

Emotional and Fear Appeal in Advertising is an Effective Approach to Aware Against Air Pollution in Society

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Abstract

The aim of the present study is to fill the existing gaps in the marketing literature, by providing a comprehensive comparison of fear versus emotional appeals based on high and low involvement of advertising to increase awareness. Further, this article is an attempt to analyse the presentation order of organisation endorser and message content in advertising on perceived persuasion. A questionnaire was individually applied to participants. Relationships between different particles in air were analysed using correlation, regression, and ANOVA test. Among all the pollutants, fine particles are directly associated with increased levels of mortality and morbidity. Due to its bad effect on health and environment, it is necessary to monitor and assess particulate pollution regularly and make aware to the people against its effect. The parameters under study are TSPM, RSPM SO₂ and NO_x. This study gives a good idea of relationship between TSPM and RSPM. The study also focuses to find the relationships among the levels of concentration of various pollutants and tried to predict the concentration level of one pollutant with respect to another within the available range of the data. It has been found that there is an urgent need to promote appeals advertising against air pollution perceiving uniqueness in emotional and fear response.

Keywords: Advertising, Awareness, Urban Area, Air pollution, Fine Particles

Introduction

Advertising has a powerful influence on people and often generates people needs. It is vitally important for free

markets, but its action is subtle and discovery is fragile. If advertisements are not initially effective, repetition will not make them more effective (Tellis, 2004). The effectiveness of advertising has been a matter of endless discussion for several decades. As advertisers increasingly seek greater communication effectiveness, more careful consideration needs to be given to the selection of the type of advertising appeal used for each target group (MacKenzie, Lutz, & Belch, 1986). In developing countries, it is a challenge to conduct development programmes without bringing harm to the environment. To aware against air pollution, emotional and fear- advertising appeals are required to attract more attain of the public. In India too, air pollution is a major problem which is affecting not only the health of people but also the development policies. Therefore, various monitoring programmes have been undertaken to know the quality of air by generating vast amount of data on concentration of each pollutant (e.g. SPM, RSPM, TSPM, NO_x, SO₂ etc.). Industrial as well as coal-mining areas are the obvious places with bad air quality. These areas are the producers of vast amount of particulate matter. Smaller particles with less than 2.5µm in diameter generally come from combustion of fossil fuel. These particles include soot from vehicle exhaust and are often coated with various chemical contaminants or metals. SO₂ and nitrogen oxides condense in the atmosphere to form fine sulphate and nitrate aerosols. The large sources of fine particle are coal fired power plant, fuel combustion in industries, auto and diesel exhaust are predominant sources along transportation corridor. Emotional and fear appeal in advertising create more attention in public to see advertising and aware against such types of issues.

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Emotional and Fear Appeals in Environmental Advertising

Much recent research has been conducted on the influence of emotions in framing messages although not all of this is in the environmental advertising (Dillard & Peck, 2000; Arthur & Quester, 2004). Some authors distinguish between fear and emotions in advertising (Holbrook & Batra, 1987). The link between emotional arousal, attitude formation and behavioural compliance is still theoretically problematic with only tentative links drawn between attitudes and intent, and some still ambiguous findings relating to intent and eventual behaviour (Chandon, Morwitz & Reinartz, 2004). Notwithstanding these difficulties, social advertising campaigns often use emotional appeals in an attempt to encourage compliant behaviour from the public. Negative emotional appeals are also regularly applied in social advertising to attract the attention of public (Bennett, 1998). Additionally, there is a significant research which has studied the effectiveness of negative in comparison to positive emotional appeals (Block & Keller, 1995; Frazer et al., 2002). Dillard and Peck (2000) showed that public service advertising effectiveness was influenced by fluctuating attitudes, changes in affective responses, and cognitive reactions for both positive and negative appeals. The negative emotions discussed in advertising, the participants were more likely to recall advertisements that used fear as a major appeal, fear for others and fear

of loss especially a fear of personal consequences. As the participants described it, fear appeals in social advertising encouraged people to comply with rules and acceptable behaviour by scaring them about the potential legal, health and social risks associated with illegal, unhealthy or antisocial behaviour. However, fear is a strong word that the participants are hesitating about using this word. They frequently used words such as 'concern' or 'anxiety', but it was clear that certain advertising aroused a fearful response in the participants (Brennan & Binney, 2010). Fear is seen as an unhealthy reaction to advertising and something to be avoided. Of those respondents who admitted to being fearful, the general response was to be afraid of dying or having a loved one die, and they were fearful of losing someone or something they loved. However, consistent with other studies, it was clear that some highly graphic and emotionally charged advertising resulted in emotional trauma leading to 'escape' from the message rather than engagement with, and intention to act as a result of, the message. Self-protection was most likely to be evoked in situations where there was the most empathy and close relationship with the issue at hand. As a consequence, the people most required to respond with action were those most likely to be attempting escape from the message. When these appeals were coupled with horror or shock (as much pro-social advertising contains), and high levels of repetition, participants were likely to respond with anger towards the issue rather than fear, guilt or shame.

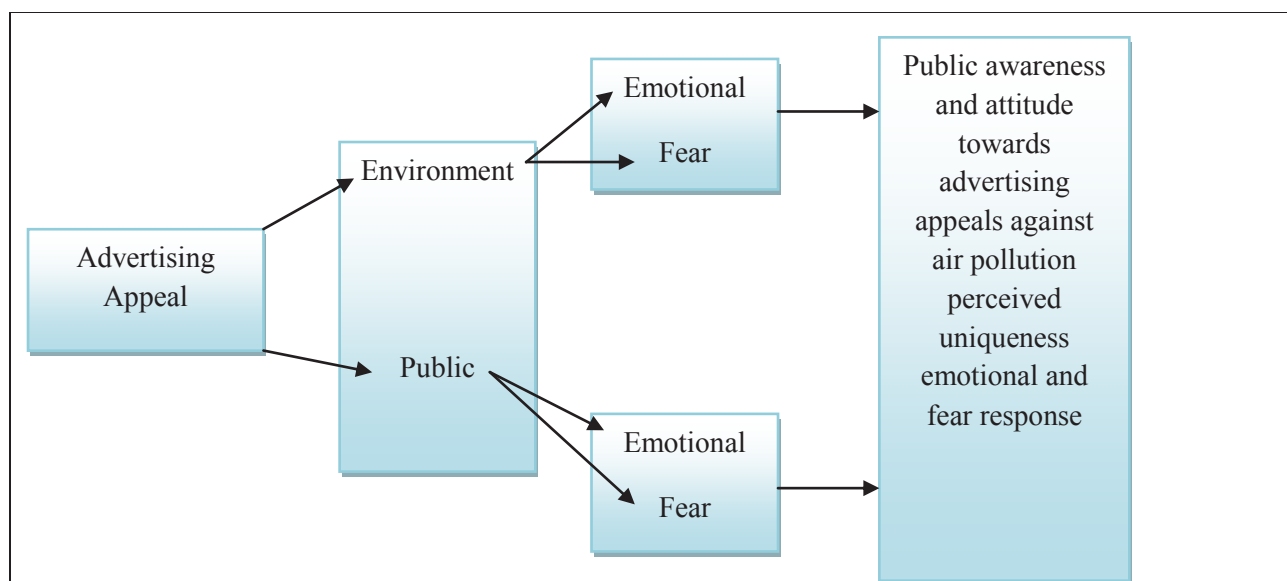


Fig. 1: Effects of Advertising Appeal on the Evaluation of Social Advertising on Air pollution

Methodology

For the present study, two types of data were collected 1) air quality data for Jamshedpur city was collected from JSPCB office and 2) primary data was collected through survey in Tata Steel Plant for knowing the effects of advertising appeals. Participants were staff from Tata Steel and worked on Plant machinery. TSPM, RSPM, SO₂ and NO_x measurements were carried out for one year at four sites in Jamshedpur city. Data is analysed by applying various statistical tools including ANOVA. The results are presented in Tables 1, 2, 3, 4, 5, 6, 7, 8 and 9. Tables 1 and 2, summarise seasonal and annual variations of particulate pollutants. We have applied regression analysis on the available data and the results are shown in the Tables 3 and 4. In Tables 7, 8 and 9 show test results of causal effect of independent variable on dependent variable and control other variables that might contaminate the relationship between advertising with appeals and attraction of people towards advertising shown for awareness against air pollution.

Questionnaire and Survey Method

The questionnaire designed for the study included 20 questions, grouped in three sections: demographic

characteristics, recognition of local environmental issues and recognition of social advertising. Questions were closed answer except for some requesting additional description. The

Questionnaire was filled by the staff of Tata Steel at the time of launch period. The questionnaire was pre-tested with a group of staff of the target population in order to ensure comprehension of the survey.

Result and Discussions

Seasonal average concentrations of total suspended particulate matter (TSPM) are presented in Table 1.

Table 1: Seasonal Variation in the Concentration of TSPM

Seasons	Average concentration in $\mu\text{g}/\text{m}^3$
Spring	198.59
Summer	309.59
Autumn	245.31
Winter	311.04

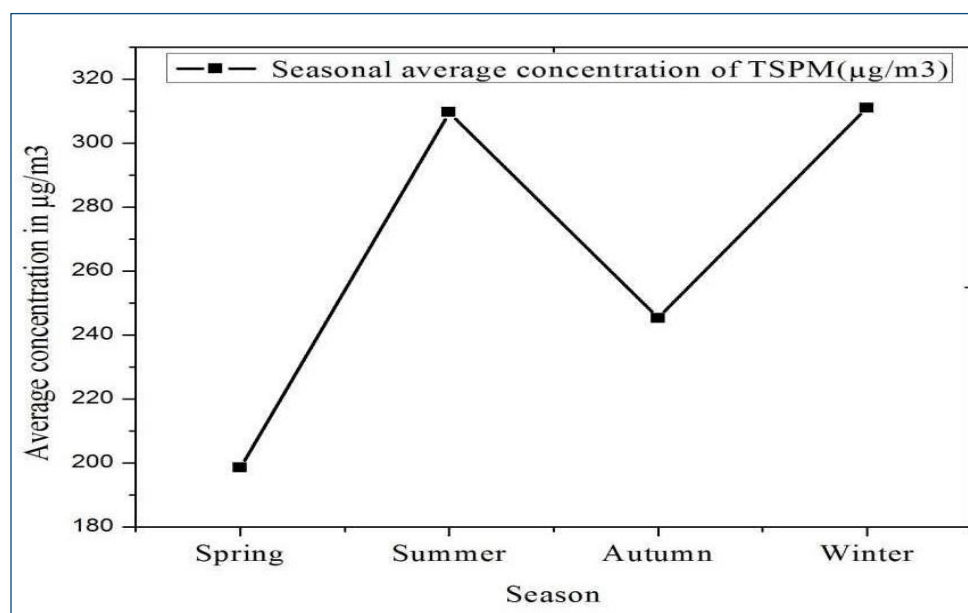


Fig. 2: Seasonal Average Concentration of TSPM

Results of TSPM and RSPM during the study period are presented in Table 2.

Table 2: Annual Average air Quality Status of TSPM, RSPM, SO₂ and NO_x at Jamshedpur (Year 2015-16)

Station	TSPM		RSPM		SO ₂		NO _x	
	Mean	SD	MEAN	SD	MEAN	SD	MEAN	SD
Regional office	287.22	23.52	139.56	27.78	35.91	3.39	46.26	3.7
Bistupur	281.03	56.62	136.37	27.78	35.6	3.25	45.63	3.33
Golmuri	297.18	48.23	144.43	27.78	36.91	3.54	46.68	3.49
Badajamda	216.59	49.01	104.40	23.52	18.05	1.37	25.45	1.98

Source: Jharkhand State Pollution Control Board.

Average values of TSPM, RSPM, SO₂, and NO_x were 270.5, 131.19, 31.61, and 41 $\mu\text{g}/\text{m}^3$ respectively at ambient sites. As can be seen in Tables 3, 4, 5 and 6, in both the regression output, we have R² value very close to 1. Also, significance F is less than 0.05 and p-value is less than 0.05. This shows very strong and positive correlation between SO₂ and TSPM, SO₂ and NO_x and NO_x and TSPM.

Table 3: Regression Analysis Result for SO₂ and TSPM

Regression statistics	
Multiple R	0.90226061
R ²	0.814074208
Adjusted R ²	0.793415786
Standard Error	1.639929308
Observations	11

Table 4: ANOVA Table

	Df	SS	MS	F	Significance f			
Regression	1	105.9783413	105.9783413	39.40640926	0.000144816			
Residual	9	24.20431321	2.689368134					
Total	10	130.1826545						
	Coefficients	Standard error	t-stat	p-value	Lower 95%	Upper 95%	Lower 95%	Upper 95%
Intercept	20.1050541	2.510571	8.008158769	2.19553E-05	14.4257	25.7843	14.42574	25.7843
	0.05509648	0.008776	6.277452449	0.000144816	0.03524	0.0749	0.03524	0.0749

Table 5: Regression Analysis Result for NO_x and TSPM

Regression statistics	
Multiple R	0.920713975
R ²	0.847714223
Adjusted R ²	0.830793581
Standard Error	1.644920434
Observations	11

Table 6: ANOVA Table

	Df	SS	MS	F	Significance f			
Regression	1	135.55714	135.5571491	50.09941277	5.80434E-05			
Residual	9	24.351869	2.705763233					
Total	10	159.90901						

	Coefficients	Standard error	t-stat	p-value	Lower 95%	Upper 95%	Lower 95%	Upper 95%
Intercept	28.4276966	2.5182122	11.28884037	1.29339E-06	22.73110	34.124288	22.731104	34.124288
	0.06231270	0.0088035	7.078093866	5.80434E-05	0.042397	0.082227	0.042397	0.0822278

The SO₂ and NO_x showed highly correlated with the value of coefficient 0.96 approximately for all the four locations whereas SO₂ and TSPM showed high correlation with correlation coefficient 0.90 and 0.86 respectively in two out of four sites. Seasonal profile of the data indicates that there is a buildup of higher levels of TSPM during summer and winter seasons. Period of monsoon extends for about four months (June-September) during which the high wind velocity along with rains bring the particulate levels down considerably. During winter season contribution from industrial sites situated lead to higher TSPM levels. Regression analysis carried out for SO₂ and NO_x with TSPM showed strong correlation for all the four locations. The correlation coefficient is 0.96 between SO₂ and NO_x, 0.90 between SO₂ and TSPM and 0.92 between NO_x and TSPM. This good correlation indicates that NO_x, which is mainly associated with vehicular pollution and responsible for nitrate aerosols, has same origin as that of SO₂. During winter season, TSPM levels were also monitored along with RSPM, SO₂ and NO_x at ambient site shows that the Central Pollution Control Board (CPCB) standard has been exceeded for TSPM and RSPM levels. NO_x levels were within prescribed limits. The regression lines were found to know the relationship between the concentration trends of SO₂ and TSPM and NO_x and TSPM. Following are the results:

For SO₂ and TSPM:

$$Y_1 = 0.05X_1 + 20.105 \quad (1)$$

This result can be verified by the Table 7.

Table 7: Predicted Values of SO₂ Concentration (Keeping TSPM Concentration as X)

Residual output		
Observation	Predicted 48.15	Residuals
1	38.13372731	1.976272688
2	38.45383791	-0.183837914
3	38.75246089	-0.172460885
4	38.89681369	-1.236813687
5	36.73592938	-3.305929382

6	32.63124094	-0.141240939
7	30.56402067	-0.574020665
8	31.09735468	-0.437354681
9	32.30451876	1.065481242
10	35.97890362	2.391096379
11	37.57119216	0.618807843

Now, for NO_x and TSPM, resultant regression line is given as

$$Y_2 = 0.06X_2 + 28.42 \quad (2)$$

This result can be verified by Table 8.

Table 8: Predicted Values of NO_x Concentration (Keeping TSPM Concentration as X)

Residual output		
Observation	Predicted 48.15	Residuals
1	48.8176588	1.502341199
2	49.1796956	-0.179695597
3	49.51743044	-0.637430439
4	49.68068972	-0.690689717
5	47.23678556	-3.366785564
6	42.5944893	1.625510698
7	40.25651674	-0.276516742
8	40.85970369	-0.389703692
9	42.22497498	-0.964974982
10	46.38060905	2.099390955
11	48.18144612	1.278553881

These results show that majority of the TSPM comprise of RSPM fraction indicating critical condition during summer and winter. Also, wide variation in the ratio of RSPM and TSPM indicates that large scale suspended dust is responsible for high TSPM. The major sources of air pollution in the vicinity of sampling station in a radius of about 2.5 kms include vehicles, biomass burning, sewage treatment plant, open defecation, crematoria and bakery. The results of the different advertising appeals and presentation order primacy vs. recency on perceived persuasion are shown in Table 7, analysis of variance

result of social advertising type on perceived persuasion is shown in Table 8, and homogeneity testing of background variables are shown in Table 9.

Results of the Different Advertising Appeals (Emotional vs. Fear)

Based on Table 7, result indicated that fear and emotional appeals had no significant effect on perceived persuasion variable. The mean of perceived persuasion for both fear and emotional treatment group were relatively high that were 5.6453 and 5.6427 (scale 1-5), respectively.

This result demonstrated that both fear and emotional appeals, known public service advertisement, were able to form a positive attitude toward the social issues, even though fear appeal advertisement used an expert as the endorser while emotional advertisement used a typical endorser. There is no significant effect of fear and emotional type in public service advertisement.

Analysis of Variance Result of Social Advertising Type on Perceived Persuasion

Based on Table 8, result showed that recency presentation order in rational appeal persuasion affected perceived persuasion more than primacy presentation order ($p < 0.01$). This result indicated that pronouncing TPO identity on the beginning of advertisement was capable to increase the connectivity of information source and message content. Therefore, information that was delivered by recency type of fear appeals social advertisement developed by perceived persuasion. On the other hand, presentation order in emotional public service had no effect on the perceived persuasion. Therefore, both presentation order type could lead persuasion effect. Advertising with emotional appeal were capable to stimulate audience emotion and attract their attention, since both types of advertising emotional and fear are involved in information processing. Performance capabilities of emotional appeal advertisement are indicated by the relatively high mean value of perceived persuasion among treatment groups, that was 5.6822 in primacy and 5.5275 in recency presentation order. Further analysis was conducted using ANOVA to justify similarity of capabilities of emotional appeal advertisements, Both primacy and recency showed

that there was no difference between those types of advertisements in influencing perceived persuasion. This confirmed that emotional appeals advertisements could lead stronger persuasion than recency rational appeal advertisements, no matter what presentation order is followed.

Homogeneity Testing of Background Variables

Table 3 showed that age potentially worked as moderating variable, but further test

Conducted to confirm age as moderating variable did not support this ($F = 1.361$, $\text{sig.} = 0.174$). This result means there is no significant evidence of age to be moderating variable.

Table 9: Results of Different Advertising Appeals (Emotional vs. Fear) and Presentation Order (Primacy vs. Recency) on Perceived Persuasion

Independent Variable	Perceived Persuasion			
	Average	SD	t-stat	Sig.
Fear (N= 60)	5.6453	0.9158	-0.108	0.915
Emotional (N = 43)	5.6247	0.9758		
Fear advertisement (N=60)				
Primacy (N=30)	5.2907	1.0618	-3.088	0.003
Recency (N= 30)	6.0000	0.6751		
Emotional advertisement (N=43)				
Primacy (N=27)	5.6822	0.866	0.498	0.621
Recency (N=16)	5.5275	1.1614		

Table 10: Results of Different Advertising Appeals (Emotional vs. Fear) and Presentation Order (Primacy vs. Recency) on Perceived Persuasion

Independent Variable	Perceived Persuasion				
	Average	SD Levene's	Test	F-stat	Sig.
Recency-Fear (N= 30)	6.000	0.6751 0.6751	0.065	1.804	0.172
Primacy-Emotional (N = 27)	5.6822	0.8666			
Recency Emo- tion (N=16)	5.5275	1.1614			

Table 11: Homogeneity Testing of Background Variables

Variable	Pearson Chi-Square	Asymp Sig. (2-sided)	Inference
Age	38.990	0.001	Potentially as moderating variable
Gender	1.277	0.735	Homogeneous
Involved in decision making	0.857	0.836	Homogeneous
Involved in creating air pollution	5.871	0.118	Homogeneous

However, mixed results have been obtained from a number of studies of appeal advertising effect on consumer response (Wang & Lin, 2011). Fear appeal is generally used in public service advertisements with independent agency, inability of public service advertisements is mostly delivered in fear appeal to meet low attention of public. Expert endorsers that are heavily used for fear appeal in public service advertisements do not attract audience better than typical endorser (Syahlani 2007). Emotionally charge advertising appeal may exhibit a tendency to attention more people interest.

Conclusions

It can be generalised that that emotional and fear type of advertisings had no effect on persuasion towards the social issues. However, presentation order of TPO identity at the beginning of advertising affected perceived persuasion in fear type of social advertising and resulted perceived persuasion as better than emotional appeal social advertising. Citizens' perception on local air pollution, its causes and consequences were explored in different area of Jamshedpur. However, results indicated that TSPM levels during the study period exceeded standard of $65\mu\text{g}/\text{m}^3$ (24 hourly) during winter season. As most of the city area has very high density of traffic for major parts of the day and night, the ambient sites are also highly impacted by vehicular emissions, this might be the reason why NO_x and SO_2 correlate strongly even at the ambient site. Strong correlation (0.99) of TSPM and RSPM indicates that major parts of the air are fine particles being emitted by industrial sites and fossil fuel combustion. This study gives a good idea of relationship

between TSPM and RSPM. As per literature, RSPM levels reported in Indian are already higher than the levels reported elsewhere, indicating urgency for initiating action for their monitoring. RSPM in air is responsible for respiratory problems and has several environmental impacts, therefore there is an urgent need to promote appeals advertising against air pollution perceiving uniqueness in emotional and fear response. Emotional advertising attracts public attention more in respect of fear advertising, so such type of social issue advertising needs to focus with emotional appeal in advertising.

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