

## **Effects of Visual Metaphors on Enhancing the Power of Advertisements**

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### Abstract

Visual metaphors deliberately deviate from the literal representation of an object. The resulting incongruity has the potential to be more engaging and memorable for the viewer and thus are frequently used as a design feature in advertisements. Recently, researchers have begun to more thoroughly examine the advantages that visual metaphors play in advertisements and this study contributes to this growing body of research. Two experiments were conducted using sets of paired advertisements for the same product or social awareness campaign based on one of them being a visual metaphor and the other being a visual non-metaphor to explore if there was a *visual-metaphor effect*. In Experiment 1, participants rated these adverts based on three criteria, effectiveness, engagement, and a metaphorical framing effect along with an open-ended question. In Experiment 2, two additional variables were included, comprehensibility and creativity. Results support the view that visual metaphors tend to be more engaging and perceived to be more creative. However, this does not always result in them being viewed as more effective adverts.

**Keywords:** advertisements, creativity, engagement, framing effect, visual metaphor

In 2016, a visual metaphor for the World Wildlife Federation social awareness campaign won a best advertising award<sup>1</sup>. In the image, the designers blended a game of Jenga with the ecosystem, so each Jenga piece represents some part of the ecosystem. Understanding the ecosystem is rather complex and abstract, but many people know that the game of Jenga is based on balance and removing each piece slightly disrupts this balance before the structure eventually collapses. Viewing the ecosystem as a game of Jenga is a powerful way to help people better understand the fragility of it. Visual metaphors like this one have the potential to be more pleasing than non-visual equivalents for it requires the viewer to resolve the conceptual deviance within the metaphor. This stimulates interest in the viewer and requires additional cognitive effort, which has the potential to be a rewarding experience (see Jeong, 2008). Previous research has shown that visual metaphors have a positive effect on consumers by capturing the viewers' attention and increasing the persuasiveness of the advert (Kitchen 2008; McQuarrie & Mick 2003; McQuarrie & Phillips 2005). Thus, advertisements and social awareness campaigns often use visual metaphors as a way to engage, make the campaign message more memorable, and persuade the viewer to the intended interpretation (e.g., we must act soon to protect the environment before the entire ecosystem collapses). The wide spread use of metaphors in advertisements has resulted in an increase amount of interest into this topic (see Pérez-Sobrino, 2017) and this study contributes to this growing body of research. This study investigates visual advertisements by using an innovative method that pairs visual metaphors in advertisements by contrasting them with equivalent visual non-metaphor adverts. In Experiment 1, we explore whether there was a visual metaphor advantage on three measurements; engagement, effectiveness and a metaphorical framing effect. In Experiment 2, we expand these variables to include two additional ones; comprehensibility and creativity.

### Theoretical Framework

The theoretical framework of this study is grounded in Conceptual Metaphor Theory (Gibbs, 2011; Lakoff, 1987; Lakoff & Johnson, 1980; Lakoff & Johnson, 1999), which argues that metaphor is not only a linguistic device, but in fact, is conceptual in nature, as in, we think in metaphor. So, metaphorical expressions like to “come clean” or a “mudslinging campaign” are not simply linguistic, but there is an underlying conceptual structure that motivates them (e.g., MORALITY IS CLEANLINESS). Thus, at the conceptual level and possibly neuronal level (Gallese & Lakoff, 2005), we fuse these concepts together and this allows us to easily understand metaphorical expressions in language. Furthermore, if metaphors are conceptual in nature, then they will also appear in other modes of communication like images.

### Metaphors in Images

Linguistic metaphors are often ontological in which an abstract concept is represented or grounded in something concrete (Lakoff & Johnson, 1980). On the other hand, visual metaphors<sup>2</sup> often use two concrete objects in which (a) the topic and source are blended together; (b) the source replaces the topic in the image; or (c) the topic replaces the source (Forceville, 1996; Forceville & Urios-Aparisi, 2009). For instance, an example of (a), an advertisement for Toyo tires blends together car tires with the legs of an octopus to highlight the gripping power of these tires (see Figure 1A). An example of (b) is an advert by BMW,

<sup>1</sup> See <https://www.bestadsonTV.com/ad/79549/wwf-Green>

<sup>2</sup> In the literature both visual and pictorial metaphors are frequently used, we will use only the term “visual metaphors” to describe metaphors that use images and contrast this with “visual non-metaphors”, or images that are used in the literal sense.

which shows a cheetah with glowing eyes like the headlamps of a car, but the car is not present, but must be inferred from the context, namely the logo. One likely maps the fast, sleek, and graceful movements of this animal with its nocturnal vision onto a BMW car. For an example of (c), Forceville (1996, pp. 110-113) shows an advert for a pair of shoes. One shoe is contextually placed where a tie is usually worn. This highlights the aesthetic beauty of these shoes. That is to say, they are so pleasing they could be worn in the most prominent place on the body. The world of advertising exploits the use of metaphors as a way to emphasize certain semantic features of their products. So, after viewing the BMW advert, the viewer has semantically mapped certain semantic features of a cheetah onto the car (e.g., sleekness, speed, etc.). It has been shown in a number of studies that visual metaphors have the power to enhance appreciation of the product (McQuarrie & Mick, 1999; McQuarrie & Mick, 2003; Phillips & McQuarrie, 2009) and this could be described as a *visual-metaphor effect* in advertising. Figures of speech like metaphors are a common design and style feature in advertisements. For example, Leigh (1994) in a large sampling of print adverts found 75% of the headlines used some form of figure of speech, particularly word play and metaphor.

### **Aesthetic Preference in Advertisements: Being Engaged and Perceived Effectiveness**

A primary goal of an advertisement is to attract the attention of the viewers by engaging them with the image and text and for them to find some pleasure in this experience. Engagement is a complicated term and is not widely agreed upon among researchers, but typically it refers to when the viewer has an intrinsic enjoyable experience (Calder et al., 2009). This pleasure results in the attention of the viewer becoming involved in the advertisement or what Wang (2006) has described as being “turned on” to “a brand idea enhanced by the surrounding context” (p. 356). One variable to enhance the surrounding context is to use a visual metaphor since metaphor is a common cognitive tool for creativity (see Birdsell, 2018) and creative adverts have been shown to attract the attention of the viewer (Pieters et al., 2002; Smith et al., 2007). In this view, the artful deviation of the rhetorical figure (e.g., metaphor) in an advertisement adds interest to the image (McQuarrie & Mick, 1999; Phillips & McQuarrie, 2009), resulting in a direct relationship between cognitive effort and aesthetic appreciation (see Berlyne, 1971; Miall & Kuiken, 1994; van Mulken, Dijk, & Hoeken, 2005). In one study that looked specifically at aesthetic preference in language, participants evaluated non-conventional or novel variants of metaphor as being more aesthetically pleasing as compared to conventional variants despite the fact that they also had an enhanced cognitive cost for comprehension (Wimmer, Christmann, & Ihmels, 2016). This has important implications for research into visual metaphors, which tend to require greater cognitive resources to comprehend. However, there are conflicting theories in how one assesses pleasure from stimuli like language, images, or objects. Another side argues that the stimuli that can be processed most fluently are rated as most pleasurable (see Reber, Schwarz, & Winkielman, 2004; Zajonc, 2001) and thus the added cognitive load of processing a visual metaphor may in fact reduce the enjoyment of the viewing experience. Moreover, McQuarrie and Mick (1999) showed that the positive effect of a visual trope (such as metaphor) diminished for viewers who lacked the cultural competency to appreciate the adverts, suggesting that other factors may play a role in effectively engaging the viewer to the advert. Thus, there is still a considerable amount of uncertainty to whether visual metaphors have a positive effect of engaging the viewer to the advertisement.

As engagement looks at how much the viewer is involved and “turned on” by the advertisement, effectiveness, on the other hand, is the overall evaluation the viewer has of the advert. Again, research (Smith et al., 2008) with creative adverts has shown them to be

favorably evaluated and thus more effective than low creativity adverts. Taken together, this hints to the possibility that advertisements that use visual metaphors will be evaluated as being more engaging and effective, yet this still needs to be further explored. So, our first research question asks the following:

- (1) Are visual metaphors in advertisements, compared to paired non-metaphorical equivalents, rated as being more engaging and effective by the participants, despite the added cognitive cost to comprehend them?

### **Metaphorical Framing Effect**

Metaphors allows us to see one thing in terms of another and this has the power to influence an individual's understanding and evaluation of a given topic. This is referred to as a metaphorical framing effect. For instance, the topic "crime" can be metaphorically framed as a "virus" or a "beast" and this has an influence on how the individual chooses a proposed countermeasure for this problem. In text that presented this problem as a "virus", participants more likely chose to increase support for social reform and when it was presented as a "beast", they more likely chose a counter-measure for increasing police enforcement (Thibodeau & Boroditsky, 2011, 2013). In regard to visual metaphors in advertisements, advertisers often select a source to include in the advert that highlights a semantic feature of the topic (that is to say, the product of the ad). For example, Toyo uses an octopus in the advert (see Figure 1A), as a way to highlight the gripping power of the tires. In another example, a hammock (the source) hangs between two ballpoint pens (the topic/product), which suggests the following interpretation, "writing with this ballpoint pen is as comfortable as relaxing in a hammock". So, in this example, it raises the question, does this metaphorical frame have an effect on how the participant conceives the product (the pen)? In other words, would a viewer rate the pen in the metaphor advert as being more comfortable to write with, as compared to a non-metaphor advert for the same pen. To assess the metaphorical frame, the researchers first identified the source in the visual metaphor, then came to a consensus as to the semantic feature(s) that it aimed to exploit, and finally came up with a unique question that assessed this metaphorical frame. For example, for the Toyo tires add, the source is "octopus tentacles", the intended semantic feature is "gripping power", and the metaphorical framing question we used is, "Do you think you can drive well in the rain with these tires?". So, our second research question asks the following:

- (2) Do visual metaphors have a metaphorical framing effect compared to paired non-metaphorical equivalents?

## **The Present Study**

### **Experiment 1**

#### ***Participants***

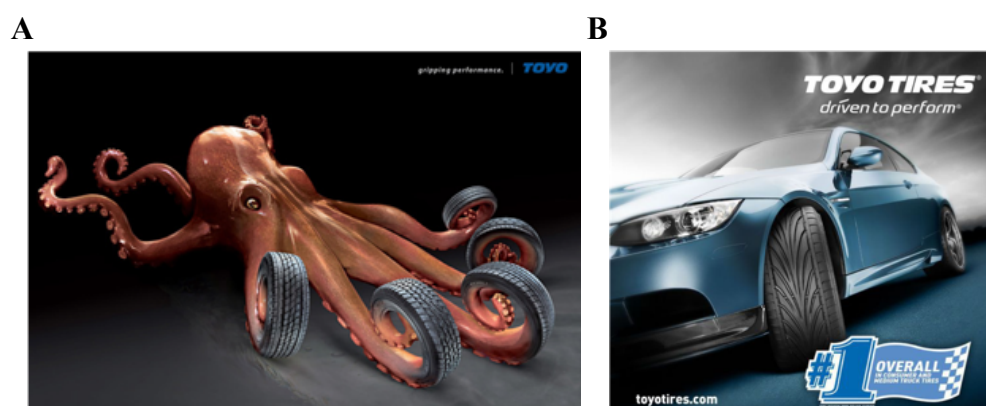
Seventy-nine students at a Japanese university took part in this study (53 female,  $M_{age} = 19.5$ ). Participants were paid remuneration, as set by the university. These participants were randomly divided into two groups.

## Materials and Procedure

The material consisted of product or social awareness campaign advertisements. We first selected these by searching for visual metaphors for advertisements online that all three researchers confirmed were metaphorical (as in, had a clear topic and source that all agreed upon). Then, we searched online for the same product in a non-metaphorical advertisement. In the end, we compiled 14 paired advertisements that had two differing conditions; metaphorical and non-metaphorical, so in total, there were 28 images (see Figure 1 as an example for a paired set of adverts)<sup>3</sup>.

**Figure 1**

*Paired-Advertisement for Toyo Car Tires*



*Note.* Panel A: Metaphorical advert (in Form1) Credit: Advertising Agency: GMASCO, Dubai, UAE; Creative Director: Khalid Radwan. Source: [https://www.adsoftheworld.com/media/print/toyo\\_octopus](https://www.adsoftheworld.com/media/print/toyo_octopus). Panel B: Non-metaphorical advert (in Form 2) Credit: <https://toyotires.com>

We then created two online forms. Form 1 had seven metaphorical and seven non-metaphorical advertisements and was completed by Group 1 ( $n = 40$ ). Form 2 had the other pairs, respectively, and was completed by Group 2 ( $n = 39$ ). A set of questions based on a 6-point Likert-scale ranging from 1 (“I strongly do not think so”) to 6 (“I strongly think so”) accompanied each advertisement. Two questions asked the following; the level of effectiveness “Is this advert effective?” and engagement “Is this advert engaging?” and these questions were consistent throughout all the paired advertisements. In addition, each paired advertisement also had a unique question(s) based on the metaphorical frame. Finally, all paired sets had a final question. This question was an open-ended question that asked the participants to input the first thing that came to their mind when they viewed the advert. These questions and all materials in this study were presented to the participants in Japanese.

As for the procedure, student participants joined an online virtual session, administered by two of the researchers and were informed about the study. Then, they provided consent and proceeded to open either Form 1 or Form 2 depending on their group. They had roughly 30 minutes to complete the form.

<sup>3</sup> The complete sets of paired-advertisements used in this study are not included in this paper, but to ensure reproducibility, the materials are available on the following website: <https://bbirdsell.wixsite.com/index/research>

## Results

A one-way analysis of variance (ANOVA) was calculated to compare the effect of visual metaphors on effectiveness (EFF), engagement (ENG), and metaphorical framing (MF) for each paired-advertisement. Results from the analysis of variance indicate that the visual metaphor condition showed significance for at least one of the before mentioned three measures for 11 of the 14 adverts (see Table 1). The Heinz ketchup and Floslek sunscreen advertisements showed significance for all three measurements with medium to large effect sizes; ketchup effectiveness,  $F(1,78) = 7.18, p = .009$ , ketchup engagement  $F(1,78) = 15.57, p = .000$ , and ketchup metaphorical framing  $F(1,78) = 44.51, p = .000$ . As for other examples from this pool of advertisements, participants who viewed the visual metaphor advert for Nestle coffee compared to the participants who viewed the non-metaphor coffee advert rated significantly higher level of engagement,  $F(1,78) = 6.76, p = .011$ , but not on the other two scales (effectiveness and metaphorical framing). In another example, the visual metaphor for Toyo car tires advert showed a large effect for one metaphorical frame (driving in the rain)  $F(1,78) = 20.52, p = .000$ , but not for the second one (safety of the tires)  $F(1,78) = 2.57, p = .113$ . In sum, engagement was the most common strength of the visual metaphor adverts showing significance for 9 of the 14 total adverts, effectiveness and metaphorical framing showed fewer cases of significance (4 and 6, respectively).

**Table 1**

*Means, Standard Deviations, and One-Way Analyses of Variance in Metaphor and Non-metaphor Visual Advertisements for Experiment 1*

Variable	Metaphor		Non-metaphor		ANOVA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (1, 78)	$\eta^2$
Cello Ballpoint Pen						
EFF	3.48	1.22	3.62	1.23	0.26	.00
ENG	4.13	1.40	3.49	1.41	4.07*	.05
MF	3.38	1.37	2.97	1.18	1.93	.02
Tabasco Hot Sauce						
EFF	4.43	1.41	3.49	1.39	8.83**	.10
ENG	5.00	1.36	3.15	1.09	44.26***	.37
MF	4.38	1.64	4.15	1.27	0.45	.01
Nestle Coffee						
EFF	4.68	1.27	4.54	1.00	0.28	.00
ENG	5.10	1.08	4.41	1.27	6.76*	.08
MF	3.90	1.78	3.15	1.60	3.84	.05
Heinz Ketchup						
EFF	5.13	1.02	4.49	1.10	7.18**	.09
ENG	5.33	0.94	4.31	1.32	15.57***	.17
MF	5.35	0.98	3.41	1.55	44.51***	.37
Fry Light Cooking Oil						
EFF	3.88	1.40	4.41	1.27	3.16	.04
ENG	4.53	1.24	4.67	1.13	0.28	.00
MF	4.28	1.54	4.54	1.35	0.65	.01
Oxipoder Shirt Cleaner						
EFF	5.38	0.84	5.05	0.92	2.69	.03
ENG	5.23	1.00	4.51	1.17	8.50**	.01
MF	5.68	0.57	5.08	1.29	7.20**	.09

Variable	Metaphor		Non-metaphor		ANOVA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (1, 78)	$\eta^2$
Toyo Car Tires						
EFF	4.54	1.35	4.50	1.18	0.41	.01
ENG	4.03	1.46	4.73	1.20	5.43*	.07
MF1	4.54	1.39	3.13	1.38	20.52***	.21
MF2	3.49	1.54	3.98	1.14	2.57	.03
Anti-smoking Campaign						
EFF	4.68	1.49	4.62	1.41	0.03	.00
ENG	4.70	1.52	3.69	1.30	9.98**	.11
MF	4.73	1.50	4.00	1.52	4.54*	.06
New Balance Running Shoes						
EFF	4.36	1.25	4.85	1.00	3.74	.05
ENG	4.79	1.20	4.73	1.01	0.08	.00
MF	3.38	1.71	2.83	1.47	2.44	.03
Australian Postal Service						
EFF	4.56	1.37	3.45	1.26	14.14***	.16
ENG	4.51	1.52	4.03	1.40	2.20	.03
MF	4.38	1.62	3.90	1.78	1.60	.02
Floslek Sunscreen						
EFF	5.56	0.85	4.90	0.96	10.61**	.12
ENG	5.56	0.79	4.60	1.19	17.85***	.19
MF	5.38	0.67	4.63	1.21	11.76**	.13
WWF Protect the Forest						
EFF	5.51	0.68	5.23	1.00	2.22	.03
ENG	5.26	1.12	4.38	1.55	8.39**	.10
MF	5.44	1.21	4.88	1.34	3.80	.05
Defend Press Freedom						
EFF	4.13	1.38	4.05	1.45	0.06	.00
ENG	4.13	1.59	3.78	1.37	1.12	.01
MF	4.38	1.71	3.85	1.59	2.07	.03
VW Van						
EFF	3.08	1.49	3.20	1.45	0.14	.00
ENG	3.28	1.45	2.90	1.41	1.41	.02
MF1	2.90	1.41	2.68	1.31	0.14	.00
MF2	4.97	1.06	4.05	1.50	9.93**	.11

Note. *N* = 79. EFF = effectiveness; ENG = engagement; MF = metaphorical framing.

\**p* < .05. \*\**p* < .01. \*\*\* *p* < .001.

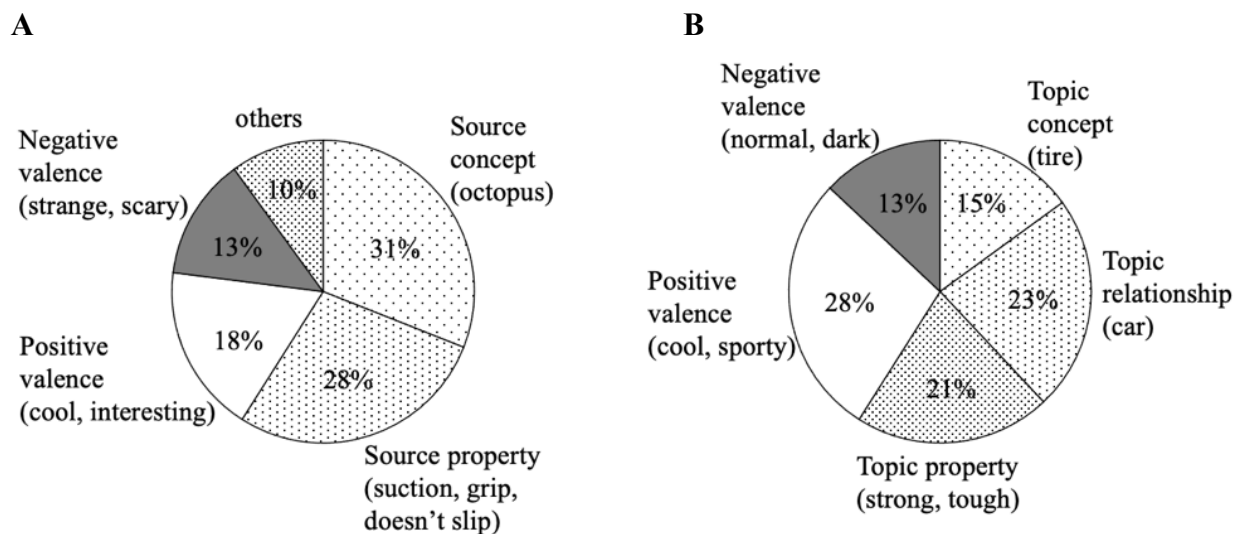
In regards, to the open-ended question that asked them to input their immediate reaction to the advertisement, we first translated the responses from Japanese into English by two native Japanese speakers and one native English speaker. Then, we categorized the responses based on the following: topic, as in, referencing the product of the advert, source, as in, referencing the source in the metaphor, property, as in, referencing some inherent feature of the source or topic, positive valence, as in, evaluating the advert in a favorable way, negative valence, and other. Figure 2 shows the contrasting responses from the participants for the Toyo car tires paired-advertisements. This is one of the metaphor adverts that showed a significant difference for the metaphorical frame 1 (driving well in rainy weather), but not for metaphorical frame 2 (safety). Responses to the open-ended question highlights the fact that a number of participants (28%) in the metaphor condition focused on the source property of the octopus (gripping



power) and this likely influenced their assessment of the tires ability to drive well in the rain, but not the more general metaphorical frame concerning safety. As expected, the participants in the non-metaphor condition primarily focused on the topic of the advert, the tires and car, and also the apparent “toughness” of the tires. Despite the responses to this open-ended question showing a higher percentage of positive evaluation to the non-metaphor advert (28%) compared to the metaphor advert (18%), the latter still showed a significant difference for engagement.

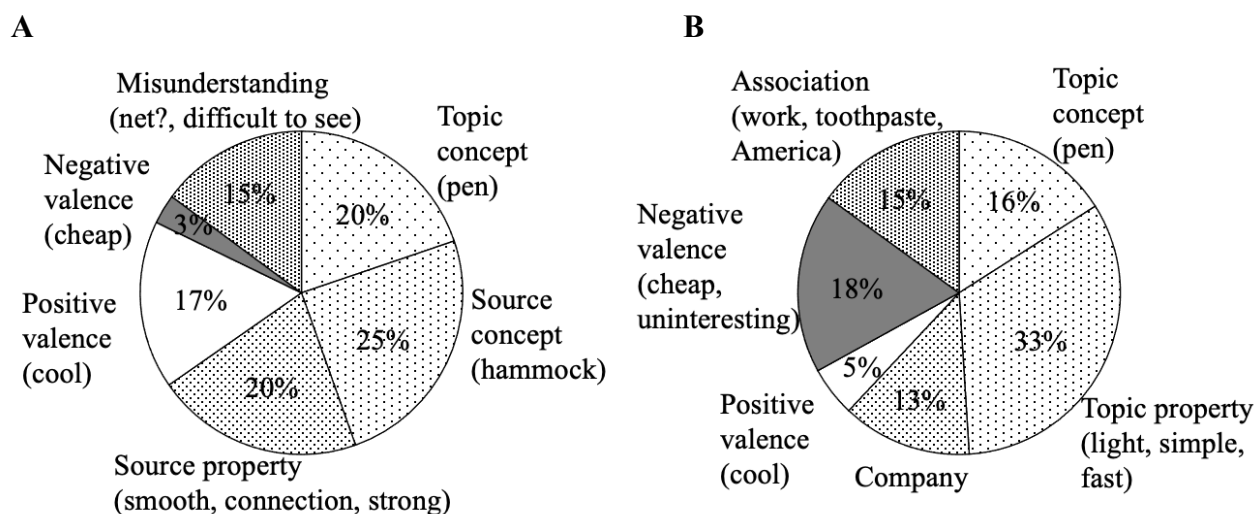
**Figure 2**

*Paired-Advertisement for Toyo Car Tires Open-Ended Question*



*Note.* Panel A: Metaphorical advert. Panel B: Non-metaphorical advert.

In another analysis for the open-ended question, we had to include a number of other categories for the responses to the Cello ballpoint pen advert. One additional category is named misunderstanding, which is when the viewer experienced a cognitive break down in the interpretation of the advert. For example, one participant thought the hammock in the metaphorical ballpoint pen advert was a net and even included a question mark to highlight his/her confusion. Another category is called company, for when the viewer focused primarily on some connection to the company. Finally, some viewers made a connection to another semantic field and therefore we called this category association. For example, one participant connected the non-metaphorical ballpoint pen advert to toothpaste and another to America. Figure 3 shows the results. First, many respondents in the visual metaphor condition focused on the source concept, the hammock (25%), and also positively evaluated the advert (17%). On the other hand, 15% showed a misunderstanding of the metaphor, writing “net?” or “difficult to see”. As for the non-metaphor advert, participants focused on the topic and topic properties, as expected, but also the company logo and name (15%) and some made associations to work or even more abstrusely to toothpaste, compared to the metaphor group.

Figure 3: *Paired-advertisement for Cello Ballpoint Pen Open-Ended Question*

Note. Panel A: Metaphorical advert. Panel B: Non-metaphorical advert.

One limitation of this experiment is that we did not collect data from these participants on a variable that examines the difficulty of interpretation for these adverts or the comprehensibility of them. This would have provided additional insight into why some visual metaphor adverts did not show a *visual-metaphor effect* for engagement. Collecting this additional variable, one then could examine more closely whether the degree of difficulty of comprehending the visual metaphor has an inverse relationship with engagement. In addition, the adverts used in this study were not adverts originating in Japan and therefore the effect culture has on visual metaphors also needs to be considered. In a recent study (Pérez-Sobrino et al., 2019) researchers investigated processing time, appreciation, and interpretation of creative multimodal adverts with participants from various cultural and linguistic backgrounds. Results from their data indicate considerable cross-cultural variation among the participants. To which the researchers suggest, “(I)n some cases, the participants misunderstood the main message of the advertisement, and this appeared to affect their levels of appreciation and perceived effectiveness” (p. 986). So, taking these points into consideration, we conducted a second experiment. As a result, three additional research questions were included in this second study:

- (1) Are visual metaphors rated as being more creative than paired non-metaphorical equivalents?
- (2) Are visual metaphors more difficult to comprehend?
- (3) Are foreign advertisements more difficult to comprehend than non-foreign (Japanese) advertisements?

## Experiment 2

### Participants

Seventy-five students at a Japanese university took part in this study (51 female,  $M_{\text{age}} = 18.6$ ). Participants were paid remuneration, as set by the university. These participants were randomly divided into two groups.

## Materials and Procedure

Similar to Experiment 1, the material consisted of advertisements and a set of questions accompanying each advert. To modify some of the shortcomings from Experiment 1, we included Japanese adverts into the list and removed the social awareness campaign items. So, in total there were 15 paired items: 10 foreign adverts and 5 Japanese adverts. Form 1 had eight metaphorical and seven non-metaphorical advertisements and was completed by Group 1 ( $n = 38$ ). Form 2 had the other pairs, respectively, and was completed by Group 2 ( $n = 37$ ). The accompanying questions were similar to Experiment 1, but in Experiment 2, we included two additional items; the level of comprehensibility of it “Is this advert easy to understand?” and level of creativity “Is this advert creative?” Furthermore, after interviewing student participants from Experiment 1, who expressed difficulty in selecting scores based on a 6-point scale, we reduced the scale to a 4-point Likert-scale, ranging from 1 (“I strongly do not think so”) to 4 (“I strongly think so”). The procedure was the same as Experiment 1.

## Results

A one-way analysis of variance (ANOVA) was calculated to compare the effect of visual metaphors on effectiveness (EFF), engagement (ENG), metaphorical framing (MF), comprehensibility (COMP), and creativity (CR) for each paired-advertisement. Results from the analysis of variance indicate that the visual metaphor condition showed significance with medium to large effect size for creativity for all the adverts in this pool, except for the Toshiba semiconductor advert; ranging in strength from the Oxipoder shirt cleaner advert  $F(1, 74) = 12.99, p < .001$  to the Floslek sunscreen advert  $F(1, 74) = 115.50, p < .001$  (see Table 2). In short, visual metaphor adverts on the whole were rated as being more creative than equivalent non-metaphorical adverts. As for comprehensibility, only the Cello ballpoint pen visual metaphor ( $M = 1.55$ ) and the VW van nonvisual metaphor ( $M = 1.66$ ) showed low comprehensibility, as indicated by their low scores ( $M < 2.0$ ). In fact, visual metaphor adverts as an aggregate scored higher for comprehensibility than the counterpart nonvisual metaphors ( $M = 2.94, M = 2.77$ ). Moreover, six visual metaphor adverts were rated as being statistically more comprehensible than their non-metaphorical visual paired adverts (conversely 3 non-metaphorical visual adverts were rated as being more comprehensible than their metaphorical counterparts), which suggest that metaphors do not necessarily make the advert more difficult to understand and may in some cases facilitate comprehension. Similar to Experiment 1, we found a majority of visual metaphor adverts to score significantly higher for engagement (11 of 15) ranging in strength from the MSJ Financial Services  $F(1, 74) = 6.64, p < .05$  to the Floslek sunscreen advert  $F(1, 74) = 26.76, p < .001$  (see Table 2). In addition, Experiment 2 also showed a larger number of the adverts as being more effective and having a metaphorical framing effect than the paired non-metaphorical visual adverts (6 and 9 of 15, respectively). Furthermore, there was no difference between the foreign ( $M = 2.78, SD = 0.69$ ) and non-foreign ( $M = 3.01, SD = 0.32$ ) advertisement scores for comprehensibility,  $t(28) = -0.97, p = .34$ .

**Table 2**

*Means, Standard Deviations, and One-Way Analyses of Variance in Metaphor and Non-metaphor Visual Advertisements for Experiment 2*

Variable	Metaphor		Non-metaphor		ANOVA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (1, 74)	$\eta^2$
Cello Ballpoint Pen						
EFF	2.63	0.83	2.18	0.88	0.14	.00
ENG	2.60	0.89	2.00	0.85	9.10**	.11
MF	1.97	0.79	2.03	0.76	0.09	.00
COMP	1.55	0.65	2.16	0.99	10.84**	.12
CR	3.00	0.90	1.92	0.95	25.49***	.26
Tabasco Hot Sauce						
EFF	2.74	1.06	2.62	0.83	0.28	.00
ENG	3.05	1.18	2.41	0.96	6.76*	.09
MF	2.97	1.10	2.43	1.04	4.78*	.06
COMP	2.63	1.17	2.59	0.83	0.25	.00
CR	3.47	0.80	1.89	0.57	97.72***	.57
Heinz Ketchup						
EFF	3.35	0.90	2.78	0.71	7.99**	.10
ENG	3.42	0.83	2.59	0.72	21.16***	.23
MF	3.53	0.92	2.38	0.98	27.25***	.27
COMP	3.71	0.61	2.60	0.76	49.06***	.40
CR	3.42	0.72	1.84	0.60	106.23***	.59
Fry Light Cooking Oil						
EFF	2.68	0.74	3.05	0.78	4.45*	.06
ENG	3.03	0.87	2.97	0.87	0.06	.00
MF	3.23	0.79	2.76	1.06	4.95*	.06
COMP	2.61	1.13	2.92	1.14	1.44	.02
CR	3.42	0.72	2.38	0.93	29.78***	.29
Oxipoder Shirt Cleaner						
EFF	3.68	0.53	3.59	0.60	0.48	.01
ENG	3.39	0.79	2.86	0.92	7.20**	.09
MF	3.74	0.64	3.65	0.74	0.97	.01
COMP	3.84	0.37	3.92	0.28	1.03	.01
CR	3.29	0.90	2.57	0.83	12.99***	.15
Toyo Car Tires						
EFF	3.16	0.83	3.03	0.88	0.47	.01
ENG	3.51	0.87	3.13	0.81	3.87	.05
MF	3.16	0.93	2.37	1.02	12.34***	.15
COMP	3.22	0.92	2.53	1.00	9.62**	.12
CR	3.86	0.42	2.61	0.88	61.33***	.46
New Balance Running Shoes						
EFF	3.00	0.74	2.92	0.85	0.18	.00
ENG	3.27	0.90	2.68	0.99	7.18**	.09
MF	3.57	1.12	1.58	1.06	20.79***	.22
COMP	2.62	0.98	2.47	0.98	0.43	.01
CR	3.49	0.65	2.24	0.91	46.35***	.39
Australian Postal Service						
EFF	3.35	0.72	2.32	0.87	31.46***	.30
ENG	3.46	0.69	2.49	1.12	20.10***	.22
MF	3.05	1.05	2.66	1.15	2.43	.03
COMP	2.84	1.07	2.27	0.98	5.92*	.08
CR	3.76	0.43	2.34	0.81	87.32***	.55

Variable	Metaphor		Non-metaphor		ANOVA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (1, 74)	$\eta^2$
Floslek Sunscreen						
EFF	3.73	0.61	3.21	0.70	11.67**	.14
ENG	3.78	0.58	2.84	0.95	26.76***	.27
MF	3.59	0.69	3.00	0.93	9.89**	.12
COMP	3.84	0.55	3.42	0.76	7.36**	.09
CR	3.78	0.42	2.16	0.82	115.50***	.61
VW Van						
EFF	2.30	0.91	2.24	0.75	0.10	.00
ENG	2.68	1.11	1.97	0.91	8.98**	.11
MF1	1.95	0.91	1.82	0.80	0.433	.00
MF2	3.38	0.79	2.68	0.84	13.48***	.16
COMP	2.24	1.04	1.66	0.71	8.17**	.10
CR	3.11	0.88	1.84	0.59	54.00***	.43
MSJ Financial Services						
EFF	3.16	0.82	2.65	0.89	6.64*	.08
ENG	2.89	0.92	2.05	0.88	16.26***	.18
MF	3.55	0.65	1.86	0.79	103.35***	.59
COMP	3.11	1.11	2.68	1.03	3.02	.04
CR	3.16	0.92	1.78	0.82	46.71***	.39
Kagome Tomato Juice						
EFF	2.89	1.06	3.27	0.73	3.17	.04
ENG	2.97	1.08	2.70	0.74	1.60	.02
MF	2.71	1.14	3.70	0.52	23.41***	.24
COMP	3.03	1.03	3.62	0.64	9.04**	.11
CR	3.26	0.92	2.30	0.70	26.00***	.26
Toshiba Semiconductors						
EFF	3.16	0.79	2.68	0.58	9.05**	.11
ENG	2.97	0.94	2.41	0.83	20.29***	.22
MF	2.95	0.98	2.41	0.83	6.61*	.08
COMP	3.18	0.93	2.49	0.87	11.30**	.13
CR	3.24	0.88	2.95	1.20	1.43	.02
Kikkoman Sauce						
EFF	3.59	0.60	3.13	0.70	9.39**	.11
ENG	3.84	0.37	3.26	0.79	15.92***	.18
MF	3.03	0.90	2.92	0.94	0.25	.00
COMP	2.97	0.87	3.08	0.94	0.26	.00
CR	3.81	0.40	2.42	0.92	71.56***	.50
Nishin Cup Noodles						
EFF	2.95	1.03	3.21	0.84	1.49	.02
ENG	3.46	0.80	3.30	0.81	0.75	.01
MF	2.51	1.10	3.23	0.88	9.93**	.12
COMP	2.70	1.13	3.21	0.84	4.90*	.06
CR	3.54	0.61	2.61	0.91	27.04***	.27

Note. *N* = 75. EFF = effectiveness; ENG = engagement; MF = metaphorical framing; COMP = comprehensibility; CR = creativity.

\**p* < .05. \*\**p* < .01. \*\*\* *p* < .001.

## Discussion

This study provides evidence that visual metaphors in advertisements are more engaging and viewed as being more creative than equivalent visual non-metaphor adverts. One is engaged by things one finds pleasing and therefore invests more time interacting with the given stimuli. In the case of these two experiments in this study, despite the added cognitive effort in linking the two semantic fields (coffee – alarm clock or sunscreen – parasol), visual metaphors were scored as being more engaging and this often overlapped with them also being viewed as more creative. Based on data from Experiment 1, adverts that did not show significance for engagement, we interpreted this as resulting from a breakdown in comprehension due to the complexity of the visual metaphor. Therefore, we conducted a second experiment that also looked at comprehensibility, as noted by Phillips (2000), providing the viewer with a visual metaphor that demands too much cognitive processing has risk for it might confuse the viewer. However, we did not find any evidence for this, at least based on our measurement items. For example, despite the Cello ballpoint pen visual metaphor scoring lowest for comprehensibility among all the adverts, it still was viewed as being significantly more engaging than the non-metaphor equivalent in both experiments. One visual metaphor advert that did not show significance across both experiments for engagement was the cooking oil advert. In this advert, the metaphor focused on the lightness of the oil, so the vegetables appeared floating as a bunch of balloons. A salient feature of balloons is their lightness, and this gets projected onto the vegetable oil and when applied to vegetables, they taste light and refreshing (not heavy). Yet, failing to focus on this semantic feature of balloons could result in confusion since one also has to suppress other semantic features of them like being round shaped, made of rubber, used for celebrations, filled with helium, and so on.

In regard to the metaphor framing effect, this effect was not as prominent as engagement, but still prevalent in many adverts. The three adverts that showed the strongest effect were the Heinz ketchup advert (tomato – freshness), Toy car tires advert (octopus tentacles – effectiveness in driving in the rain), and Floslek sunscreen advert (parasol – effectiveness for sun protection). These findings were also replicated in Experiment 2. The strong effect size for the ketchup advert indicates that the metaphor (viewing the bottle of ketchup as a fresh tomato) had a powerful influence on how the viewers perceived the product. This could be due to the fact that ketchup is processed and kept in a bottle and thus not typically viewed as being fresh. Yet, the visual metaphor breaks this assumption and forces the viewer to focus on the freshness of the main ingredient. The car tires advert is another interesting example. The metaphor framing effect, effectiveness in driving in the rain, showed a strong effect in both experiments. The gripping power of the octopus tentacles gets projected onto the car tires, which in turn, are viewed as being effective for driving on wet roads. Finally, the sunscreen visual metaphor advert, where the sunscreen tube is a parasol for the beachgoers and covers them in a shade, also showed a very strong metaphor framing effect as being more effective for sun protection than the non-metaphor advert for the same product. One possible explanation is that the shade from the parasol is visibly protecting the beachgoers against the sun light compared to the literal application of sunscreen, which is transparent on the skin and thus not visibly seen as protecting one against the sun. Inconsistent with most of our findings, in Experiment 2, two of the non-foreign Japanese adverts (cup noodles and tomato juice) showed a reverse metaphor framing effect, where the non-metaphor visual advert showed the effect. For example, for the tomato juice advert, the tomato was in the place of a heart on the x-ray screen while the non-metaphor presented the product with fresh vegetables behind it and the metaphor framing effect question was, “Do you think this juice is good for your health?”. One possibility here is that

the x-ray image evoked a hospital frame for the viewer, which might have lowered their perception of health while viewing the advert.

As for effectiveness, the visual metaphor adverts were only viewed as being more effective in less than half of the total adverts (4 of 14, Experiment 1 and 7 of 15, Experiment 2). This indicates that despite a majority of the adverts as being rated as more engaging and creative, this does not necessarily result in them being evaluated as a more effective advert. Therefore, further studies need to look more closely at the attributes that a viewer considers when judging the effectiveness of an advert. Data collected in this study shows that it is complex construct that likely includes other factors like context, color, imagery, and individual differences.

Finally, in Experiment 2, we showed that non-foreign adverts were not rated as being any easier to comprehend than foreign adverts. Further research still needs to examine the effect culture has on visually encoded messages like visual metaphors (Van Mulken et al., 2010), particularly how they exploit a source concept that may vary in meaning across cultures.

On a practical perspective, from the data gathered in this study, the following are suggestions to consider for advertisers when designing a visual metaphor. Select a source that has a clear and salient property that can be mapped onto the topic (e.g., sunscreen – parasol shade; property “cover from the sun”). Also, for highly complex or difficult to understand visual metaphors (e.g., pen and hammock), extra explanatory information may enhance comprehension and appreciation (see Mills, 2001; Phillips, 2000; Van Rompay & Velkamp, 2014) and thus improve the *visual metaphor effect*. Finally, visual elements like an x-ray likely activates a broad frame (e.g., hospital), which might result in the viewer associating the product with unintended negative attributes of this frame (e.g., sickness, unhealthiness, disease, etc.).

## Conclusion

In conclusion, we paired visual advertisements into two groups, a metaphor and non-metaphor group, and participants ranked them on a number of dimensions. For Experiment 1 this included; engagement, effectiveness, and metaphorical framing effect. For Experiment 2, we added two additional ones; comprehensibility and creativity. Overall, a large number of visual metaphors showed a significant effect for engagement, creativity, and a metaphorical framing effect, but effectiveness only appeared in a small number of these paired advertisements. Moreover, visual metaphor adverts are not more difficult to comprehend than paired non-visual ones. In sum, this study supports the theoretical positions that argue that the creative combination found in visual metaphors has an engaging effect on the viewer, despite the fact that it requires greater cognitive effort. However, this does not always lead to the adverts being rated as more effective.

## Conflicts of Interest

The authors declare no conflict of interest associated with this manuscript.

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