# Design Techniques of Ambient Media Advertisements and Message Comprehension

Yen Hsu[1], Chia-Jung Lee[1(✉)], and Pei-Ying Yang[2]

[1] The Graduate Institute of Design Science,
Tatung University, Taipei, Taiwan R.O.C.
`dl07l70ll@ms.ttu.edu.tw`
[2] Ming-Chi University of Technology, Taipei, Taiwan R.O.C.

Abstract. Ambient media advertising is an innovative outdoor advertising format. This type of advertising typically involves placing unexpected advertisements in unusual locations to draw the attention of consumers and leave a memorable impression on consumers. Ambient media advertisements are often integrated into daily surroundings, and these novel advertisements make consumers' daily lives more fun and creative. Unexpected ambient media advertisements draw consumers' attention, provoke their positive attitudes toward the advertisement, and increase purchase intentions and revenues.

Ambient media advertisements that attract people's attention often employ unique media to convey messages, and different presentation designs are applied to incorporate novel and unpredictable factors in the visual display to stimulate the audiences' interests in advertisement messages. For this study, 238 advertisement samples were acquired from the website Bored Panda Ambient Media. After experts eliminated similar samples, a total of 190 ambient media advertisement samples were adopted for this research. By analyzing these samples, five design techniques (i.e., metaphor, similes, allegory, metonymy, and analogy) and three media (i.e., site media, reproducing media, and mechanical media) were identified, and a total of 15 ambient media advertisement sample combinations were obtained. The differences in the message comprehension level were then determined among these samples. The results are as follows:

(1) Among various media with all design techniques, site media resulted in the highest message comprehension.
(2) Among all design techniques under various media, the technique of metaphor resulted in the highest message comprehension.
(3) Regarding the effect of media and design technique interactions, the combination of metaphor and site media resulted in the highest message comprehension.

Keywords: Ambient media · Design technique · Media ·
Message comprehension · Message communication

1   Introduction

Ambient media advertising first appeared in British media around 1999 before becoming a standard advertising format in the advertising industry [1]. At the time of its inception, this type of advertising attracted great attention among British marketing and advertising media enterprises [2]. Ambient media advertising is an innovative outdoor advertisement format, in which unexpected advertisements are placed in unusual locations to draw consumers' attention [3] and provide unique experiences to the public [4]. Ambient media advertisements have more novelty and are more surprising for recipients than any other advertising media. By placing unexpected advertisements in unusual locations, this type of advertisements successfully encourages their positive attitudes toward the advertisement [5]. Ambient media advertisements provoke new social phenomenon, which increases purchase intentions and sales revenue [6].

In ambient media advertising, a common advertising approach is to integrate advertisements into daily life and use creativity to add some fun to people's lives. By finding a common point between product features and the carrier, advertisers use the happiness and value generated by such novelties to increase ambient media recognition by the public [7]. Ambient media advertisements are usually placed at unexpected locations for targeted audiences. These advertisements are usually well-planned to surprise and excite the audience. Ambient media advertisements often employ unique media to convey messages, and different presentation designs are applied to incorporate novel and unpredictable factors in the visual display to stimulate the audiences' interests in advertisement messages [8].

An increasing number of ambient media advertisements have employed the approach of on-set interactive experiences to achieve promotion purposes [9]. Successful ambient media advertisements effectively communicate advertisement messages through the optimal medium by integrating advertisement contents with designs and media [1]. In response to the increasing popularity of ambient media, the present study analyzed and categorized design techniques and media of ambient media advertisements and then analyzed the differences in the level of message comprehension among different types of advertisements. The objectives of this study are as follows:

(1) Categorize design techniques and medium types of ambient media.
(2) Analyze the effect of design techniques of ambient media advertisements on message comprehension under various media.
(3) Determine the effect of various media of ambient media advertisements on message comprehension under various design techniques.
(4) Determine the effect of media and design technique interactions on message comprehension.

2 Literature Review

The present study focused on determining the process and employment of the rhetoric approach as design techniques for ambient media advertisements. Based on relevant literature review, this study analyzed ambient media advertisements and theories for design techniques to determine the different media characteristics of advertisements and message comprehension. This section is divided into four main topics: ambient media, design techniques, media, and message comprehension.

2.1 Ambient Media

Media are the form of presentation of advertisements, and advertisement messages are information conveyed by companies to the public. Advertisements must provoke the public's interest in the product and promote the brand image. The increasing demand of products and services has led to the generation of various advertisement formats and types. People have learned to apply selection and elimination to process the high amount of advertisement messages. Such behaviors affect the views and purchase intention of consumers [10].

Extraordinary ideas can draw consumers' attention and persuade them to purchase the product. Without extraordinary ideas, advertisements may be overlooked by consumers and hence do not achieve their purpose. Ideas imply creativity [11]. The creativity of ambient media is often based on advertisement messages, and creative ambient media are often realized in locations/spaces that are visually appealing, creating mutual feelings and achieving extensive communication. Advertisement creativity increases the beauty, artistic, and truthful level of the work. Therefore, creativity is the key to the success and quality of an advertisement [12].

2.2 Design Techniques

Languages were created by humans to properly, correctly, and lively convey messages and thoughts. During the process of language use, rhetoric techniques were invented. Rhetoric techniques optimize the effectiveness of language use and emotional expressions [13]. Design techniques refer to the message communication method of an advertisement. Advertisements provide product information that companies want to convey to targeted consumers; advertisements are presented creatively through design techniques and texts to market the product [14].

According to the research results obtained by Trevino (1986), Wimberly et al. (2000), Jeong (2008), Booth (2010), Radden and Kövecses (1999), and Gentner (1983), the present study categorized the design techniques employed by ambient media into five categories.

(1) Metaphor: The carrier can represent the tenor; both objects are considered equal, and their similitudes or differences can only be understood through comprehensive thinking [15]. The public interprets another symbolic element when facing the product. The metaphoric design technique cleverly integrates a cultural element into the product design to create a new creative product. The technique of metaphor

involves pairing two objects and producing new combinations and comprehensions of the relationships and contexts projected by these two objects [16]; for example, bus handles shaped as hands implies contact with unknown individuals.

(2) Similes: Similitudes between the tenor and the carrier are obvious and can be understood without much thinking [17]. For example, containers on a truck represent USB devices with enormous storage capacity. The capacity of storage is the similitude of the two objects.

(3) Allegory: This technique involves counterintuitive thinking by the audience; the product and service portrayed are contradictory to the audience's expectations [18]. For example, the image of a prisoner sitting on the floor of an elevator trying to open the door symbolizes imprisonment in tiny spaces and other possible torture, which contradicts the emphasis of human rights in modern society.

(4) Metonymy: This technique employs partial elements, symbols, or product features to refer to the entire object or concept, and the referral fits the audience's expectation [19]. For example, regarding the image of well-organized clothes stored in each step of a staircase, the visual of well-organized storage represents the products and services of IKEA, and such an interpretation fits the expectation of the public.

(5) Analogy: The tenor and the carrier are absolutely not related, and contexts or written texts are often required to facilitate comprehension [20]. For example, comparing colorful iPods with paint recycling fields implies the effective reuse and recycle of the paint.

2.3   Media

In Understanding Media: The Extensions of Man, Mcluhan proposed that media are messages [21]. People comprehend various messages simultaneously using more than one sense and their comprehension is affected by the conveyance method. Messages and communication media are symbiotic, and such relationships are presented by title font, color, and images of various specifications when people browse through the platform [22].

Ambient media transform messages into symbols through different channels or methods. The nature of these media determines the extent to which the message is conveyed. The media can be divided into three categories and can be applied individually or in combination [23]:

(1) Site media: A communicator is a media. The media communicate through language, facial expression, and hand gestures. Therefore, a communicator must be present. This type of media is confined to the scene and can only occur on site. The communicator conveys the message content through behaviors, actions, or facial expressions such as sitting down or grabbing other people.

(2) Reproducing media: The media were created from the perspective of cultural aesthetics such as images, paintings, and photographs. The media comprise communication works that can exist independently and serve as the basis for site media because they can be reproduced and are creative. Communication is achieved through images, photographs, or nature; for example, images and visual aids such as clouds or the color of the sky.

(3) Mechanical media: This category refers to the use of telephones, televisions, and elevators, which are the transporters of site media and reproducing media. The main differences between reproducing media and mechanical media are that mechanical media operate through mechanics; therefore, technicality must be considered to determine the mechanical output. For mechanical media, the technical aspect is used to communicate messages; for example, the movement of an escalator or the cold air from an air conditioner [23].

2.4   Message Comprehension

Consumers' understanding and comprehension regarding advertisements in surroundings influence their attitude and intention as well as the subsequent purchase behaviors. Therefore, advertisement message comprehension plays a critical role in consumers' purchase decision-making [24]. Through message comprehension, consumers interpret stimulations from the environment and infer knowledge, meanings, and faith. Such inferences then interact with consumers' existing knowledge to produce personal inferences and messages [25].

The following factors influence message comprehension: (1) products, product formats, brands, and marketing methods: Relevant message attributes and benefits obtained by consumers from the product affect consumers' perception of the product [26] and (2) new product benefits, complexity, and perceived risks affect consumers' perception regarding new products [27].

This study aims to determine the differences in the message comprehension level among advertisement samples. On the basis of the research results of Feiereisen, Wong, and Broderick (2008), the present study assessed the level of message comprehension from the perspectives of the advertisement slogan, image descriptions, and main features of a product or service.

3   Experiment

Ambient media communicate a wide variety of concerns including charity, environmental protection, ecosystem, sports, and brand marketing. To understand the design techniques commonly adopted for ambient media advertisements, relevant cases and samples were obtained from the website of Bored Panda Ambient Media. According to the categorization of sites by the website, a total of 238 advertisement samples were obtained in the preliminary stage. Subsequently, further examination was conducted to combine or eliminate similar samples to reduce the possibility of repeated data. Finally, a total of 190 ambient media advertisement samples were obtained. These samples were categorized according to five design techniques (i.e., metaphor, similes, allegory, metonymy, and analogy) and three media (i.e., site media, reproducing media, and mechanical media). The 5 × 3 experimental design was adopted to generate a total of 15 ambient media advertisement sample combinations. Moreover, 60 participants were recruited for each media. The between-group design was adopted for the experiment. A total of 180 participants were recruited. Before the test, the participants were allowed 5 min to familiarize themselves with the experiment tool and testing samples and to

read the operating instructions. The participants were also given time to practice the operation to quickly learn the procedure and content of the experiment and reduce test errors. The operation procedure is as follows: the participants were instructed to look at the center of the screen and click the left button of the mouse for the testing sample to appear on the screen. Each sample was programmed to be displayed for 10 s. Once the sample disappeared from the screen, the participants began to respond to the items. The message comprehension level of these samples was tested.

3.1 Materials

Table 1 presents the 15 ambient media advertisement samples. The samples with images on topics with lesser relevance or with a messy background were eliminated. The image in the sample advertisement and its design concept must be consistent with the advertisement theme; the advertisement text must be readable and be consistent with the original meaning of the situation.

Table 1. Sample numbering according to the media and design techniques

Media	Design technique				
	Metaphor	Similes	Allegory	Metonymy	Analogy
Site media	Sample 1 Metaphor + Site	Sample 4 Similes + Site	Sample 7 Allegory + Site	Sample 10 Metonymy + Site	Sample 13 Analogy + Site
Reproducing media	Sample 2 Metaphor + Reproducing	Sample 5 Similes + Reproducing	Sample 8 Allegory + Reproducing	Sample 11 Metonymy + Reproducing	Sample 14 Analogy + Reproducing
Mechanical media	Sample 3 Metaphor + Mechanical	Sample 6 Similes + Mechanical	Sample 9 Allegory + Mechanical	Sample 12 Metonymy + Mechanical	Sample 15 Analogy + Mechanical

4 Results

4.1 Effect of Design Techniques on Message Comprehension Under Different Media

The experiment with all the ambient media advertisements revealed significant differences in the message comprehension level among advertisements using different media (F value = 8.973, p = .000 < .05).

Table 2. Advertisement comprehension level according to different media

	Media	N	M	Std.	F value	p value	Ranking
Design techniques	Site media	300	5.011	1.4747	8.973	.000***	1
	Reproducing media	300	4.598	1.4754			2
	Mechanical media	300	4.543	1.4906			3

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

The mean value of the comprehension level of an advertisement using site media was higher than that of advertisements using the other two media, and the mean values were in the following order: $M = 5.011 > M = 4.598 > M = 4.543$. This finding implies that the participants had the highest comprehension level for advertisements using site media (Table 2). Slight differences were observed in the mean values of the comprehension level of reproducing and mechanical media.

The simple main effects of these three media variables revealed that for the design techniques of similes, allegory, metonymy, and analogy, the comprehension level of various media differed significantly, whereas for the technique of metaphor, nonsignificant differences were observed (F value = 0.943, p = .391 > .05). The technique of similes showed significant differences in structure (F value = 4.126, p = .018 < .05), and a post hoc test revealed that message comprehension was higher for site media than for mechanical media. The technique of allegory showed significant differences in structure (F value = 33.853, p = .000 < .05), and the post hoc test revealed higher message comprehension for site media than for mechanical media as well as higher message comprehension for reproducing media than for mechanical media. The technique of metonymy showed significant differences in structure (F value = 9.672, p = .000 < .05), and the post hoc test revealed higher message comprehension for site media than for reproducing media. The technique of analogy showed significant differences in structure (F value = 7.578, p = .001 < 0.05), and the post hoc test revealed higher message comprehension for mechanical media than for site media as well as higher message comprehension for mechanical media than for reproducing media (Table 3).

Table 3. Analysis of variance (ANOVA) of main effects of advertisement message comprehension (media)

Source						
Media (A)	SS	Df	MS	F value	p value	Scheffé
Metaphor (b1)	2.594	2	1.297	0.943	.391	–
Similes (b2)	12.337	2	6.169	4.126	.018*	a1 > a3
Allegory (b3)	121.019	2	60.509	33.853	.000***	a1 > a3, a2 > a3
Metonymy (b4)	40.137	2	20.068	9.672	.000***	a1 > a2
Analogy (b5)	32.182	2	16.091	7.578	.001***	a3 > a1, a3 > a2

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

4.2 Effect of Media on Message Comprehension Under Different Design Techniques

According to Table 4, different design techniques exerted significant effects on advertisement message comprehension (F value = 28.851, p = .000 < 0.05). Particularly, the mean of the message comprehension level for advertisements employing metaphors was higher than that for advertisements employing similes, allegory, metonymy, and analogy, and the mean values showed the following order: $M = 5.488 > M = 4.911 > M = 4.864 > M = 4.187 > M = 4.136$. The results revealed that the participants had a uniform perspective of message comprehension for advertisements employing the technique of metaphor (Table 4).

Table 4. Advertisement comprehension level according to different design techniques

	Design Techniques	N	M	Std.	F value	p value	Ranking
Media	Metaphor	180	5.488	1.1724	28.851	.000***	1
	Similes	180	4.911	1.2439			2
	Allegory	180	4.864	1.5632			3
	Metonymy	180	4.187	1.5086			4
	Analogy	180	4.136	1.5098			5

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

The main effects test results revealed that under site media, reproducing media, and mechanical media, the design techniques significantly affected the message comprehension level of the participants. Significant differences were observed in site media (F value = 18.144, p = .000 < .05), and the post hoc test revealed higher message comprehension for the technique of metaphor than for the techniques of metonymy and analogy as well as higher message comprehension for the techniques of similes, allegory, and metonymy than for the technique of analogy. Reproducing media showed significant differences (F value = 26.233, p = .000 < .05), and the post hoc test revealed higher message comprehension for the techniques of metaphor, similes, and allegory than for the techniques of metonymy and analogy. Mechanical media showed significant differences (F value = 18.144, p = .000 < .05), and the post hoc test revealed higher message comprehension for the technique of metaphor than for the techniques of allegory and metonymy as well as higher message comprehension for the techniques of similes and metonymy than for the technique of allegory (Table 5).

Table 5. The main effects of advertisement message comprehension (design techniques) according to the ANOVA

Source						
Design Techniques (B)	SS	Df	MS	F value	p value	Scheffé
Site media (a1)	128.393	4	32.098	18.144	.000***	b1 > b4, b1 > b5 b2 > b5, b3 > b5, b4 > b5
Reproducing media (a2)	170.762	4	42.690	26.233	.000***	b1 > b4, b1 > b5, b2 > b4 b2 > b5, b3 > b4, b3 > b5
Mechanical media (a3)	98.771	4	24.693	18.144	.000***	b1 > b3, b1 > b4, b2 > b3, b5 > b3

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

4.3   Effect of Media and Design Technique Interactions on Message Comprehension

Two-way ANOVA revealed significant effects of interactions between the three media and the five design techniques (F value = 11.923, p = .000 < .05). The results indicated that the interaction between media and design technique had moderating effects on message comprehension (Table 6).

Table 6. Significance of media and design technique interaction on message comprehension

Independent variables	SS	Df	MS	F value	p value
Media (A)	39.321	2	19.660	11.100	.000***
Design techniques (B)	228.977	4	57.244	32.319	.000***
Media (A)* Design techniques (B)	168.948	8	21.119	11.923	.000***
Error	1567.530	885	1.771		

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

Table 7. Effect of design technique and media interactions on advertisement message comprehension

No.	Design techniques	Media	N	M	Std.	F value	p value	Ranking
Sample 1	Metaphor	Site	60	5.657	1.1623	11.923	.000***	1
Sample 2		Reproducing	60	5.388	1.0688			4
Sample 3		Mechanical	60	5.418	1.2778			3
Sample 4	Similes	Site	60	5.275	1.0099			6
Sample 5		Reproducing	60	4.788	1.2061			7
Sample 6		Mechanical	60	4.670	1.4180			10
Sample 7	Allegory	Site	60	5.507	1.3435			2
Sample 8		Reproducing	60	5.378	1.1845			5
Sample 9		Mechanical	60	3.707	1.4677			14
Sample 10	Metonymy	Site	60	4.767	1.6748			9
Sample 11		Reproducing	60	3.610	1.3583			15
Sample 12		Mechanical	60	4.185	1.2548			11
Sample 13	Analogy	Site	60	3.850	1.3655			12
Sample 14		Reproducing	60	3.823	1.5138			13
Sample 15		Mechanical	60	4.733	1.4880			8

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

For all ambient media advertisement samples, media and design technique interactions significantly affected the level of message comprehension (F value = 11.923, p = .000 < .05). The mean value of Sample 1 (Metaphor + Site) was higher than that of Sample 7 (Allegory + Site), Sample 3 (Metaphor + Mechanical), Sample 2 (Metaphor + Reproducing), and Sample 8 (Allegory + Reproducing); the mean values

presented the following order: M = 5.657 > M = 5.507 > M = 5.418 > M = 5.388 > M = 5.378. The results indicated that the participants' perception of advertisement messages with metaphor, allegory, and site media showed higher uniformity than their perception of advertisement messages with other samples (Table 7).

5   Conclusion

In the present study, the ambient media advertisements collected were analyzed and summarized, and the effects of design techniques and advertising media employed by these ambient media advertisements on the message comprehension level were determined. This study provided the following findings:

(1) Five design techniques: The design techniques identified in this study were metaphor, similes, allegory, metonymy, and analogy. These techniques can provoke the imagination of people. The emotional reaction of people toward the advertisement was achieved by the stimulation of the senses through the media, which draw the public's attention and awaken feelings through the design technique of hidden messages. The interactions of these two factors (media and design technique) can affect the message comprehension level of the advertisement, because people echo with the effects generated in them when they came in contact with the information.

(2) Conveying messages through the three media: Site media communicate the message content through language and eliciting certain behaviors in people at the scene. Reproducing media create new topics by altering images and communicating through the visual sense. Mechanical media create special effects by employing mechanical techniques and technology to overcome time and space limits as well as by stimulating multiple senses.

(3) Among various media, for all the design techniques, site media provided the highest message comprehension. Communication achieved through language and eliciting certain behaviors in people at the scene renders site media the most effective for conveying advertisement messages. Among various design techniques under three media, the metaphor design technique provided the highest message comprehension. In metaphor, the carrier can represent the tenor, and the similitudes and differences in the two objects can only be obtained through comprehensive thinking. The use of metaphor in advertisement design provokes people's comprehensive thinking to understand the meaning of the advertisement and thus comprehend the message.

(4) Regarding media and design technique interactions, the combination of metaphor and site media resulted in optimal message comprehension. Advertisers prefer that advertisements are seen at the adequate time and in the appropriate space for people to interact with the advertisement of their interest. When the advertisement is presented in the image form and the description is consistent or inconsistent with general understanding, the audience will be simulated to seek an answer. Overall, by combining experiences with a series of measures for persuasion, advertising and marketing will improve message comprehension and advertisement values and effectively influence the purchasing intentions of people.

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