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Relationship between Spokesperson's Gender and Advertising Color Temperature in a Framework of Advertising Effectiveness

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Abstract

Advertising spokesperson is one of the undeniably important factors affecting advertising effectiveness. However, advertising spokesperson has to have some particular features to be effective. Various previous researches resulted in determination of different features of advertising spokesperson and their effectiveness; i.e. type of a spokesperson (celebrity vs. a regular person); gender and race of a spokesperson; etc. were found to have an impact on the spokesperson's effectiveness. However, the research on the impact of shooting color temperature on its effectiveness is still scarce. Moreover, an assumption can be made that color temperature might cause a different effect depending on advertising spokesperson's gender. The aim of this paper is to fill this gap by analyzing the relationship between spokesperson's gender and advertising color temperature in a framework of advertising effectiveness. Neuromarketing research methods were applied to meet the aim and to determine the guidelines for its usage in advertising.

Keywords: advertising color; advertising effectiveness; color temperature; spokesperson.

JEL classification: M31; M37.

1. INTRODUCTION

In a context of intensive competition, many organizations are trying to conquer the market clutter using various tools of marketing communication. Advertising is becoming an inevitable part of human life. According to Bendixen (1993), advertising represents important means by which organizations communicates with their current and potential customers. Advertising allows companies to reach a large group of consumers with message about their brands or products faster than other forms of marketing communication, truly connects with consumer by giving an opportunity of developing an ongoing brand relationship (Sharma, 2012). Advertising can play a key role in value creation and capturing (Tackx *et al.*, 2017). However, being used massively, advertising loses its effectiveness and

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ability of solving many marketing and sales problems. Therefore, marketing scholars and business representatives are searching for ways of making advertisements more attractive, attention grabbing, and encouraging customers to make an action.

Many researches were provided to determine the factors having effect on advertising effectiveness. As a result, undeniably important factor is determined to be advertising spokesperson. In order to evoke consumers' involvement in advertising, enterprises seek for the right spokesperson representing their brand image as well as their products or services (Chih-Chung *et al.*, 2012). Moreover, advertising spokesperson has to have some particular features to be effective. Various authors have provided researches concerning the features of advertising spokesperson and their impact on spokesperson effectiveness. Such characteristics of spokesperson as type (celebrity vs. a regular person), gender, race, age, etc. were assessed to provide a perfect picture. However, the research on the impact of shooting color temperature as a factor determining spokesperson effectiveness is still scarce. This paper contributes to previous researches by filling this gap. Therefore, the scientific problem solved in the article is: what is the impact of shooting color temperature on the effectiveness of advertising in relation to spokesperson's gender? The aim of the research is to substantiate the impact of color temperature and its relation to spokesperson's gender in a framework of advertising effectiveness. In order to solve a problem and to contribute to a theory, neuromarketing research methods were applied. Implicit association test and eye tracking procedure were provided to substantiate an impact of color temperature on spokesperson effectiveness; based on research results, general guidelines concerning the usage of color temperature in advertising to make it more effective were given.

Reaching the aim, article was structured in to three main parts: theoretical substantiation (Section 2), methodological background (Section 3), and research results and discussion (Section 4). The summing-up conclusions and the guidelines for the different usage of color temperature in advertising considering spokesperson's gender are given in Section 5.

2. THEORETICAL SUBSTANTIATION

A spokesperson is anyone who communicates the advertising message of a personal opinion, belief, finding, experience, etc. to the target market and it is believed by the public (Chih-Chung *et al.*, 2012). Relying on spokesperson is a common strategy in advertising; therefore, the right choice of advertising spokesperson is critical for advertising to be successful (Lin, 2011). The question of 'what attributes are desirable for an endorser to possess?' (Priester and Petty, 2003) is quite relevant in a situation of tough competitions for consumer hearts.

After generalizing the scientific findings, Lin (2011) substantiates the usage of four types of spokespersons in advertising: celebrities, top managers, experts, and typical consumers. Despite the possibility of usage of each of them, numerous researches have proved empirically the effectiveness and the positive influence of celebrity endorsements in advertising (Gupta *et al.*, 2015). Therefore, the main body of spokesperson-related empirical research is provided concerning celebrities. Banyte *et al.* (2011) emphasize that celebrities are often used by advertisers because of being famous and representing their well-known attributes like beauty, talent, athleticism, power, etc. Spokespersons' attributes often have to correspond the desired features of the brands they represent; the assumption is made that consumer-brand relationship may be encouraged by the celebrity endorsing it. Previous research (see Grigaliūnaite and Pileliene (2015), revealed positive effect of celebrity

spokesperson on consumer purchase intentions (whereas a non-celebrity spokesperson hasn't caused same effect).

However, choosing an appropriate celebrity is not enough. According to [Li and Yu \(2013\)](#), [Chih-Chung et al. \(2012\)](#), there are three main characteristics which have to be met by a spokesperson: attractiveness, trustworthiness, and expertise. [Sertoglu et al. \(2014\)](#) substantiated the effect of celebrities having latter characteristics on consumer purchase intentions. However, many factors may affect consumer perception and valuation of even the same spokesperson; therefore, presented in different circumstances the same person could cause different reaction.

One of the elements presumably having an effect on consumers' perception of the spokesperson is advertising colors. A wide body of scientific research provides evidence of different color impact on consumer perception and behavior ([Lee and Barnes, 1989](#); [Smolders and De Kort, 2017](#)). As colors can be classified into warm and cool, [Patil \(2012\)](#) emphasizes that warm colors encourage activity, and cool colors are passive. Therefore, it can be stated that colors have a particular temperature. The color temperature is defined as "the correlated temperature of estimated illumination of color images, and it relates to the energy of illumination in the image: if the color temperature is low, an image looks reddish and the image looks bluish if the color temperature is high" ([Nam et al., 2005](#)); thus, modifying the color temperature of an image simply changes how warm or cool (blue or red) an image looks. Considering latter insights, we hypothesize that shooting color temperature has an impact on advertising spokesperson effectiveness.

Considering the impact of color temperature, a very important aspect is advertising spokesperson's gender. Advertising frequently uses gender roles to promote products ([Eisend et al., 2014](#)). [Babolhavaeji et al. \(2015\)](#) emphasize that gender is the most important demographic feature of people having impact on selecting the color. Therefore, we hypothesize that advertising color temperature might have a different effect depending on the gender of spokesperson.

3. RESEARCH METHODOLOGY

Color temperature is often measured in Kelvins (K); according to color temperature, lightning is classified into the three following groups: Warm (about 2900 K), White (about 4200 K) and Cool (about 6000 K) ([Kapogiannatou et al., 2016](#)). Hence, for the research, ten sample advertisements of which 5 were warm color temperature (3000 K) and 5 were cool color temperature (6000 K) were created with the female celebrity spokesperson and ten sample advertisements of which 5 were warm color temperature (3000 K) and 5 were cool color temperature (6000 K) were created with the male celebrity spokesperson (see [Figure no. 1](#)). In all of the advertisements the same well known female celebrity spokesperson and the same well known male celebrity spokesperson as well as the product of mineral water (representing the category of fast moving consumer goods) were presented. The only differences were color temperature and brand name on the product. For advertisements with warm color temperature one brand was created (in order to eliminate the possible influence of existing attitude toward the well-known brands) and for advertisements with cool color temperature – the other brand was created. All of the created advertisements were used for the eye tracking experiment and implicit association test.

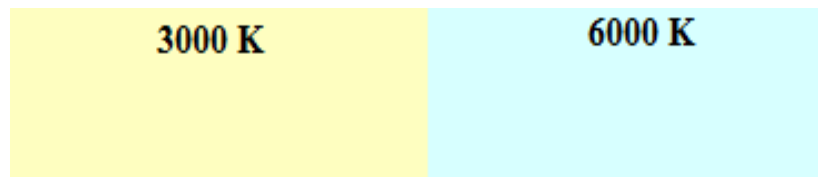


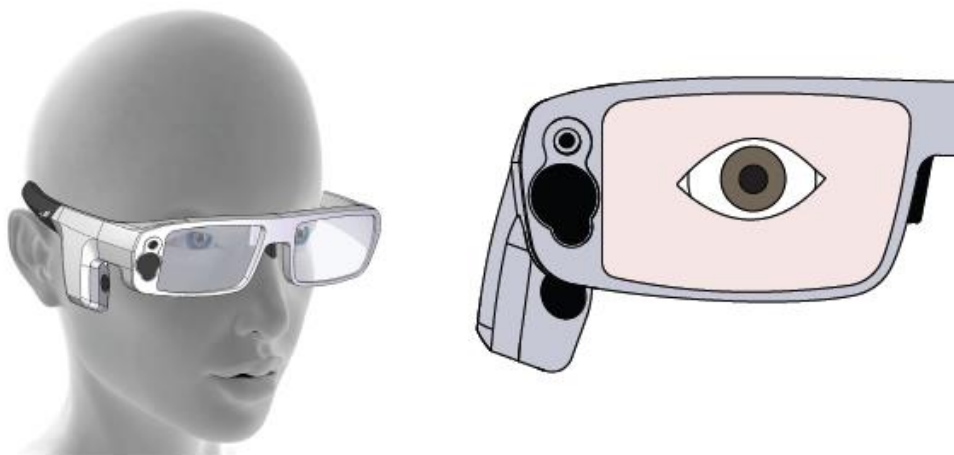
Figure no. 1 – Color temperatures used for the research

Eye tracking experiment

According to [Pieters *et al.* \(2010\)](#), effective advertising primarily needs to capture consumers' attention. Attention is the first element of AIDA model proposed by E. St. Elmo Lewis in 1898 ([Li and Yu, 2013](#)) – according to [Hassan *et al.* \(2015\)](#) the AIDA model has been widely adopted in formulating marketing strategies; without capturing consumers' attention no advertisement will be effective. As the appropriate methodology for analyzing consumers' attention is eye tracking experiment, latter procedure is applied for this research.

A number of 10 sample advertisements were shown for the participants at one time in a randomized order on the computer screen for 10 times, each time the order of the advertisements was randomized again. In the first part of the experiment, 10 advertisements (5 warm color temperature and 5 cool color temperature) were shown with female celebrity spokesperson, and in the second part of the experiment, 10 advertisements (5 warm color temperature and 5 cool color temperature) were shown with male celebrity spokesperson. Between the screens with 10 advertisements, black screen appeared for 2 seconds to disannul the effect of the trajectory of gaze for the last seen screen.

For the experiment, Tobii Eye-Tracking Glasses were applied. Latter glasses are mounted on the participant's head and record data from the right eye of the participant wearing the glasses (see [Figure no. 2](#)). The accuracy of the used eye-tracking glasses is 0.5°. For the most reliable results, each of the participants had to perform new glasses calibration procedure.



Source: [Tobii Pro \(2012\)](#)

Figure no. 2 – Setting up of Tobii Eye-Tracking Glasses

Participants were volunteers and have signed the informed person's consent. Convenience sampling method was applied. The experiment was held in Lithuania, Vytautas Magnus University, April – September, 2017. Totally 10 participants' of the same nationality (4 females, all participants were 18-30 years) data were appropriate for the analysis.

The results of the eye-tracing experiment were analyzed with Tobii Studio v.3.2.3 software. Total fixation duration and fixation count were calculated regarding warm and cool color temperature advertisements'. For the statistical analysis of the results IBM SPSS Statistics v.20 software package was applied.

Implicit association test

Implicit-Association Test provides a measure of strengths of automatic associations (strength of association is understood as the potential for one concept to activate another) (Greenwald *et al.*, 2003).

Thus, by applying this test we measure the strength of implicit associations between impressions in people's minds based on latency measures in a simple sorting task. The strength of an association is measured by the standardized mean difference score (d-score) of the:

- 'hypothesis-inconsistent' (target A with attribute B and target B with attribute A) pairings;
- 'hypothesis-consistent' (target A with attribute A and target B with attribute B) pairings.

In this research Inquisit's Picture IAT by Millisecond Software was applied. Target and attribute stimuli were:

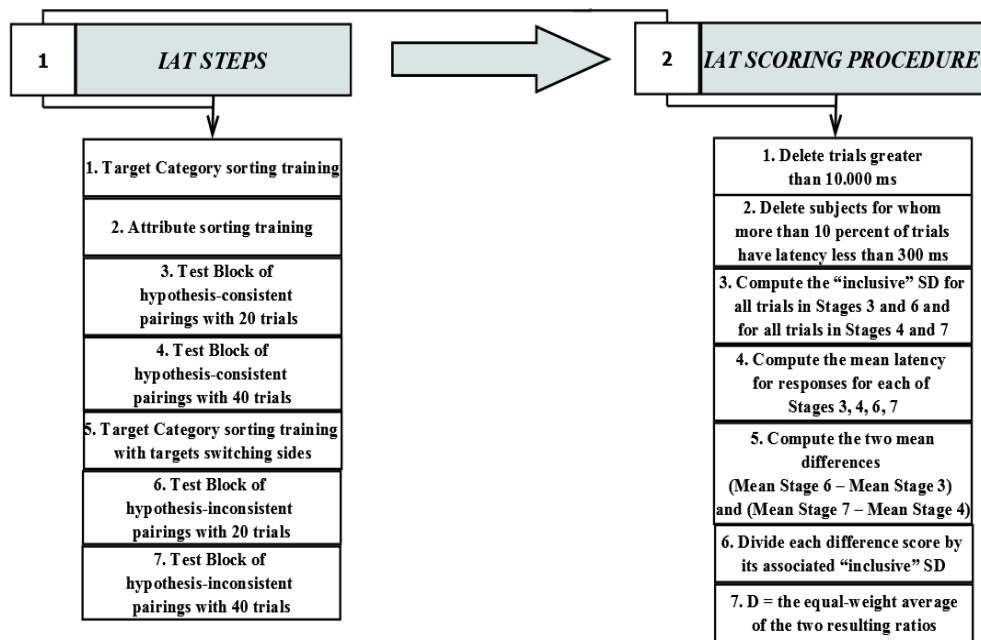
- target stimulus A – warm color temperature advertisements,
- target stimulus B – cool color temperature advertisements,
- attribute A – like (quality, value, advantage, beauty, good),
- attribute B – dislike (horror, nonsense, boredom, worthless, bad).

All of the advertisements used for IAT were the same as used in eye-tracing experiment, except that participants of IAT experiment were divided in two groups: the one that saw warm and cool color temperature advertisements with female celebrity spokesperson and the one that saw warm and cool color temperature advertisements with male celebrity spokesperson.

Inquisit software calculates d-scores using the improved scoring algorithm as described in Greenwald *et al.*, 2003 (see Figure no. 3).

Hence, positive d-score suggest more positive implicit attitude toward warm color temperature advertisements, while negative d-score suggest more positive implicit attitude toward cool color temperature advertisements.

The experiment was held in Lithuania, Vytautas Magnus University, April – September, 2017. Participants in both groups heard the instruction about the IAT procedure while sitting in front of the computer screen. Their task was to classify words and pictures (advertisements of the experiment) by pressing one of two keys, namely 'E' and 'I' (see Figure no. 4).



Source: *Greenwald et al. (2003)*.

Figure no. 3 – The sequence of the steps of IAT and the summary of IAT scoring procedure

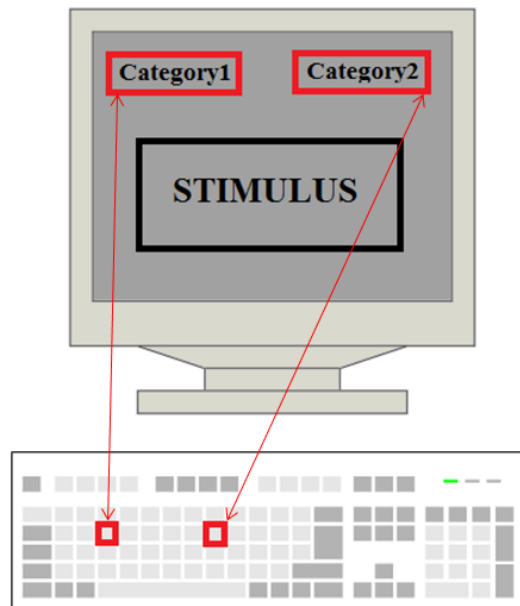


Figure no. 4 – Setting up of IAT experiment

A number of 20 participants of the same nationality participated in the each of the group. Participants in the different groups were not the same, but the dissemination of gender and age in both groups was the same. Each group contained participants at the age group of 18-29 years, 7 females. Excel 2010 and IBM SPSS Statistics v.20 software packages were applied for the statistical analysis of the results obtained from the Inquisit software.

After the implicit association test in both groups (the one that saw warm and cool color temperature advertisements with female celebrity spokesperson and the one that saw warm and cool color temperature advertisements with male celebrity spokesperson), participants outlined which brand of the mineral water they prefer to buy (the one from the warm color temperature advertisements or the one from cool color temperature advertisements).

4. RESEARCH RESULTS AND DISCUSSION

The analysis of the research results revealed that advertisements with warm color temperature (in this case 3000 K) attract more visual attention than advertisements with cool color temperature (in this case 6000 K) (see [Table no. 1](#)). As it can be seen, mean viewing time to the advertisements with warm color temperature is 9.36 s (S.E. 0.75), while mean viewing time to the advertisements with cool color temperature is 5.43 s (S.E. 0.74). Fixation count (in times) substantiates the results of the mean viewing time. Mean fixation count to the advertisements with warm color temperature is 284.20 (S.E. 22.75), while mean fixation count to the advertisements with cool color temperature is 164.80 (S.E. 22.92). Hence, warm color temperature advertisements (3000 K) are more attention-grabbing than cool color temperature advertisement (6000 K), even when the advertised product is mineral water, usually associated with cool colors.

Table no. 1 – Mean viewing time and fixation count for the advertisements with different color temperature

Statistics	3000 K ad		6000 K ad	
	Mean viewing time (s)	Fixation count (times)	Mean viewing time (s)	Fixation count (times)
Mean	9.36	284.20	5.43	164.80
S.E.	0.75	22.75	0.74	22.92
95% C.I. Lower bound	7.65	232.73	3.73	112.94
95% C.I. Upper bound	11.05	335.67	7.12	216.66
Median	9.97	303.00	5.10	154.00
S.D.	2.37	71.95	2.36	72.49
Min	4.99	152.00	2.77	83.00
Max	11.33	342.00	9.38	286.00

As the data of eye tracking experiment are non-normally distributed, Wilcoxon Signed Ranks Test (two dependent samples) is applied in order to evaluate whether there are significant differences in visual attention to the advertisements with different color temperature (see [Table no. 2](#)).

As it can be seen, viewing time to the warm color temperature advertisements (3000 K) is statistically significantly higher than viewing time to the cool color temperature advertisements (6000 K). Thus, it could be stated that consumers' attention is the necessary but not sufficient condition for the advertisements to be effective. In case of the selection of advertising color temperature, based on the research results, warm color temperature

increases the possibility for capturing consumers' attention, hence increases the possibility for advertising to be effective.

Table no. 2 – Wilcoxon Signed Ranks Test

Statistics	6000 K ad viewing time – 3000 K ad viewing time
Z	-2.096
p-value	0.036

The results of the implicit association test when the gender of the advertising spokesperson is female, revealing the strengths of automatic associations, are provided in [Figure no. 5](#) below. As it can be seen, the d-score for all of the 20 participants is positive. Positive d-score means the stronger association between the 'hypothesis-consistent' pairings (target A with attribute A and target B with attribute B). As in this research target A is warm color temperature advertisements (3000 K), attribute A is positive words with the title 'like', target B is cool color temperature advertisements (6000 K), attribute B is negative words with the title 'dislike', hence it could be stated that warm color temperature advertisements (3000 K) are stronger associated with positive words and feelings than cool color temperature advertisements (6000 K) are. In general, participants have more positive implicit attitude toward warm color temperature advertisements (3000 K) than toward cool color temperature advertisements (6000 K).

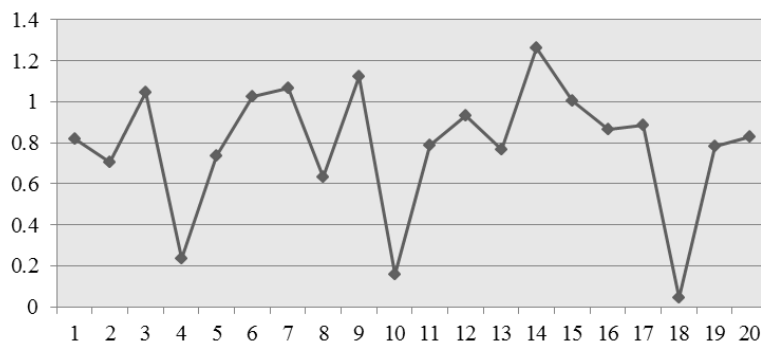


Figure no. 5 – Results of IAT (gender of advertising spokesperson: female)

As all of the advertisements contain the same female celebrity spokesperson and the same product, and the only difference in the advertisements is the color temperature, based on the results it could be stated that color temperature influences not only consumers' visual attention, but implicit preferences as well. Hence, the assumption could be made that color temperature complements the effectiveness of female advertising spokesperson. Contrarily, wrong color temperature can decrease the effectiveness of the female advertising spokesperson and in such a way decrease advertising effectiveness. These results suggest that selecting one effective advertising element (e.g. female celebrity spokesperson) may not be sufficient to increase advertising effectiveness if all of the remaining elements are not properly managed.

The results of the implicit association test when the gender of the advertising spokesperson is male are provided in [Figure no. 6](#). As it can be seen, the d-score for the 17 participants out of 20 is positive. Hence, 85 percent of participants prefer warm color temperature advertisements (3000 K) to the cool color temperature advertisements (6000 K).

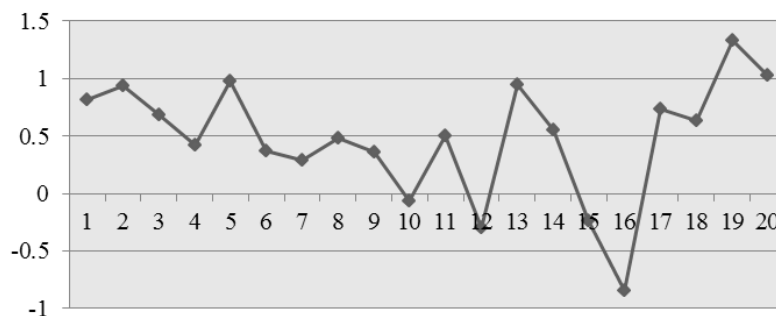


Figure no. 6 – Results of IAT (gender of advertising spokesperson: male)

In general, participants have more positive implicit attitude toward warm color temperature advertisements (3000 K) than toward cool color temperature advertisements (6000 K) when advertising spokesperson is male. Nevertheless, unlike in the case of female celebrity spokesperson, where all of participants prefer warm color temperature advertisements, in the case of male celebrity spokesperson, 15 percent of participants prefer cool color temperature advertisements. This leads to the assumption, that cool color temperature is more effective when advertising spokesperson is male than female. Despite this, higher percent of participants prefer warm color temperature advertisements even when advertising spokesperson is male, thus it could be stated that warm color temperature advertisements, despite the gender of the spokesperson, increase the probability to achieve more positive implicit attitude toward the advertising campaign.

Finally, when analyzing purchase intentions of the products presented in the advertisements of different color temperature when the advertising spokesperson is female, it could be stated that in general the product presented in the warm color temperature advertisement (3000 K) with female celebrity spokesperson is definitely more likely to be bought than product presented in the cool color temperature advertisement (6000 K) with female celebrity spokesperson (see [Figure no. 7](#)).

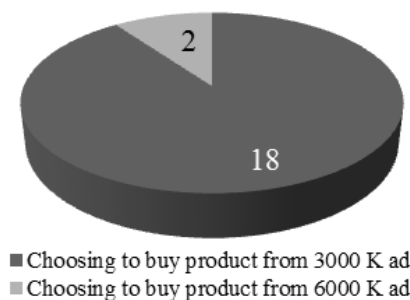


Figure no. 7 – Purchase intentions of the products presented in the advertisements with different color temperature (gender of advertising spokesperson: female)

As it can be seen from [Figure no. 7](#), 18 out of 20 participants (90 percent) chose to buy product (and brand) presented in the warm color temperature advertisements (3000 K). Consequently, visual attention, implicit attitude and purchase intentions are all higher for the advertisement/product with warm color temperature containing female celebrity

spokesperson. On the other hand, when male celebrity spokesperson is presented in the advertisements, the difference in purchase intentions of the product presented in the advertisements of different color temperature is minimal (see [Figure no. 8](#)).

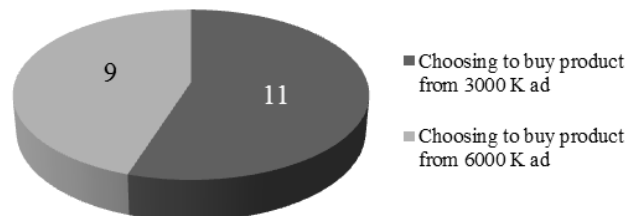


Figure no. 8 – Purchase intentions of the products presented in the advertisements with different color temperature (gender of advertising spokesperson: male)

Thus, 55 percent and 45 percent of participants choose to buy product from warm color temperature advertisements (3000 K) and cool color temperature advertisements (6000 K) respectively when the advertising spokesperson is male. Consequently, the choice of advertising color temperature depends on the choice of advertising spokesperson's gender. The analysis of the research results reveals that warm color temperature advertisements are more effective; nevertheless, if advertising spokesperson is male and the aim of marketing communication is to increase sales, in such a case cool color temperature can be applied for the advertisements. Based on the results, recommendations for the selection of advertising color temperature are provided in [Figure no. 9](#) below.

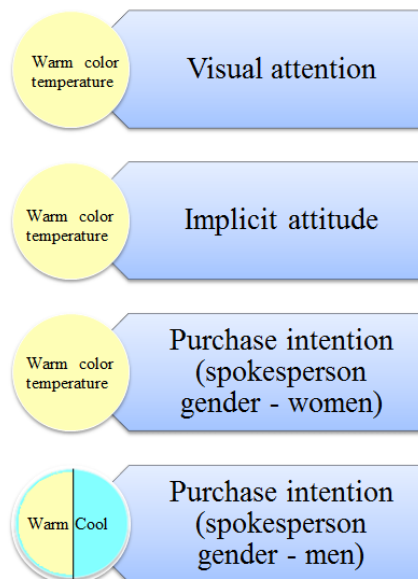


Figure no. 9 – Recommendations for the selection of advertising color temperature

As it can be seen, if advertisements do not contain many elements that can attract consumer visual attention and color temperature is expected to be that element for the

attraction of visual attention to the advertisements, then, despite of the gender of advertising spokesperson, it is recommended to use warm color temperature. The same recommendation applies to the advertisements if the aim of marketing communication is to form / change attitude: despite of the gender of advertising spokesperson, it is recommended to use warm color temperature. Finally, if the aim of marketing communication is to increase consumer purchase intentions of the advertised brand / product, then advertising spokespersons' gender can be taken into consideration. Generally, based on the research results, warm advertising color temperature is advisable; nevertheless, if the gender of advertising spokesperson is male and the other elements of advertisement are more coherent with cool color temperature, then it is recommended to use cool color temperature as it is expected not to lower the probability of higher purchase intentions.

5. CONCLUSIONS

Being used massively, advertising loses its effectiveness and ability of solving many marketing and sales problems. Therefore, marketing scholars and business representatives are searching for ways of making advertisements more attractive, attention grabbing, and encouraging customers to make an action. Analysis and synthesis of scientific literature leads to the conclusion that without capturing consumers' attention no advertisement will be effective. After capturing consumers' attention advertisements receive the opportunity to become effective.

The analysis and synthesis of scientific literature allows concluding that advertising spokesperson is one of the undeniably important factors for advertising effectiveness. Nevertheless, properly selected spokesperson might not be enough to reach advertising effectiveness if other advertising elements are not managed properly and based on the research results one of the factors that influence consumer behavior is advertising color temperature.

The analysis of the research results leads to the conclusion that advertising color temperature influences consumers' visual attention, implicit preferences, and purchase intentions. In the case of this research, warm color temperature (3000 K) attracts more visual attention to the advertisement, receives more positive implicit attitude toward the advertisement and elicits higher purchase intentions of the advertised product when compared to the cool color temperature advertisement (6000 K) if advertising spokespersons' gender is female. Hence, color temperature complements the effectiveness of advertising spokesperson. Contrarily, wrong color temperature can decrease the effectiveness of the advertising spokesperson and in such a way decrease advertising effectiveness.

Moreover, if advertising spokespersons' gender is male, then warm color temperature (3000 K) attracts more visual attention to the advertisement and receives more positive implicit attitude toward the advertisement when compared to the cool color temperature advertisement (6000 K) as well as in the case of female advertising spokesperson. Nevertheless, the analysis of the research results reveals that if advertising spokespersons' gender is male, then there is minimal difference in purchase intentions of the advertised product / brand regarding warm and cool advertisements' color temperatures. Hence, warm advertising color temperature is advisable despite of the gender of advertising spokesperson; nevertheless, if the aim of marketing communication is to increase consumer purchase intentions and the gender of the selected advertising spokesperson is male, furthermore, other elements of advertisement are more coherent with cool color temperature, then it is recommended to use cool color temperature as it is expected not to lower the probability of higher purchase intentions.

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