

Analysis of Dependence of the Emotional Perception of Colors on the Type of Personality of the Russian Consumers of Advertising Information

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Abstract: The Foreign and National researchers noted long time ago, the color advertising attracts more attention than its faceless black-and-white analogues. The researchers striving for reducing the costs of a potential advertiser and improving efficiency of any advertising product designed by creative agencies was the main purpose of performance of the marketing research. This study presents the results of the research and analysis of dependence of psychological perception of colors on the type of personality and the degree of emotional impact on a potential consumer. It is assumed that at unconscious and slightly conscious level each basic color causes a certain emotional reaction. During the research performed, there were distinguished five types of personality in respect of which the experiment was conducted aimed at identification of psychological reactions arising in the specified respondents depending on perception by them of one or another color in diverse advertising materials. In the study, these associations have been analyzed empirically. The results obtained by questioning were summarized in a single table of attitudes, processed with the use of the statistics package IBM SPSS Statistics, as a result of which the contingency tables have been made, the graphical analysis has been performed and the 'classification trees' has been designed the most important tool of the researcher's method of identification of the consumer attitudes to the color range of the advertising communications. The tool allowing both a costumer and advertising contractor to get the answer to one of the most important questions in advance 'Which attitude one or another color rises in consumers distributed according to the types of personality?' As the result of analysis performed the researchers have proposed interrelations for each particular personal sentiment and color. The practical guidelines on the application of obtained results in the advertising activity of the Russian market participants are provided.

Key words: Economy, color, advertising, emotion, type of personality, statistics package IBM SPSS Statistics, 'Decision Tree'

INTRODUCTION

In the conditions of a modern market when the difference between the specifications of products and services becomes less obvious in order to maintain the leading positions the companies shall pay much more attention to the issues of coordination of relationships with different consumer groups.

From now, on the main objective is not as much the broad coverage of the consumer audience as continuous monitoring of the nature of relationships with each consumer or target segment that allows recognizing, acquiring and using knowledge of them, performing search for the methods of effective coordination and improving the level of the customer satisfaction.

Under the harsh conditions of competition, the consumers have right to count upon some benefits for

them, namely, completer account for their needs and implementation of the reasonable service standards even if they are not the absolutely best for a company.

The knowledge of its consumer allows any company to form a clearer idea of what a consumer needs, what is the most relevant and priority to him. Mastering the quality information of such kind the companies having evaluated the wishes and preferences of their customers, analyzed their expectations and possible concerns may give the answer to the most topical market question: what the consumers of products and services rely upon during the process of making a purchase decision.

Analysis of the customers' needs is an important process for the effective operation of a company since a customer is always in the focus of attention of any marketing-oriented enterprise.

Thus, today it is almost impossible to affect the customers' feelings and emotional drivers of their behavior at the market without analysis of the target audience. The process of management of the knowledge of customers becomes for a company regardless of the its size and scope of activity the priority trend ensuring its actual competitiveness. The key aspect is from now on the ability to organize the information and use all the data available not only to particular employees but to separate groups of them as well (Romanov and Tultayev, 2014).

This gains special significance also at the stage of communicating the information about the company or product to the target audience which makes the modern technologies of the advertising activity topical.

The role and power of advertising is known from the world experience. It contains information in the succinct form that is emotionally colored brings the most important facts and information about the product and services home to the potential customers.

Advertising messages differ from the informational messages by the reason that they perform the function of a suggestive and persuasive effect on a person in order to impel him to some actions, to purchase some other products or services. This is why, the ability of advertising to affect a human and create demand for products allows using it for development of reasonable needs, aesthetic tastes and population requests.

Advertising constitutes a segment of the market marketing the task of which consists in ensuring the interrupted sales of the manufactured products manufactured. It shall accurately inform a costumer of the quality, properties, range of products, instructions for use (operation) (http://www.consultant.ru/document/cons_doc_LAW_67789/) (On the guarantees of the right of citizens to health protection by dissemination of advertising: RF Presidential Decree d/d 17.02.1995 No. 161. PDU "Consultant Plus 3000" (Digital resource).

The informative function of advertising creates prerequisites for more efficient output of products and better satisfaction of the costumers needs. It is inadmissible to include into advertising messages the overstated information about the quality of products or moreover, misrepresent adulterated products as genuine ones to exercise effect on the sinister affections of a human and use other negative motivations (Federal Law d/d 13.03.2006 No. 38-FZ 'Concerning Advertising' (as amended). *Rossiyaskaya Gazeta* no. 51. 15.03.2006; *Parlamentskaya Gazeta* no. 37. 17.03.2006; *Parlamentskaya Gazeta* no. 41. 23.03.2006; *Ofiicial Gazette RF* no. 12. 20.03.2006. Art. 1232).

The advertising design shall meet the modern aesthetic requirements and the cost of organization thereof shall fall within a reasonable range.

On the one hand, advertising communicates to the costumers the information required for purchase and use of products, on the other hand, combining its information content with the persuasiveness and suggestion it exercise emotionally-mental effect on a human (Robyn, 2007). Thus, it may be concluded that the advertising itself is at the same time being a component of business, specific communication and art.

Moreover, the advertisers use for the purposes of their occupation nearly all known kinds of creativity. For the benefit of the marketing policy of an advertiser literature, cinema, painting, photography, statuary art, music, ballet work (George and Michael, 2011). There is no such kind of art that would be unacceptable in advertising. Besides, all modern technologies from printing to innovative ones may also efficiently work for advertising.

The analysis of the market for products and services shows that advertising overbearing color effects affect the costumer audience less and less being transformed into a huge poorly perceived color chaos.

The main purpose of a marketing message: stimulus-response proposed in the studies by I.P. Pavlov is not always achievable since at the present time the color triggers are most frequently used in incompetent way.

Color is an emotional symbol appealing to the human feelings by means of associative perception (Shklyar and Akayemova, 2013). By creating advertising and orienting towards a certain market segment marketing experts forget (or do not know) the use of which color will be the most efficient by transmission of information as well as particular emotion at the unconscious and conscious level (Donald and Kirsten, 2014). Emotion (author's interpretation) is the inner state of satisfaction or dissatisfaction of an individual spurring it into action or inaction.

The emotional state depends on a variety of factors, one of which possibly not the main one is color. A concept that has correctly expressed in color will achieve its objective faster and stir a customer into the actions communicated by the marketing experts.

A great contribution to the color action research was made by: K. Auer, B.M. Velichkovsky, N.I. Volkov, I.A. Goldman, I.A. Gubanov, E.T. Dorofeyeva, P.V. Zinchenko, R.M. Evens, V.V. Kalyuzhny, V.O. Kandinsky, M. Cooper, A.R. Luriya, F.T. Martynov, R.I. Mokshantsev, L.G. Puchko, L. Sivek, V.I. Timofeyev, O.A. Feofoanov, Y.I. Filimonenko, G. Frieling, L.N. Khromov, V.I. Shuvanov, P.V. Yanshin, etc.

At the same time, it should be noted that in Russia, there are still no research works and published results of the marketing research associating colors, emotions and types of personality which is additional motivation for researchers to make their fair share of contribution to the investigation of this issue.

MATERIALS AND METHODS

Part 1: The objective of the study performed was analysis of effect of the basic colors on the human emotions. The authors suggested that the basic colors trigger emotions and each color is associated primarily with a single particular emotion.

The study involved 195 persons, male and female, at the age from 17-25 years without deviations in physical and mental development. All colors were alternately translated on-screen in the RGB-format.

For the purposes of fulfillment of the task set the researchers used of the following methods and techniques:

- Psycho-geometric test by S. Dellinger (Rogov, 1999)
- Method of the clinical diagnostics of personality Makhover (1996) (Projective image of a human)
- Mathematical statistics methods (contingency tables) (Nasledov, 2013; Urintsov and Dik, 2009)
- The questionnaire designed by the authors by detection of correlation between a color and emotions

Total 5 types of personality were taken as the basis with standard behavior patterns which may be helpful by segmenting of customers.

Type of personality performer (figure, square): Top-ranked specialists rather conservative, self-consistent and predictable in their actions. Such people systematize all the information available. Maintain

order in organizational processes (Adizes, 2004). Pedants in everything, extremely attentive to details. However, it is rather difficult for them to find common language with colleagues.

The maximum effect for this category is exercised by the colors (Table 1) white, red and black, yellow, green. The minimum effect: blue, orange, grey, violet.

Type of personality leader (figure, triangle): Leaders by nature. Such people become good managers. They are not afraid to take non-standard decisions. These people always know what they want and have it their own way. Such people acknowledge only one point of view their own one. They prefer status to all the other things. They ensure efficiency and performance (Adizes, 2004).

The maximum effect for this category is exercised by the colors (Table 2) yellow, brown, red, violet and black. The minimum effect: orange, blue, grey.

Type of personality doubter (figure, rectangle): These individuals are in the state of transition dissatisfaction with the actual position of affairs. They are characterized by the state of confusion and unconsciousness. They are inconsistent in their deeds and actions. The maximum effect for this category is exercised by the colors (Table 3) green, red, black and violet. The minimum effect: brown, grey, blue.

Type of personality well-wisher (figure, circle): The friendliest persons among all characters. Create such an atmosphere in a team that will make all people act jointly (Adizes, 2004). Conflicts are not their element. They are ready to give up cave in and settle any situation. They demonstrate the non-characteristic stiffness only in matters of morality and justice.

The maximum effect for this category is exercised by the colors (Table 4) yellow, green, red, orange, black. The minimum effect: blue, violet.

Table 1: Correlation between colors and emotions for the type of personality 'Performer' (%)

Colors	Emotions									
	Anger	Interest	Disgust	Sorrow	Happiness	Fear	Shame	Astonishment	Pleasure	Fatigue
White	-	3	-	-	4	-	-	3	3	-
Light-blue	-	-	-	-	3	-	1	1	-	1
Yellow	-	1	3	-	3	1	-	1	1	-
Green	-	1	1	-	4	-	-	-	3	-
Brown	-	1	3	-	-	-	-	-	-	3
Red	1	1	-	-	1	1	1	1	1	3
Orange	-	1	-	-	1	-	-	1	1	-
Grey	-	-	-	3	-	-	-	-	1	3
Blue	-	4	-	-	-	-	-	4	-	-
Violet	-	4	-	-	-	-	-	-	-	3
Black	1	1	-	1	-	4	-	1	-	1

Table 2: Correlation between colors and emotions for the type of personality 'Leader' (%)

Colors	Emotions									
	Anger	Interest	Disgust	Sorrow	Happiness	Fear	Shame	Astonishment	Pleasure	Fatigue
White	-	3	-	1	2	-	-	-	2	1
Light-blue	-	1	-	1	2	-	-	1	2	-
Yellow	-	1	1	-	2	-	-	-	2	2
Green	-	1	-	-	3	-	-	-	3	-
Brown	-	1	2	-	-	-	-	2	2	1
Red	2	3	-	-	2	1	-	2	2	-
Orange	-	1	-	-	3	-	-	-	2	-
Grey	-	1	-	2	-	-	-	-	-	3
Blue	-	2	-	-	1	-	-	-	3	-
Violet	-	3	-	-	-	-	-	1	2	1
Black	-	2	-	1	-	2	-	-	1	-

Table 3: Correlation between colors and emotions for the type of personality 'Doubting' (%)

Colors	Emotions									
	Anger	Interest	Disgust	Sorrow	Happiness	Fear	Shame	Astonishment	Pleasure	Fatigue
White	-	3	1	-	2	-	-	1	3	1
Light-blue	1	1	1	-	2	-	-	1	3	-
Yellow	-	1	1	-	2	-	-	3	1	1
Green	1	4	-	-	4	-	-	1	3	-
Brown	-	2	2	1	-	-	-	-	1	-
Red	1	2	1	-	1	1	1	2	2	-
Orange	1	1	2	1	1	1	-	1	1	1
Grey	-	-	-	4	-	-	-	1	1	2
Blue	1	1	1	-	-	-	1	-	1	1
Violet	1	3	1	1	1	1	-	1	2	1
Black	2	3	1	2	1	2	-	-	1	1

Table 4: Correlation between colors and emotions for the type of personality 'Well-wisher' (%)

Colors	Emotions									
	Anger	Interest	Disgust	Sorrow	Happiness	Fear	Shame	Astonishment	Pleasure	Fatigue
White	-	3	-	1	1	1	-	-	2	1
Light-blue	-	1	-	-	3	-	-	-	2	-
Yellow	-	1	-	1	4	-	-	2	3	-
Green	-	2	-	-	2	-	-	1	3	1
Brown	-	-	2	2	-	-	1	-	1	1
Red	3	2	-	-	3	1	1	1	1	-
Orange	1	2	1	-	1	-	1	1	1	1
Grey	-	-	-	3	-	-	-	-	-	4
Blue	-	3	-	-	-	-	-	1	1	1
Violet	-	1	-	1	-	1	-	1	1	1
Black	-	3	-	2	-	3	-	-	1	1

Table 5: Correlation between colors and emotions for the type of personality 'Creator' (%)

Colors	Emotions									
	Anger	Interest	Disgust	Sorrow	Happiness	Fear	Shame	Astonishment	Pleasure	Fatigue
White	-	3	-	1	3	-	-	1	1	-
Light-blue	-	-	1	-	3	-	-	-	3	1
Yellow	1	1	1	-	1	-	1	3	1	1
Green	-	1	-	1	3	-	-	-	3	1
Brown	1	-	3	3	-	-	1	-	1	3
Red	3	1	-	-	1	1	-	1	3	1
Orange	-	1	1	-	4	-	-	-	1	-
Grey	-	-	-	4	-	-	-	-	-	5
Blue	-	1	-	-	-	-	-	5	-	-
Violet	1	3	3	-	-	-	-	-	1	-
Black	-	4	-	1	1	-	-	1	4	-

Type of personality creator (figure, zigzag):

This category of people is characterized by out-of-the-box thinking, creative approach and readiness for risk (Adizes, 2004). Pioneers in everything. The world is a continuously

changeable, inconsistent system for them. The deadliest for such people is routine and rigid boundaries. The maximum effect for this category is exercised by the colors (Table 5) yellow, brown, red, black. The minimal effect: blue.

RESULTS AND DISCUSSION

Part 2: For analysis of correlation between the choice of figures and emotional perception of colors the classification trees were used, the Method CHAID (Mkhitarian, 2013) based on the assessment of correlation between the categorical parameters with the use of the chi-square test (Nasledov, 2013) as well as frequency charts for emotional perception of colors (Wright and Rainwater, 1962).

The analysis performed by researchers aimed at identification of the customer's perception of the color range in advertising communications was preceded by a detailed analysis of the customers' opinions and preferences.

The main tool taken as the basis for performance of the marketing research was the questionnaire designed by the researchers that allows collecting and processing the data describing the audience's attitude to one or another color.

The data obtained as the result of questioning were summarized in a single contingency table and processed with the use of the statistics package IBM SPSS Statistics (William, 2012; Moosmuller and Rebik, 2011).

The objective of the research was design of the Classification Tree with the use of the same-name method on the basis of which the attitudes to the color range of advertising communications were determined.

Classification tree is the method of presentation of rules in a hierarchic, chain structure where each object is assigned a node providing a solution. This is the method allowing forecasting belonging of observations or objects to one or another class of categorical dependent variable according to the values of one or a few variables. The hierarchic structure of the classification tree is used for interpretation of the classification obtained. The type of personality was selected as the target variable. The correlation between perception of emotions and colors as independent variables (Fig. 1).

For respondents that selected a triangle (type of personality Leader) the most relevant is the 6th node in which the share of such respondents exceeds the sample average by 1.9 times. Characteristics of the emotional perception of colors:

- Astonishment red, blue, violet, green, brown, grey
- Disgust brown, orange, green, blue, grey
- Pleasure blue, green, brown, violet

For consumers of advertising communications that selected a circle (type of personality Well-wisher) the most relevant is the 1st node in which the share of such respondents exceeds the sample average by 1.4 times. Characteristics of the emotional perception of colors in this node: Astonishment orange, yellow.

For respondents that selected a square (type of personality performer) and a zigzag (type of personality creator) the most relevant is the 2nd node in which the share of such respondents exceeds the sample average by 4.6 and 3.6 times, respectively.

Emotional perception of colors in this node: astonishment blue, white, black. For the audience that has chosen a rectangle (type of personality doubter) the most relevant is the 4th node in which the share of such respondents exceeds the sample average by 2.9 times. The indicators of the emotional perception of colors in this node:

- Astonishment red, light-blue, violet, green, brown, grey
- Disgust violet, yellow, red, blue, white, black

Part 3: Let's consider the frequency charts of emotional perception of colors (Fig. 2-11).

Interest: Most of respondents choose:

- Leader red
- Well-wisher orange
- Performer blue, violet
- Doubter green
- Creator black

Happiness: Most of respondents choose:

- Leader blue
- Well-wisher yellow
- Performer black
- Doubter green
- Creator orange

Pleasure: Most of respondents choose:

- Leader violet
- Well-wisher yellow
- Performer green, white
- Doubter light-blue
- Creator black

Astonishment: Most of respondents choose:

- Leader red, brown
- Well-wisher yellow

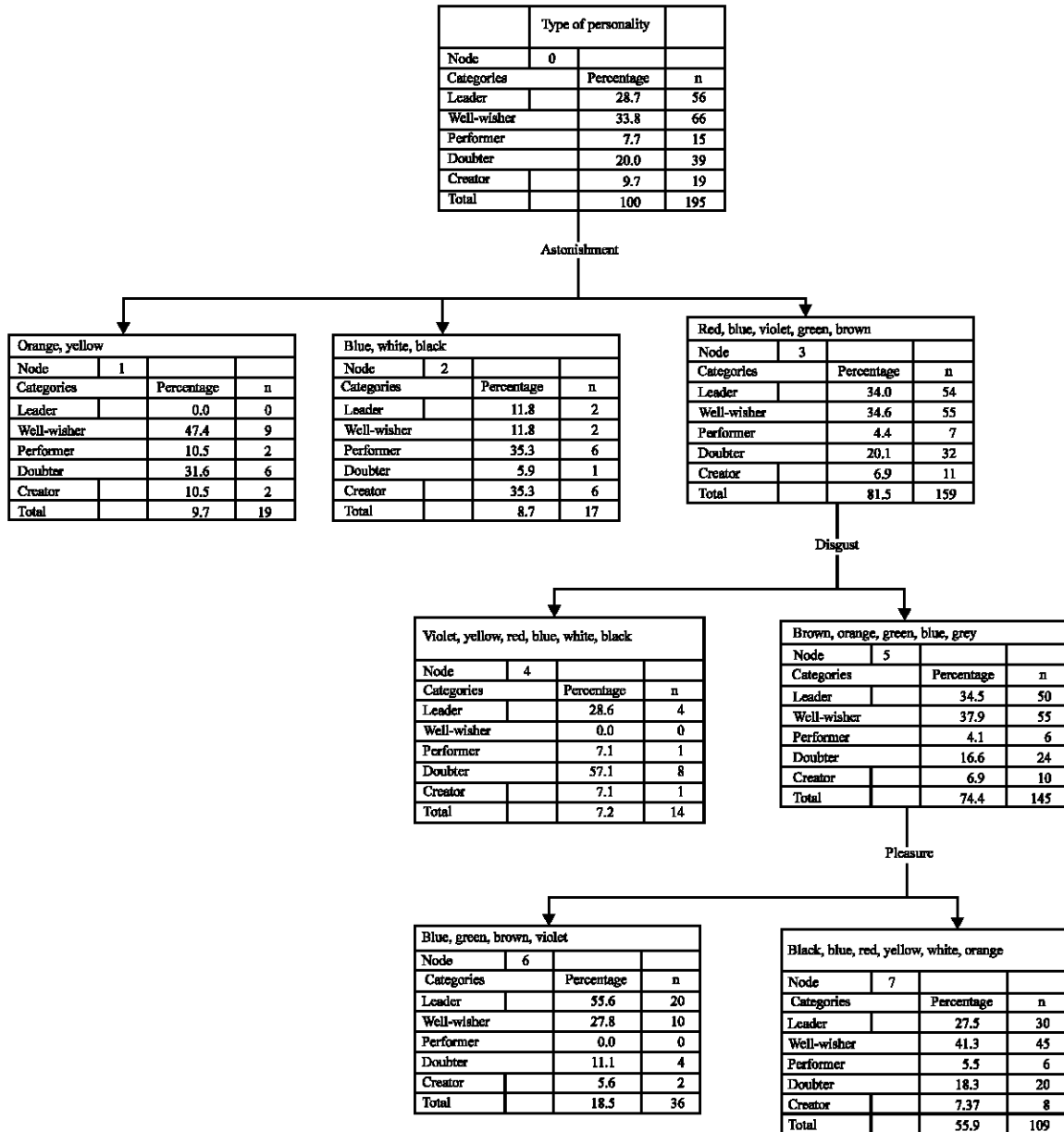


Fig. 1: The tree of classification by color perception by different types of personality

- Performer white
- Doubter yellow
- Creator blue

Fatigue: Most of respondents choose:

- Leader grey
- Well-wisher grey
- Performer red, violet, brown
- Doubter grey
- Creator grey

Sorrow: Most of respondents choose:

- Leader grey
- Well-wisher grey
- Performer blue
- Doubter grey
- Creator green, brown

Anger: Most of respondents choose:

- Leader red, black
- Well-wisher red

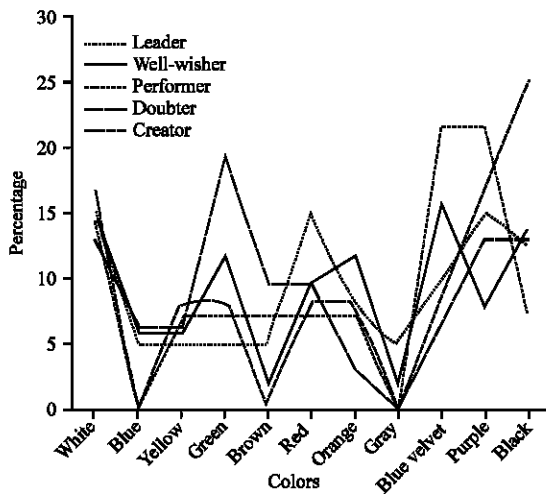


Fig. 2: Correlation between the type of personality and emotion 'interest' and the color

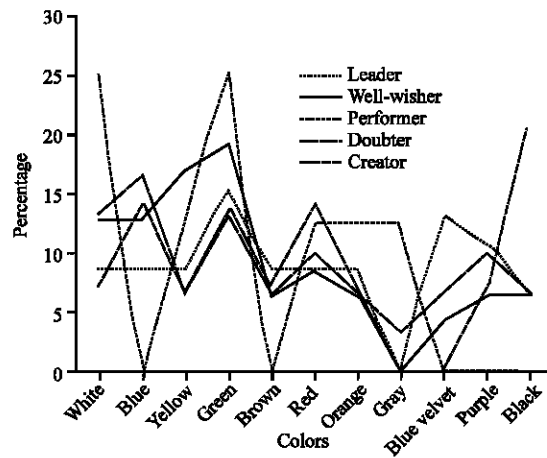


Fig. 4: Correlation between the type of personality and emotion 'pleasure' and the color

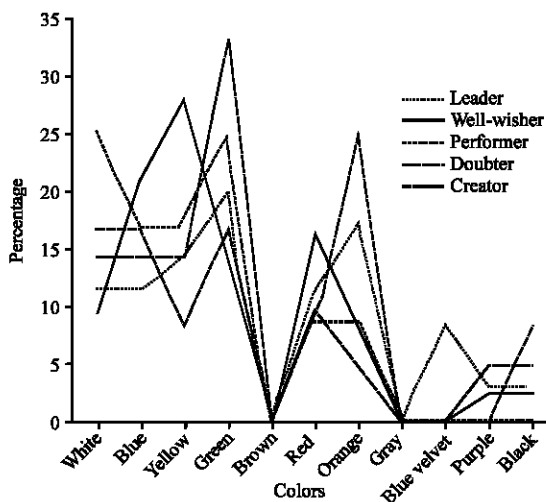


Fig. 3: Correlation between the type of personality and emotion 'happiness' and the color

- Performer red, black
- Doubter black
- Creator red

Disgust: Most of respondents choose:

- Leader brown
- Well-wisher brown
- Performer yellow, brown
- Doubter orange, brown
- Creator violet, brown

Shame: Most of respondents choose:

- Leader brown

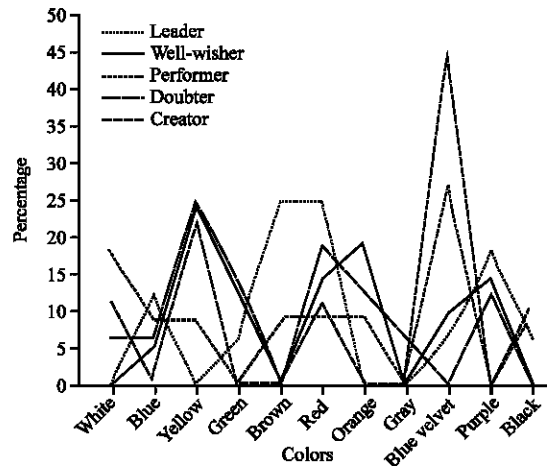


Fig. 5: Correlation between the type of personality and emotion 'astonishment' and the color

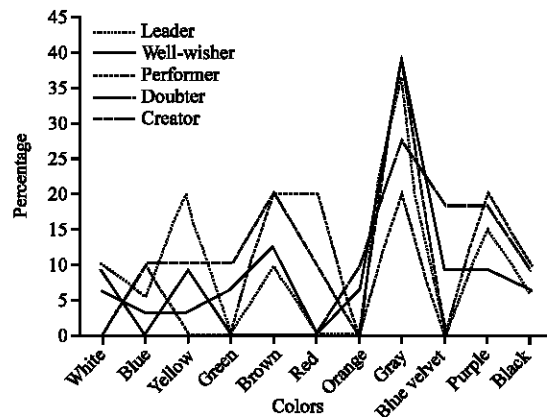


Fig. 6: Correlation between the type of personality and emotion 'fatigue' and the color

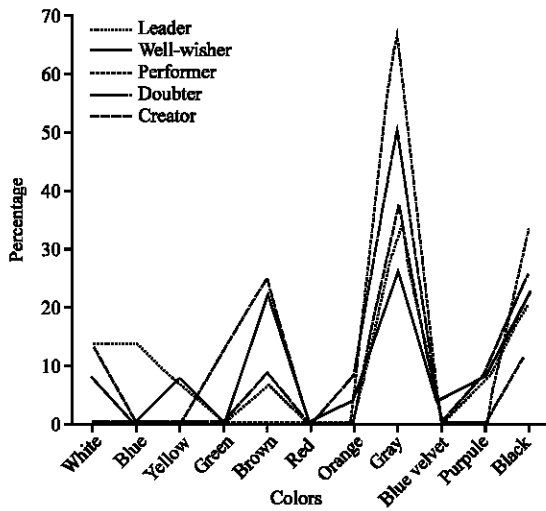


Fig. 7: Correlation between the type of personality and emotion 'Sorrow' and the color

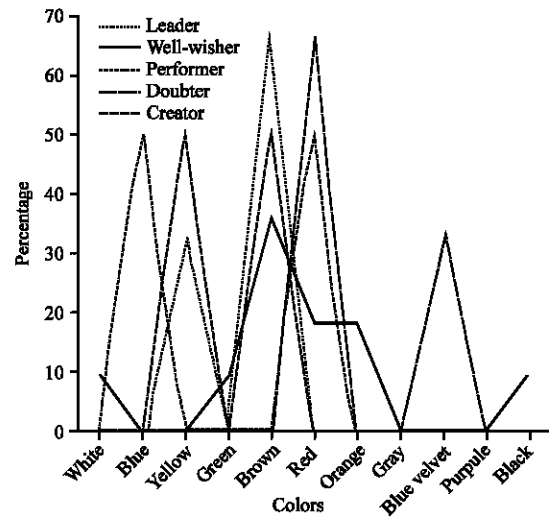


Fig. 10: Correlation between the type of personality and emotion 'Shame' and the color

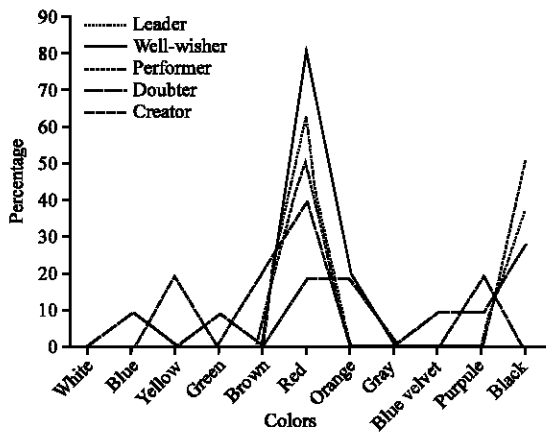


Fig. 8: Correlation between the type of personality and emotion 'Anger' and the color

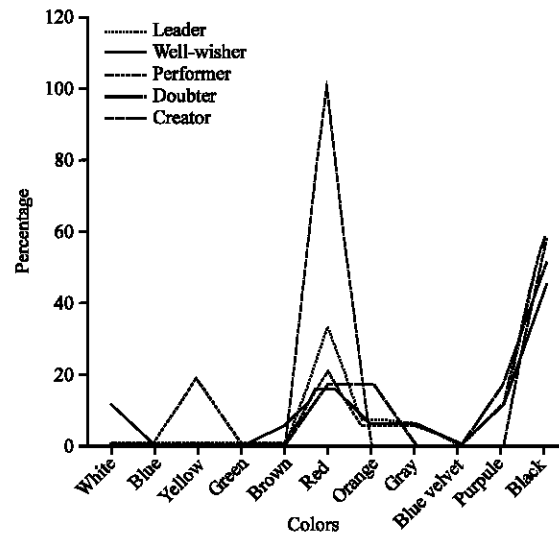


Fig. 11: Correlation between the type of personality and emotion 'Fear' and the color

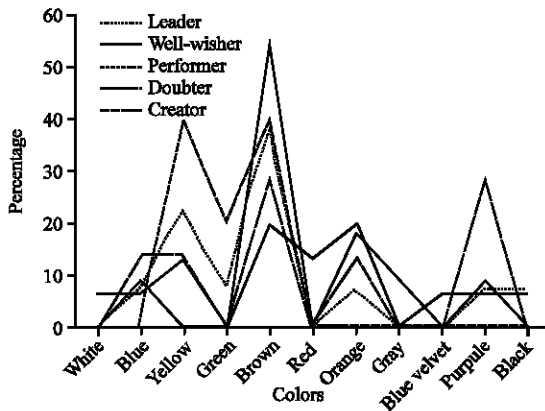


Fig. 9: Correlation between the type of personality and emotion 'Disgust' and the color

- Well-wisher brown
- Performer blue, red
- Doubter red
- Creator yellow, brown

Fear: Most of respondents choose:

- Leader black
- Well-wisher black
- Performer black
- Doubter black
- Creator red

CONCLUSION

The research performed allowed the researchers detecting a number of correlations between emotions and colors. The researchers consider this fact to be all important. This is because the possibility of manipulation of the conscience of the segment of people being considered and enhancement of the communicated information by a certain color arises.

In the types of individuals considered some colors cause the same emotions, for example, the brown color disgust and others not at all, for example, fatigue and astonishment are characterized by completely different colors.

The maximum emotional effect on all the respondents is exercised by the red and black colors, the minimum by the blue color. No gender correlation between colors and emotions was detected.

In conclusion, it may be noted that any advertising message for a particular segment shall be colored in the colors exerting the maximum effect. It is also necessary to maintain the emotional background laid in their marketing message. It is quite risky to use colors in advertising (packaging, product) with complete unconcern as they may cause contradictory emotions in a customer and may finally become a strong reason for refusal of a purchase.

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