The Exploration of Puzzle Design in Advertising Images

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ABSTRACT

Consumers often tend to ignore or avoid excessive textual information in advertisements. Puzzle images have the potential to evoke viewers' curiosity. Curiosity is the primal human drive that enables consumers to actively seek out and engage with information. This study aimed to clarify the content creation and form design of intriguing puzzle images and analyze the design trends of 118 print advertising images from The One Show Awards from 2017 to 2023. The results showed the following. First, puzzle content creation is divided into the number of clues, product illustrations, and realism of the scenarios. Second, the missing form design is divided into non-closure, figure-ground, proximity, and similarity. Third, trend analysis reveals that most puzzle content creation uses two or fewer clues, direct product illustrations, and realistic scenarios. In terms of missing form design, most cases apply the non-closure design.

Keywords: Advertising image, Puzzle design module

INTRODUCTION

Not all advertisements can capture consumers' attention; particularly, advertisements that are overloaded with textual information often detract people from the intended message. Researchers believe that advertising images can persuade consumers (Phillips and McQuarrie, 2004); attract attention, and arouse curiosity (Negm and Tantawi, 2015). Using the curiosity strategy in advertisements can strengthen consumers' motivation to explore the product information (FitzGibbon et al., 2020); increase interest in the product, and prolong engagement (Menon and Soman, 2002, Park et al., 2015). Curiosity is a driving force similar to hunger and thirst (Schmitt and Lahroodi, 2008, Shin and Kim, 2019), and the desire to acquire new knowledge or have new sensory experiences, stimulating exploratory behaviors (Litman and Spielberger, 2003, Berlyne, 1954).

Puzzle Content Creation and Advertisement Curiosity

Successful advertising images attract consumers' attention through both content and form. Content is the information that advertising uses to promote a product, while form refers to the expressive elements in the aesthetics of advertising (Petrovicia, 2016). Therefore, this study attempts to clarify the relationship between the puzzle content that generates curiosity and how it

can be applied to the form design of advertising images. Epistemic curiosity can be stimulated by puzzles (Thumu et al., 2023, Kang et al., 2009). Advertisements prefer to make implicit connections between images and products (Messaris, 1997). In other words, they use less-related or unrelated image content to allude to products, thereby resembling puzzle (Myers and Jung, 2019, Madupu and Ranganathan, 2013).

The Number of Clues in the Puzzle

Studies have shown that an increase in the implicit cues or information about the product in the advertisement content increases the viewer's curiosity correspondingly (Park et al., 2015, Menon and Soman, 2002). Psychologist Loewenstein believes that curiosity arises from information gaps, that is, the gap between what a person knows and what they want to know (Loewenstein, 1994). Park et al., examined the effect by using three levels of knowledge gaps in taekwondo sports advertisements. They found that when the information gap is moderate (i.e., when moderate cues are provided), people become more curious about advertisements. They explain that in addition to presenting the basic images of taekwondo, adding explanations of the philosophy and spirit of taekwondo while not going into detail about the sport's basic rules and grading can create greater consumer curiosity about the advertisement (Park et al., 2015).

Product Illustrations of the Puzzle

To arouse curiosity, advertisements will express something opposite or different from the literal meaning of the product's attributes, presenting viewers with a small puzzle and encouraging them to expend cognitive resources to solve the puzzle (Conradie, 2013, Burgers et al., 2015, Brennan and Bahn, 2006). This leads viewers to search for these non-literal elements to satisfy their thirst for knowledge, which is necessary to resolve the contradiction (Hatzithomas et al., 2021, Ezzeldeen Mohamed et al., 2020). For example, the slogan of an advertisement "A small family business for big family fun!" conveys qualities that are opposite to the product attributes on the surface, but it can help viewers associate with the product's benefits (Skračić and Kosović, 2016).

Realism of the Scenarios of the Puzzle

Surreal imagery can pique the viewer's curiosity and involve puzzle-solving (Wang and Liu, 2022, Rana, 2022). Surreal imagery is created by defying logic and combining unrelated elements to create impossible compositions (Mostafa, 2005, Wade, 2015). For instance, in a certain car advertisement, the combination of a crying gas station attendant, a transforming fuel tanker, and a distorted clock illustrates the car's absurdly low fuel consumption, making the gas station operator unprofitable (Silveira et al., 2012).

Missing Form Design and Advertisement Curiosity

Some advertisements use partially missing ambiguous forms to arouse viewers' attention and perceptual curiosity (Chang et al., 2010, Jepma et al., 2012). The missing image involves the psychological process of Gestalt recognition, where Gestalt is the German word for form (Kobourov et al., 2015,

Pilelienė and Grigaliūnaitė, 2016); it mainly describes how humans integrate partially missing or overlapping visual forms into meaningful, coherent perceptions (Moratti et al., 2014). In accordance with the fundamental Gestalt principles (Paay and Kjeldskov, 2007, Wertheimer, 1923, Kim and Feldman, 2009), we have conducted a design investigation of non-closure, figure-ground, proximity, and similarity.

The Design of the Non-Closure
When individuals see non-closure figures, it involves the process of perceiving incomplete, incoherent, or disjointed objects as complete by filling in the missing information (Paay and Kjeldskov, 2007, Wertheimer, 1923). That is, sub-processes such as element integration, contour detection and formation, feature binding, and template matching enable perception to be completed (Belkacem et al., 2020). For example, although the IBM brand logo is interrupted by horizontal stripes, the perceptual system can automatically fill in the missing information, allowing one to perceive the complete letters (Mohamed and Adiloglu, 2023).

The Design of the Figure-Ground
Figure-ground is the automatic differentiation of objects into a figure and background (Paay and Kjeldskov, 2007, Wertheimer, 1923, Kim and Feldman, 2009). Figure-ground percept involves shape assignment, which is formed by combining two missing shapes. When the viewer perceives one of the shapes, it becomes the foreground, and the other shape becomes the background (Trujillo et al., 2010). An example is the well-known Rubin's vase visual puzzle, which can be seen as a vase or as two faces looking at each other (Hasson et al., 2001, Howie and Bagnall, 2013).

The Design of the Proximity
Proximity is the perception of objects that are close to each other in space as part of a whole (Paay and Kjeldskov, 2007, Wertheimer, 1923, Garofalo, 2017). These closely positioned objects are considered to have the same value and purpose (Sani and Shokooh, 2016). The closer the elements, the stronger the relationship (Azmy and Nada, 2023). An example is the Dalmatian dog puzzle image, which, at first glance, appears only as a bunch of random black spots. However, the brain automatically groups the closely positioned black spots together to perceive a complete Dalmatian dog (van Tonder and Ejima, 2000, Heylighen and Petrović, 2021, Ramachandran et al., 1998).

The Design of the Similarity
Similarity is the perception of objects that appear to be alike as being part of a whole (Paay and Kjeldskov, 2007, Wertheimer, 1923, Garofalo, 2017). Whether arranged by shape or color, as long as the objects are arranged in a similar manner, it can create a stronger connection among these objects (Azmy and Nada, 2023). An example is the logo of the National Broadcasting Company (NBC), where the arrangement of similar peacock feathers close together reinforces the viewer's perception of a single entity, the peacock (Mohamed and Adiloglu, 2023).

METHODS

A case study and content analysis were used to deconstruct advertising image samples and construct a puzzle design module for advertising images. The case study method can be used to investigate substantial contemporary phenomena, perform thorough analyses of real-life cases (Luo, 2015); and provide a first-hand understanding of people and events (Johnston et al., 1999). Content analysis is useful for examining trends and patterns in data (Stemler, 2000). It is a method for analyzing visual and linguistic data to classify phenomena or events into defined categories for better analysis and interpretation (Harwood and Garry, 2003).

Samples

The advertising image samples in this study were collected from The One Show Awards, organized by the One Club for Creativity, which is also the world's most prestigious event for advertising and design awards (The one club for creativity, 2024). This study collected award-winning print advertisements from the past seven years (2017–2023), including Gold Pencil, Silver Pencil, Bronze Pencil, and Merit Awards, for 443 images (118 series). One image was randomly selected from each series, resulting in a total of 118 advertising image samples (Fig. 1).
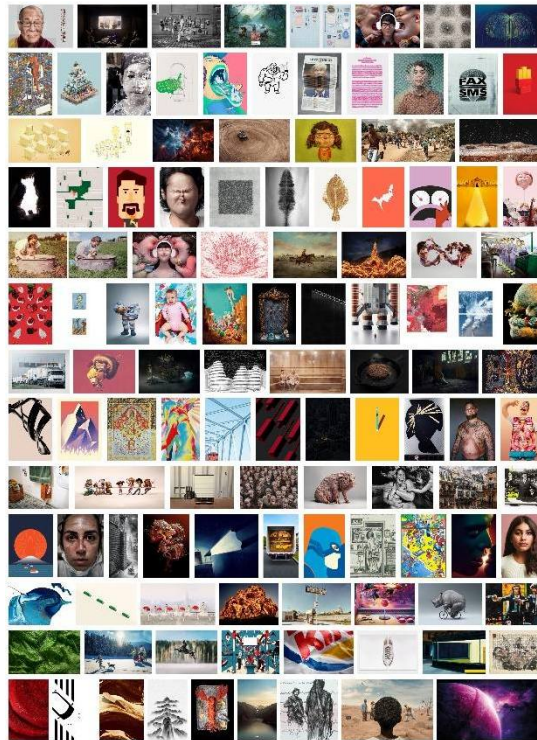
Figure 1: Samples of print advertising images.

Analysis

This study conducted analysis on the content and form of 118 print advertising images. This had two aspects. The first included puzzle content creation regarding the number of clues, which was divided into fewer than two and three or more; product illustrations, which was divided into direct and non-direct; and the realism of the scenarios, which was divided into realistic and surreal. The second was the missing form design, divided into non-closure, figure-ground, proximity, and similarity.

RESULTS

This study proposes the content and form of puzzle-style advertising images (Fig. 2), in which puzzle content creation is divided into the number of clues, product illustrations, and realism of the scenarios. The missing form design is divided into non-closure, figure-ground, proximity, and similarity.
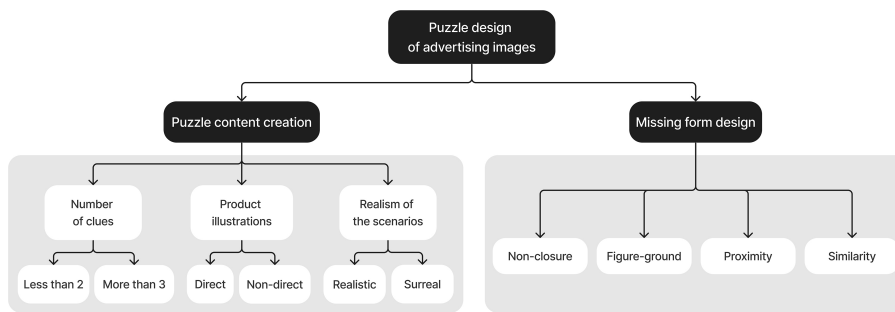

Figure 2: Puzzle design of advertising images.

Puzzle Content Creation

Table 1 shows the application results of advertising image puzzle content, revealing that 101 images (86%) utilize puzzle content, while 17 images (14%) do not. Among the advertising images with puzzle content, 35 images (30%) use one clue, 38 images (32%) use two clues, 20 images (17%) use three clues, 4 images (3.5%) use four clues, and 4 images (3.5%) use five or more clues. Fifty-five advertising images (47%) explain the product in a direct way, and 46 (39%) in a non-direct way. Fifty-seven advertising images (48%) use realistic scenarios, and 44 advertising images (38%) use surreal scenarios.

Table 1. Descriptive statistics of puzzle content creation.

Content	N (100%)	Item	Category	Description	N(100%)
Puzzle	101 images (86%)	Number of clues	1	Using 1 puzzle to allude to the product	35 images (30%)
			2	Using 2 puzzles to allude to the product	38 images (32%)

Table 1. Continued

Content	N (100%)	Item	Category	Description	N(100%)
			3	Using 3 puzzles to allude to the product	20 images (17%)
			4	Using 4 puzzles to allude to the product	4 images (3.5%)
			More than 5	Using more than 5 puzzles to allude to the product	4 images (3.5%)
		Product illustrations	Direct	Using the description of a product with the same attributes to allude to the product	55 images (47%)
			Non-direct	Using the description of a product with the opposite attributes to allude to the product	46 images (39%)
		Realism of the scenarios	Realistic	Using rational and possible scenarios to allude to the product	57 images (48%)
			Surreal	Using irrational and impossible scenarios to allude to the product	44 images (38%)
Non-puzzle	17 images (14%)			Not using puzzles to allude to the product	17 images (14%)

Missing Form Design

Table 2 shows the application results of advertising image forms, revealing that 94 images (80%) utilize advertising images of the missing form, whereas 24 images (20%) utilize advertising images of the non-missing form. Among the advertising images with missing forms, 69 images (58%) use the non-closure form, 11 images (9%) use the figure-ground form, 8 images (7%) use the proximity form, and 6 images (5%) use the similarity form.

Table 2. Descriptive statistics of missing form design.

Form	N (100%)	Item	Description	N (100%)
Missing	94 images (80%)	Non-closure	Regarding the missing objects in the image as a complete entity	69 images (58%)
		Figure-ground	Regarding the objects in the image as the main figure and background	11 images (9%)
		Proximity	Regarding the objects close to each other in the image as a complete entity	8 images (7%)
		Similarity	Regarding the similar objects in the image as a complete entity	6 images (5%)
Non-missing	24 images (20%)		The objects are complete and whole in the image	24 images (20%)

CONCLUSION

This case study provided a content analysis of 118 print advertising images from The One Show Awards from 2017 to 2023, focusing on puzzle content creation and missing form design. Puzzle content was divided into the number of clues, product illustrations, and realism of the scenarios. The missing form design was divided into non-closure, figure-ground, proximity, and similarity. The trend analysis showed that over 85% of print advertising images contain

puzzles, and the use of one to two puzzle ideas to allude to the product and use of direct illustrations to explain product attributes account for over 50% of the images studied. While contextual associations that match the reality of the product make up the majority, the creation of surreal scenarios also accounts for 40%. In addition, more than 80% of advertising image designs use the concept of missing forms, with the use of the non-closure design being the most common at approximately 60%.

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