of food nutrition labels, 1995-2006*. https://ageconsearch.umn.edu/record/56466

Wills, J. M., Storcksdieck genannt Bonsmann, S., Kolka, M., & Grunert, K. G. (2012). European consumers and health claims: Attitudes, understanding and purchasing behaviour. *Proceedings of the Nutrition Society*, *71*(2), 229–236. https://doi.org/10.1017/S0029665112000043

Wright, P. (1975). Consumer choice strategies: Simplifying vs. Optimizing. *Journal of Marketing Research*, *12*(1), 60–67. https://doi.org/10.1177/002224377501200109

Yin, Y., & Özdinç, Y. (2018). Budget over health unless overweight: A Solomon four-group

study. *International Journal of Consumer Studies*, *42*(2), 232–240. https://doi.org/10.1111/ijcs.12411

**Appendix**

*Product manipulations*
Food: Protein Bar Choc-Fudge

- Ingredients (per serving): Protein Blend [(36%) Soy Protein Isolate, Calcium Caseinate, Whey Protein Isolate], Glucose Syrup, Milk Chocolate [(17%), Sugar, Milk Solids, Cocoa Butter, Cocoa Mass, Emulsifiers (Soy Lecithin 476), Flavour], Humectant (Glycerine), Honey, Cocoa Powder (1.8%), Apple Juice Concentrate, Flavours, Emulsifier (Soy Lecithin), Salt.

Drink: Energy Drink

- Ingredients: Carbonated water, Sugar, Acidity Regulators (Citric Acid, Sodium Citrate), Taurine, Guarana Extract (0.12%), Flavours, Preservatives (Sodium Benzoate, Potassium Sorbate), Caffeine, Glucuronolactone, Colour (Caramel), Vitamins [Niacin (B3), Pantothenic Acid, B6, Riboflavin (B2, B12)], Antioxidant (Ascorbic Acid).

Drug: Sunscreen 50 SPF

- Active Ingredients (per 1 mL): Avobenzone 0.03 mL, Octocrylene 0.10 mL, Oxybenzone 0.05 mL.
- Inactive Ingredients: SD Alcohol 40-B, Acrylates/Octylacrylamide Copolymer, Caprylyl Glycol, Aloe Barbadensis Leaf Extract, Retinyl Palmitate (Vitamin A), Ascorbic Acid (Vitamin C), Tocopheryl Acetate (Vitamin E), PEG-8 Dimethicone, Sodium Propoxyhydroxypropyl, Thiosulfate Silica, Octyldodecanol, Silica, Fragrance.

*Metaphorical cue (yes) manipulations:*
Food: Contains “atomic robots” that “shoot beams of bewildering high-energy lasers” at your muscles to give you the energy you need.

Drink: Contains “a nanobot squadron” that “blasts” Taurine, Guarana, and Caffeine “grenades” to improve your mental focus and alertness.

Sunscreen: “Dispatches an elite nano-coating force with heavy defensive armament” to protect you from the Sun’s “stealth-technology using UV raiders”.