THE STUDY OF ATTENTION OF ADVERTISING VISUAL EFFECT IN DYNAMICENVIRONMENT - TAKING BUS ADVERTISEMENTS AS EXAMPLES

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ABSTRACT:

Busadvertisements are a kind of dynamic media. However, in dynamic environments,visual effects (e.g. pictures, headlines, colours,) and environmentalconditions (e.g. distance, speed) vary greatly from time to time. Whetherdifferent types of visual effects influence consumers' attention and whatimagery of visual effects has expressed are important subjects. For this study,six various types of bus advertisements were collected as samples－Figure proof style, Emotion style, Abstract style,Cartoon style, Dramatic style and Fugleman style. This study adoptedexperimental design, which used distance and bus speed as variables. Theattention and the differentiae of visual effects of advertisements arerevealed; the imagery interpretation of visual effects is discussed and thebest visual conditions for bus advertisements are explored. Dynamicenvironments and types of visual effects interact with each other. This studycan be a reference to help create a better advertisement design.

Keyword: bus advertisements, visualeffects, attention

1. INTRODUCTION

1.1 AIMS AND OBJECTIVES

Busis one of the most popular vehicles among mass transportation. With its easyaccessibility and great capability of passengers, plus the regular commutebetween highly populated areas, among various transport advertisements in urbanareas, bus advertisement is an influential and ideal medium. The advertisingcontents of bus advertisements vary greatly for different commute areas andthey have good territorial effects, which focus on a wide range of customers(Zhuang, 1995). The advertisements shown on the outer parts of vehicles arecalled 'outer vehicle advertisements'. The advertisements on the two sides ofvehicles, on the front and rear sides and also on the top (though needs moredevelopment) of vehicles are mainly targeted on pedestrians. This study merelydiscusses the advertisements on the two sides of buses for which are the mostcommon mobile advertisements en route. Nowadays, vehicle advertisements havebecome a part of scenery in vibrant cities. They are the advertising mediaspace that should not be neglected (Fan and Fan, 2005).

Mostadvertisers want to evaluate several things created by advertisements-communication effect, sales effects and the potential influence on awareness,knowledge and preference. But it is very difficult to do the measurement (Xie,1998). Advertisement experts Jugenheimer and White (1994) point out that thereare two challenges given by the vehicle-outer advertisements. One is theshort-time exposure: advertisements moving with vehicles at high speed so thetime in which they show in front of the public is transient. They may not giveenough impression. The other challenge is the inability to convey complexmessages. Because of flat pictures, plus the fact that people usually have nomuch time to read the advertising contents carefully, therefore consumerscannot easily obtain the detailed product information.

Undeniably,in dynamic environments, whether advertisements are capable to draw attentionor to deliver the messages desired by the advertisers are questions worthwhileto be discussed and evaluated. This study is

focused on understanding the attentionand discussing the imagery expression of outer vehicle advertisements on busesin dynamic environments. Study samples are the bus advertisements during2004~2006 in Taipei city. Several advertisements with different visual effectsand the differentiae of attention in various dynamic environments are analysedand compared. Better conditions of dynamic environments for advertising areexplored and these can be a reference for advertisement designers or operatorsto improve their performance.

1.2 METHODOLOGY AND PROCEDURES

Inpursuit of the aims, this study has two categories:

(1) Attention tobus advertisements in dynamic environments – Experimental design isadopted and samples are the six various types of bus advertisements (Hsieh& Yang, 2006a). Distances and the speed of buses are the variations anddynamic environments are designed by computer simulation. The attention and theobservation of testees are recorded.

(2) Imagery ofvisual effects of bus advertisements in dynamic environments – Tocoordinate with experimental design, a questionnaire survey is conducted. Threeimagery factors: modernness, design and aesthetic are selected as criteria(Hsieh & Yang, 2006b). Then testees evaluate samples by these imagerycriteria.

1.3 THE RANGE AND THE RESTRICTION OFRESEARCH

Withinlimits of some research conditions, the range and the restriction of this studyare:

(1) Samples areselected from the bus advertisements (so called vehicle outer advertisements asmentioned in Ch. 1.1) of 2004~2006 in Taipei city. They are categorized intosix types by 'cluster analysis' (Hsieh & Yang, 2006a).

(2) Consideringthe difficulties of visual judgments in dynamic environments, the questionnairelimited

within three factors that are given by SD factor analysis and the rangeof imagery evaluation might be narrowed.

(3) Consideringboth safety and convenience, computer simulation is adopted. Complying with theconditions and regulations of roads and bus speed in real world, the simulationis well designed, yet the experiments and venues might not reflect the realitycompletely.

(4) Testees arecollected by availability and convenience, thus the conclusions of this studymight be confined.

2. LITERATURE REVIEW

2.1 VISUAL ENVIRONMENT INMASS TRANSPORTATION

(1) Speed of Vehicles and Road space

The regulations of Ministry of Transport (2007)state that 'the speed of vehicles should comply with the signs or lines ofspeed limits. If without any signs or lines, the following rules should beobserved: the speed should not exceed 50 kilometres. However, if on any roadwithout road lines, direction-indicating lines, or in any slow route withseparating lines, the speed should not exceed 40 kilometres. Furthermore,according to the city road information of Ministry of The Interior, thedesigned bus paths are divided into two types: type one which has theuni-direction of 18.75m; type two which has the uni-direction of 11.25m.According to types and space of various roads, practical applications can bedesigned and allocated (either by vertically sectioned or transectedly) fordifferent purposes. These are the key elements on which the designs of thedynamic visual distances for this study are considered. Figure 1 shows the twotypes of road in Taiwan.
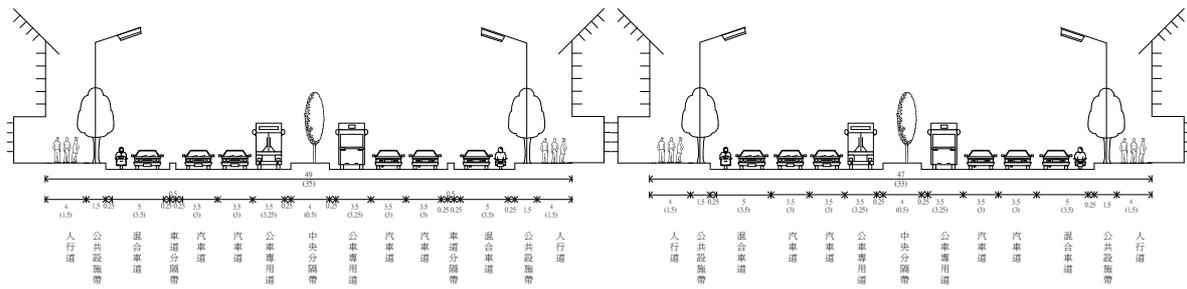
Figure 1: Left - Road Type One(Uni-direction is 18.75m); Right - Road Type Two (uni-direction is 11.25m)

(2) Visual spanand visual environments

Vision in visual cone within 3~5 degrees is theclearest. When the visual angle is enlarged to 10~12 degrees, then the vision becomes not clear. In avertical section, the vision is only the 1/2~2/3 of the horizontal range.Generally, when people see forward with both eyes, things can be seen orperceived are those within 20~200 degrees outside of the visual cone. Peoplewearing glasses have narrower visual span than average. When vehicles arestationary, the span is about 120~200 degrees. The higher speed they are, thesmaller visual span people have. The smaller visual span people have, the morelikely people overlook something and the higher rate of wrong judgment (Huang,2007).

2.2 FEATURES OF BUS ADVERTISEMENTS

Busadvertisements have many features, e.g. low cost, surprising, territorial andthe contacts do not need to pay extra expenses (Ma, 2000). Transit advertisingmedia is called 'outer vehicle advertising media' (Fan and Fan, 2005). Busesare prevalent in modern city and which have some irreplaceable features: highmobility, direct presentation, a wide range of target customers, accurateterritory, repeated exposure, low production cost and reasonable pricing. Busadvertisements have great performance around Taiwan in which Taipei has anoutstanding effect. People who see most bus advertisements or who see busadvertisements more often are at the age between twelve and twenty-nine yearold. On average, they can

see the advertisements up to 88% of all. Bus advertisementsindeed are one kind of high-exposure advertising media (OmniadMedia Incorporation, 2007).

3. RESEARCH DESIGN

3.1 HYPOTHESIS

Thetypes and the images of visual effects in advertising convey particularmeanings. Nevertheless, bus advertisements are a kind of transit media and therange they can cover is mainly for those walking on the road. Advertisingeffects can be influenced by some factors, such as vehicle speed, environmentsand distances…etc. Therefore, two hypotheses made for this study are:

1. The attention (rate of correct) to bus advertisements might be influenced by different speed.

2. The imagery interpretation of bus advertisements in dynamic environments might be different.

Thus, this study is aimed to inspectthese two hypotheses.

3.2 EXPERIMENTAL DESIGN FOR DYNAMICENVIRONMENTS

Experimentaldesign is adopted so that the relevant variation data can be obtained. The'total variable' is composed of 'deviation variable', 'experimental variable'and 'extraneous variable' (Yang, 1993). These three variables should becontrolled so that the failure of experiment result can be reduced. In order todesign the smallest deviation variable, the calculation of environmentalsimulation, the environmental design and the production of computer animationwere designed.

(1) Calculation of Environmental Simulation – the distancebetween testee and monitor

When the visual span of the stationary testeewas set to be 120 degrees, the distance between the person and the bus was 1875cm, thus the roundup number 1800 cm was set to be the experimental datum.Figure 2 shows how the distance is calculated by the formula of PyhthagoreanTheorem.

	AD = visual span of 120 degree
	DE = 1/2 of width of monitor = 15cm

AD = visual span of 120 degree
DE = 1/2 of width of monitor = 15cm
AB = the real distance between people and bus = 1800cm
BC = distance of being visible on road = 3118cm
In proportion： $\dfrac{AD}{DE} = \dfrac{AB}{BC}$,
AD ≒ 8.6cm，8.6 x 2 ≒ 17
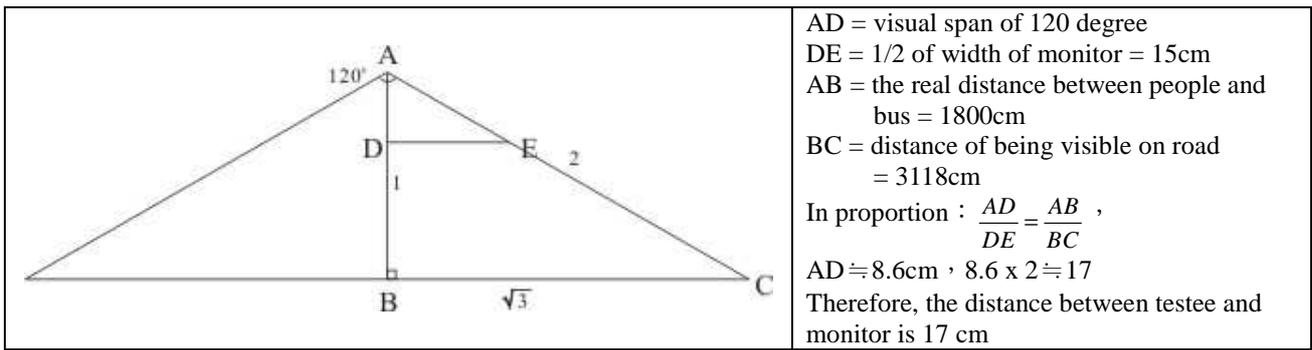Therefore, the distance between testee and monitor is 17 cm

Figure 2: The formula calculated thedistance between testee and monitor

Through the above formula, the differencesbetween speed and distance under various visual spans could be calculated. Thisexperimental design explored how long was required to obtain a better attentionwithin fixed distance. For instance, if the experimental datum 17 cm was set tobe the distance between testee and monitor, and also the exposure time wasminimum 3 seconds and maximum 11 seconds, then the width of the busadvertisement in the computer was 5 cm and 8 cm respectively. Table 1 shows thedata in detail.

Visual Span	Main Road	Speed	Width of bus advertisement in computer	Time	Distance between testee and monitor
120 degree	18m	40 m/hr	5 cm	**6 sec**	17 cm
		30 m/hr		**7 sec**	
		20 m/hr		**11 sec**	
	11m	40 m/hr	8 cm	3 sec	
		30 m/hr		**5 sec**	
		20 m/hr		**7 sec**	
90 degree	18m	40 m/hr	8 cm	3 sec	30 cm
		30 m/hr		4 sec	
		20 m/hr		**7 sec**	
	11m	40 m/hr	9.5 cm	2 sec	
		30 m/hr		3 sec	
		20 m/hr		4 sec	
60 degree	18m	40 m/hr	9.5 cm	2 sec	51 cm
		30 m/hr		3 sec	
		20 m/hr		4 sec	
	11m	40 m/hr	19 cm	1 sec	
		30 m/hr		2 sec	
		20 m/hr		2 sec	

Table 1: Data of Environmental Simulation

(2) Experimentalparadigm

The main purpose of designing experiments is toexplain what paradigms and models are. Since paradigms control various sourcesof variables, experiments can be controlled or modified accordingly. Anyinfluence on dependent variables given by the change of design can be observedand under the principles of effectiveness, objectiveness, accuracy and economy,questions of researchers can be answered (Yang, 1993). When designingexperiments, we can choose two extreme values and the optimal value ofindependent variable or a few typical values as conditions in experiments. Asshown in Table 1, when the visual angle was 90 degrees, the width of the busadvertisement in the computer was 8 cm and 9.5 cm. Meanwhile, the distance between testee and monitor was 30cm, time was between 2 seconds and 7 seconds. The mean of 2 seconds and 7 seconds is 5 seconds. Hence, 2seconds and 5 seconds, the average, could be chosen as the variables.Experimental paradigm includes two groups – attention and imagery. Thegroup of attention was marked as A1 (5 sec) and A2 (2 sec); the group ofimagery was marked as B1 (2 sec) and B2 (5 sec). Table 2 shows the arrangementof these two experimental paradigms.

Table 2: Experimental Paradigmof Attention and Imagery

Time of Attention Experiment	
A_1（5sec）	A_2（2sec）
⋮ Attention Experiment ⋮	
MA_1	MA_2
Time of Imagery Experiment	
B_1（2sec）	B_2（5sec）
⋮ Imagery Experiment ⋮	
MB_1	MB_2

(3) ExperimentalTool

Animation was designed by using personalcomputer with software of Microsoft, flash MX2004 and Photoshop. The frame timeof animation files was set to be 5 seconds and 2 seconds (shown in Figure 3-1and 3-2). The intention of designing experimental environments was to simulatethe movement of buses. Many external variables, such as noise, air, vision andwalking in real environments were excluded. Table, chair, position andlaboratory remained unchanged in this experiment; the distance of viewingbetween testee and monitor was maintained 30 cm (Figure 3-3).

Figure 3-1:5-sec Experiment   Figure 3-2:2-sec Experiment   Figure 3-3: Testee and monitor
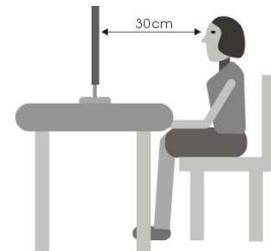
(4) Advertisementsamples

Pictures of buses, those moving on the road,were taken from the real word. Advertisement samples were selected fromthirty-six photos, which were categorized into six groups of types of visualeffects. Each bus was labeled from A to F, which presented a certain type ofvisual effects. One photo was selected randomly for each group and in totalthere were six photos illustrating the experimental sample. Figure 4 shows thevisual effects and pictures.

Figure Proof Style (A)   Emotion Style (B)

Abstract Style (C)

Cartoon Style (D)

Dramatic Style (E)

Fugleman Style (F)

Figure 4: Six Samples of Visual Effects of BusAdvertisements

(5) Testees and methods

There were 70 university students attending thisexperiment. All of them live in northern Taiwan and the age is between 19~35year old. Samples were presented at random so that the effectiveness andreliability could be obtained. There were two groups of attention observation– A1 (5 sec) and A2 (2 sec) and also two groups of imagery interpretation- B1 (2 sec) and B2 (5 sec). The combined groups A1+B1 and A2+B2 were decidedby lot. Except the two independent variables, i.e. type of visual effects andtime, the other conditions, such as computer, distance, tools, questionnaire,time and experimental environments, for both groups (A1+B1 and A2+B2), were allthe same.

3.3 DESIGNOF QUESTIONNAIRE

Thequestionnaire contains two parts, which are attention observation and imageryinterpretation. The survey was conducted with open questionnaire. In terms ofattention, the observational disparity of types of visual effects in dynamicenvironments was the key point to be explored. Questions were designed to coverfour sections including pictures, colors, headlines and products. Example 1shows the questions about these four

issues. With respect to imageryinterpretation, three imagery factors: modernness, design and aesthetic wereselected as criteria (Hsieh & Yang, 2006b). Example 2 shows the questionsabout these imagery factors.

4. ANALYSES ANDDISCUSSION

4.1 S-P SCORE TABLE ANALYSIS

Inthis experiment, student-problem score table was used to do the analysis. Thisscore table contained disparity coefficient and caution index. The analyticalprocess was:

(1) Disparity coefficient

The function of disparity coefficient is toinspect whether there is any heterogeneous factor in the questions designed inthe questionnaire for the experiment.

Sato (1975,1980b, 1985)presents the formula: $D* = \dfrac{C}{4Nn\overline{p}(1-\overline{p})D_B(M)}$

Thesum of '1' and '0' surrounded within C=S-P; M=$G(\sqrt{Nn}+0.5)$ could obtain the Gauss Integral inside the parentheses.

$\overline{p} = \dfrac{\sum\limits_{i=1}^{N} X_i}{Nn}$; N = numberof person；n = number ofquestion; $D_B(M)$ could be found by checking table

with the calculatedM.

There were 51 '1' and '0' each in 2seconds. Testees were 34 people and the number of question was 24.

$\therefore \overline{p} = \dfrac{560}{34\times24} = 0.68$ ；M= $G(\sqrt{34\times24}+0.5)$=29，D$_B$ 29=0.355checked from the DB table

$D* = \dfrac{51}{4\times34\times24\times0.68\times(1-0.68)\times0.355}$ =0.20，which meant thedisparity coefficient was 0.20 in

2-second question.

If the disparity coefficient is between 0 and 1,it means S curve and P curve are separate to some extent. When D*>0.6, itmeans there are many heterogeneous factors exist in questions. The disparitycoefficient between S curve and P curve was 0.20 in this experiment, whichmeant the heterogeneous factors are just a few.

There were 56 '1' and '0' each in 5seconds. Testees were 34 people and the number of question was 24.

$$\therefore \overline{p} = \frac{578}{34 \times 24} = 0.70 \; ; \; M = G(\sqrt{34 \times 24} + 0.5) = 29, \; D_B \; 29 = 0.355 \text{ checked from the DB table}$$

$$D* = \frac{56}{4 \times 34 \times 24 \times 0.70 \times (1 - 0.70) \times 0.355} = 0.23 \text{ , which meant thedisparity coefficient was 0.23 in}$$

5-second question. The disparitycoefficient between S curve and P curve was 0.23, which meant the heterogeneousfactors were just a few.

(2) Cautionindex

Caution index was adopted to analysequestions in dynamic experiment. It could judge whether the response toquestions have any deviation. When caution index is approaching toseriousness, and also the seriousness is becoming obvious, then the response toquestions, i.e. the answers given by testees to the questionnaire for thisexperiment, are in an abnormal status (Yu, 2003). The formula of caution indexis shown below:

$$CP_j = 1 - \frac{\sum_{i-1}^{N}(y_{ij})(y_i) - (y_j)(\mu)}{\sum_{i=1}^{y_j} y_i - (y_j)(\mu)} = \frac{\sum_{i=1}^{y_i}(1 - y_{ij})(y_i) - \sum_{i=y_j+1}^{N}(y_{ij})(y_i)}{\sum_{i=1}^{y_j} y_i - (y_j)(\mu)}$$

$$= \frac{\begin{array}{l}\text{Total marks of question j with answer '0'} \\ \text{above P curve}\end{array} - \begin{array}{l}\text{Total marks of question j with answer '1'} \\ \text{below P curve}\end{array}}{\begin{array}{l}\text{All marks of everyone of question j} \\ \text{above P curve}\end{array} - \begin{array}{l}\text{Number of person with correct answer to} \\ \text{question j x Average marks}\end{array}}$$

Averagemarks = Total marks of every person ÷ Totalnumber of people

Thecalculation is shown as follows:

Themean (μ) of this experiment was 560÷34=16.47

Forexample, picture A1 and its CP$_{A1}$: $CP_{A1} = \frac{(15+13)-(13+12)}{535-32\times16.47} = 3/7.96 = 0.37$

Sato presents the judgment standardfor cautious index as below:

When $0 \leq CP_j < .50$, it means the deviation of responsive groups isnot serious. The deviation of answer is in acceptable range. When $0.75 > CP_j \geq 0.50$, it means the deviation is serious and anasterisk (*) can be used. When $CP_j \geq 0.75$, it means the deviation is very serious and twoasterisks (**) can be used to symbolize this situation (Yu, 2003). Based onthese criteria, the experiment shows safe caution index for each picture.

4.2 ATTENTION OFVISUAL EFFECTS

(1)Visual effect of high attention

Thejudgment of high attention and low attention is defined by the rate of correctof the questionnaire.

Inthe 2-second experiment: in the section of pictures, Cartoon style and Fuglemanstyle had high rates of correct. In the section of colours, Emotion style,Abstract style and Fugleman style had high rates of correct. For both sectionsof headlines and products, Figure proof style had high rates of correct aswell.

Inthe 5-second experiment: in the section of pictures, Figure proof style,Cartoon style and Fugleman style had high rates of correct. In the section ofcolours, Figure proof style, Emotion style and Fugleman style had high rates ofcorrect. In the section of headlines, Emotion style had the highest rate ofcorrect. In the section of products, Figure proof style had the highest rate ofcorrect. More details about the result areshown in Table 3.

Table 3: Result of The Questionnaire Statistic

Contents	Photos	2 seconds			5 seconds		
		Rate of Correct	Cautious Index	Order of Result	Rate of Correct	Attention Index	Order of Result
Pictures	A1	94%	0.37		97%	0.22	
	B1	90%	0.5		86%	0.34	
	C1	35%	**0.7***	D=F>A>B>C>E	32%	0.24	D=F>A>C>E>B
	D1	100%	0		97%	0	
	E1	94%	**0.75***		86%	0.25	
	F1	100%	0		97%	0.17	
Colours	A2	97%	**0.66***		100%	0	
	B2	100%	0		100%	0	
	C2	100%	0	B=C=F>E>D>A	97%	0.17	A=B=F>C>D>E
	D2	94%	0.37		89%	0.34	
	E2	97%	0.22		95%	0.4	
	F2	100%	0		100%	0	
Headlines	A3	81%	0.47		76%	0.07	
	B3	77%	0.28		95%	0.37	
	C3	13%	0.23	E>C>B>F>A>D	16%	0.49	A>D>F>B>C>E
	D3	32%	**0.68***		8%	0.17	
	E3	3%	0		3%	**0.66***	
	F3	10%	0.29		40%	0.2	
Products	A4	97%	0.25		95%	0.11	
	B4	65%	0.18		92%	0.29	
	C4	0%	0	C>B=D>A>F>E	27%	**0.68***	A>F>B=D>E>C
	D4	26%	0.18		32%	0.29	
	E4	61%	**0.7***		64%	**0.64***	
	F4	74%	0.4		81%	0.28	

Remark: A: Figure proof style; B: Emotion style; C: Abstract style; D: Cartoon style; E: Dramatic style; F: Fugleman style

(2)Visual Effect of Low Attention

InTable 3, low rates of correct are also shown clearly. In the 2-secondexperiment: in the section of pictures,

Abstract style had the lowest rate ofcorrect. In the section of colors, Cartoon style had the lowest rate ofcorrect. In the sections of headlines, Dramatic style had the lowest rate ofcorrect. In the section of products, Abstract style had the lowest rate ofcorrect.

Inthe 5-second experiment: in the section of pictures, Abstract style had thelowest rate of correct. In the section of colors, Cartoon style had the lowestrate of correct. In the sections of headlines, Dramatic style had the lowestrate of correct. In the section of products, Abstract style had the lowest rateof correct.

4.3 THE RELATIONBETWEEN CAUTION INDEX AND ATTENTION

When caution index is taken into consideration forattention given by advertisements, cautious index can reflect the attention.For example, in the 5-second experiment, when the caution index was low, theattention was high; when the caution index was high, the attention was low.Based on this logic, we can assume that caution index and attention are inreverse proportion. Overall, the caution index of the 5-second experiment wasin a less serious degree than the 2-second experiment, which meant that in2-second environment, the visual effects could create visual confusion orconveyed inaccurate message and further impacted the attention effect.

In the 2-second experiment and the section of picturesand products, the cautious index of Dramatic style was high, but the attentionwas high as well. We can assume that the visual effects of both pictures andproducts can draw much attention in a short time. This is probably thatDramatic style has interesting denotation and it can easily catch eyes andattention of viewers (Liu, 2004). Nevertheless, there is one interestingfinding here. While Dramatic style creates stronger effects of pictures andproducts, the effects of headlines are not in good performance. This is asituation of 'offset' that when the attention to pictures is

given, then theattention to headlines or written words is diminished. This explains why thatwhen the caution index was low, the attention to the headlines in Dramaticstyle was still low. We can therefore infer that word messages can beoutweighed by pictures and they are not easy to be delivered successfully in ashort time in dynamic environments.

Asfor the section of colors, the cautious index of Figure proof style was high,but the attention was not low. It seemed indicate that colors can receive muchattention in general. However, the high attention could result from the effectof Figure proof style as well. McCracken (1986) discovers that in celebrityendorsement, the effects come from the cultural meanings borne by celebrities.Through advertisement, the cultural meaning presented by celebrities aretransferred to products and widely accepted by consumption. From this study,the effect comparison between colors and Figure proof style could not beevaluated, but this revealed a new topic and can be explored in future relevantstudy.

Inthe section of products, Abstract style had the lowest rate of attention inspite of its low cautious index. This meant that viewers did not know whatproducts were sold in the advertisement. Abstract style is called 'Ideology',too. In Taiwan, Ideology emerged from the advertisement market in the late1980. The presentation of ideology advertisements is not easy to be understoodby most people. The contents of advertisement might have no direct relationwith product. The main goal is to express personal feelings; affections andsubconsciousness by imagery, thus the product in advertisement turn to a lowerrank or become an accessory (Lu, 2002). Therefore, Abstract style catches lowattention in dynamic environment. It is not easy to be comprehended in a shorttime and not appropriate for outdoor advertisement.

4.4 THE RELATION BETWEEN DYNAMIC ENVIRONMENT ANDRAISING ATTENTION

Medianis the number lying at the midpoint of a series of numbers in order (eitherfrom small to big or vice versa) or the average of two numbers in the middle ofthe series of numbers (Bai, 2000). In table 1, for the 5-second and 2-secondexperiments, the time range was from 1 second to 11 seconds and in overallresult, the5-second conditions offers higher attention and higher rate of correct than the2-second experiment. If 5-second is the median, and we can assume that the time4-second, 5-second and 6-second can be the good timing for vision. Also, we caninfer that time over 5-second (i.e. 7-second and 11-second) is better fordrawing attention as well. If the median is 2-second, the time 1-second,2-second and 3-second are not good for vision. This study revealed that whenthe vision angle was 120 degrees; the road distance was 11m~18m; bus speed wasat 30~40km/hr; the viewing time was 5~6 seconds, the attention to theadvertisements was high. On the contrary, when the vision angle was 60 degrees;road distance was 11m; bus speed was at 20~30km/hr; the viewing time was 2seconds, then the attention to the advertisements was low. Table 4 shows theoverall attention effect in dynamic environments.

Table 4: Attention Effect in Dynamic Environments

Attention	Visual Span	Main Road	Speed (km/hr)	Time
High	120 degree	18m	40	6 sec
		11m	30	5 sec
	90 degree	18m	30	4 sec
		11m	20	4 sec
	60 degree	18m	20	4 sec
Low	90 degree	11m	40	2 sec
	60 degree	18m	40	2 sec
		11m	30	2 sec
			20	2 sec

4.5 IMAGERY INTERPRETATION OF VISUAL EFFECTS

(1) Inspection of coordination

For the inspection of coordination, Kendall'scoefficient of rank correlation of SPSS statistical analysis was adopted inthis study. The coefficient of 5-second experiment was 0.01 and of 2-secondexperiment,

it was 0.007. These data were patent and this indicated thatimagery interpretations were in coordination.

(2) Imagery interpretation

From the perspective ofimagery interpretation, in terms of modernness, the three advertising styles:Emotion, Fugleman and Abstract style had a better performance. According to Hsieh& Yang (2006b), the imagery of monderness includes the combinations ofcreativeness vs. conservativeness, boringness vs. fun, trendy vs. tradition,personalization vs. popularism, vividness vs. dullness. These characteristicsof modernness have fashionable and popular presentation elements. Among the sixvarious types of bus advertisements, Emotion style and Abstract style both hadthe most characteristics of modernness in the point of views of testees.

In terms of the imageryof design, Emotion style, Fugleman style and Abstract style had a better performance.According to Hsieh & Yang (2006b), the imagery of design includes thecombinations of sense vs. sensibility, commerce vs. art and literalness vs.metaphor. Among the three styles mentioned previously, the two styles - Emotionand Abstract style were considered to be the typical type to present theimagery of design.

In terms of aesthetic,Fugleman style and Emotion style were the most representative. According toHsieh & Yang (2006b), the imagery of aesthetic includes the combinations ofelegance vs. roughness, brightness vs. ordinary and ugliness vs. beauty. Fromthe perspectives of testees, Fugleman style and Emotion style presented mostcharacteristics of aesthetic.

The imagery of visualeffects is not absolute and it has a great deal of repeatability in each typeof visual effect. From the experiment result, we found that in dynamicenvironment the imagery of modernness, design and aesthetic was found mostly inthe three types of bus advertisement – Emotion style,

Fugleman style andAbstract style. Table 5 shows the evaluation result of imagery interpretation.

Table 5: Imagery Interpretation of Different Visual Effects

Imagery	Time		Figure Proof	Emotion	Abstract	Cartoon	Dramatic	Fugleman
Modernness	5 sec	Total	140	64	61	146	142	97
		Rank	4	2	1	6	5	3
	2 sec	Total	162	80	108	160	168	104
		Rank	5	1	3	4	6	2
Design	5 sec	Total	130	84	74	145	117	104
		Rank	5	2	1	6	4	3
	2 sec	Total	154	84	110	172	156	106
		Rank	4	1	3	6	5	2
Aesthetic	5 sec	Total	126	75	98	144	140	64
		Rank	4	2	3	6	5	1
	2 sec	Total	154	72	139	177	164	80
		Rank	4	1	3	6	5	2

5. CONCLUSIONS

This study is mainly focused on three aspects,first, the attention to various types of bus advertisement, and the relationbetween attention contents (i.e. pictures, colours, headlines and products) andstyle of visual effects (i.e. the six types of advertisement) are very usefulfor advertisers to design advertisements in dynamic environments. Secondly,this study revealed the fact that the time required to obtain the message givenby bus advertisements is four or five seconds. If the viewing time is less thanthis critical point, then

the attention could be confused. Therefore, the factthat the effectiveness of bus advertisements varies greatly in regions, peaktime and bus speed should be taken into account when bus transport operators ismaking pricing strategy and when the advertiser is seeking the route or theflow of bus to post its advertisement. Thirdly, the imagery evaluation showstestees' interpretations of different visual effects. These three aspects areexplained in more detail in the following paragraphs.

Advertisements are in close relation tocultures. Culture is the overall integration of spirit lives and material livesin a society; it reflects thoughts, behaviour patterns, beliefs, values,symbolizations and skills (Shen, 2002). Advertisements are indispensable in ourlives. Also, it is one of the most influential ideologies in contemporarycapitalism society. Advertisements are everywhere with their autonomy, thusthey have the independent reality which connects our lives and commercialstogether (Williamson, 1978). From the convey procedures of visual psychology,it is understood that when advertisers utilize bus advertisements to displayproducts or when designers are required to design the advertisement on thesides of buses, how to make an attractive and creative design for the dynamicenvironments is the top priority. More relevant studies for other dynamicadvertising (e.g. the advertisements on the Internet, electronic bulletin) andfind out if they have the similar result as what was found in this study or toreveal any inspiring finding can be worthwhile.

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