IMAGE CLOTHING AS A COMPONENT OF THE PROFESSIONAL DESIGNER'S EDUCATION

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Abstract: Everybody want to look beautiful, bright and stylish at all times of the year, but sometimes it's not easy to find perfect clothing color combinations. Managing the impact of color on person's image is smart considering that color is one of the first things noticed about a person, particularly from a distance. Each hue has a different psychological effect, and there is a specific psychological reaction to each color. Results of the literature review show that clothes don't just affect person's confidence level; they can affect one's success, as "clothing significantly influences how others perceive you and how they respond to you." Thus the authors deal with a perceptive component as a necessary component of professional competence of the fashion designer.
Authors conclude that choice of clothing colors must be achieved as a result of consideration of external data (person's coloring), and internal data (psychological features of the person). In the article it is presented through scheme of external and internal factors which have an impact on formation of visual imagery and impression.
Every person has a unique pattern of body coloring and also particular preferences for color that relate to their temperament and past experiences. In this work authors are generally applied to the contemporary study of four classical temperaments in the approaches of image clothing and selecting colors. Authors improved the incidence matrixes those show the relationship between two classes of objects: first one shows the relationship between clothing colors and personality; and the second one is about to identify the best color palette for person's body coloring. The rules of identification the best color palette are formalized and represented as a CMYK color model. Selection clothing colors and evaluation of psychological comfort of clothes are presented as a part of studied courses for future fashion designers.

Keywords: Image clothing, body coloring, perceptive component, psychological comfort

Introduction

Everybody want to look beautiful, bright and stylish at all times of the year, but sometimes it's not easy to find perfect clothing color combinations. Managing the impact of color on person's image is smart considering that color is one of the first things noticed about a person, particularly from a distance. Each hue has a different psychological effect, and there is a specific psychological reaction to each color.

The problem of image clothing that was described as problem of the psychological comfort of the clothes can be traced back to the works of Shim, Kotsiopulos, & Knoll (1990) and Radeloff (1990), as well as works of Petrova, & Korobtseva (1996) and Korobtseva, & Petrova (1998). However it is often attributed to an impressive approach to designing clothes that was described by Korobtseva (2001), and her further researches Korobtseva (2005) and Korobtseva (2006) that are devoted to the same problem of designing clothing according to requirements of individual person image. Kuleshova (2011) extended her study in order to solve the problem of harmonization of the clothes with account of person features.

Recently psychological comfort and harmonization of clothes is associated with the term of aesthetic quality of garment. Particularities of evaluation of aesthetic garment quality were considered by Kuleshova, & Slavinska (2015). From their work we can make an inference about necessity of taking in account consumer requirements to clothes.

Nowadays a hierarchy of modern consumer requirements to clothes was changed: importance of psychological comfort requirements and clothes matching with the personal features increased against the background of plenty of garments that are characterized with a good fitting on the human figure. Such changes in consumer preferences already were captured by designers. Researchers proved that the most significant indicator of the consumer's choice of any design objects is visual impression. It was shown in the works: Zymogliad (2010), and Zymogliad (2013).

Impressive approach to designing clothes is actively developing in Japan, in the US, in Russia. From this point clothes is not only the shell or the cover of the body, but it expresses the personality and is the "shell" to self-perception. The impressive approach allows using psychophysical research data in clothing design, as well as developing effective schemes of forecasting and demand management in apparel design.

Database that was developed by Kuleshova (2013) provides dress designers with sets of fashionable female figures and color palettes of dress designs in period of few last centuries. Hence, it could be used as dataset for psychophysical research of the changes in fashionable person preferences during certain period.

Color related psychological studies are a phenomenon of the twentieth and twenty-first centuries. The problem of optimal color palette selection has been studied by many researchers. An overview can be found in follows works: Luscher (1977), Jackson (1987), Spillane, & Sherlock (1995), Gill (2000), Webster (2006), Henderson, & Henshaw (2006), Henderson, & Henshaw (2010), Freer (2015). All of them considered color palettes in relationships with person individuality and described different aspects of using these relationships in regular person life.

In works of Cheremnykh (1983), Bily-Czopowa & Mierowska (1986), Kozlova (1988), and Medvedeva (2005) were described basic principles of the design clothing with account of color as one of the main elements of garment composition. Particular case of using the color palette in design of reversible garments was shown in Zakharkevich, Kuleshova, & Shvets (2015).

Color preference tests have been devised by Luscher (1977) in order to gain useful information on how people will react to certain colors in given situations, and as a means of personality analysis. Hence, the results of the tests must be used as a basic for the image clothing.

Clothes designer's professional activity in designing sewed garments must corresponds to the modern substance of the profession and to be oriented to an individual consumer, in this connection it may be used while training specialists at a university.

Thus, the results of the literature review show that the perceptive component must be considered as a necessary component of professional competence of the fashion designer. Hence, the main purpose of this research is to develop practical recommendations for image clothing based on the perceptual component of the design process and show possibility of using it in educational process.

Methods

In order to clarify the basic component of professional competence of fashion designer and approve changes in the modern consumer requirements to clothes we conducted a survey. The question was:
Which personal features of the consumer are the bases for the individual design clothing?
The list of possible answers was formed as follow:
1 –external data of the person (person's coloring: hair color, skin color, eye color ($x1$);
2 –age ($x2$);
3 – psychological features of the person: temperament, psychological comfort, aesthetic preferences ($x3$);
4 – social status ($x4$);
5 –attitude to fashion ($x5$).

The results of the survey are presented as charts on the figure 1 and figure 2.
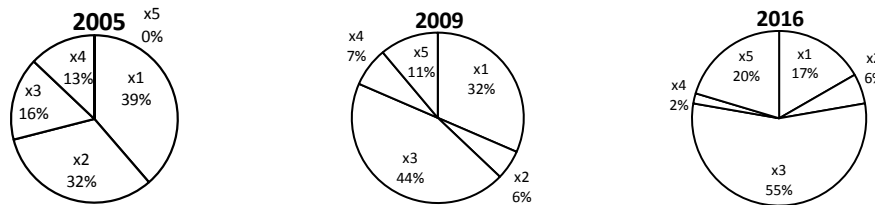
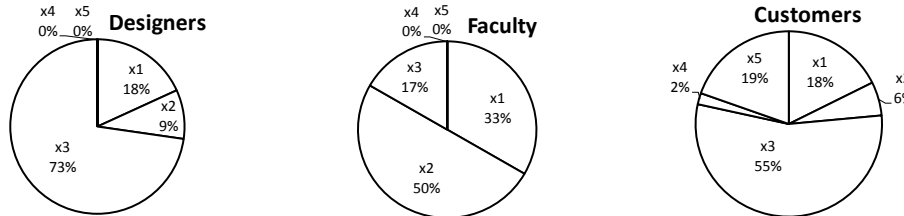Figure 1. Personal features of the consumer in the time scale

Figure 2. Personal Features of the Consumers Groups (2016)

As we can see on the figures 1 and 2 each group of consumers reacts differently but the average percentage confirms that the psychological features of the person and external data of the person must be considered as the main factors of the image clothing.

Thus, the selection of the clothing color palette must correspond to person's coloring: hair color, skin color, eye color, as well as correspond to person's temperament. Hence, the psychological comfort of the clothes would be achieved.

In order to represent the staging of the color selection process we developed the flow chart of the method that is shown on the figure 3.
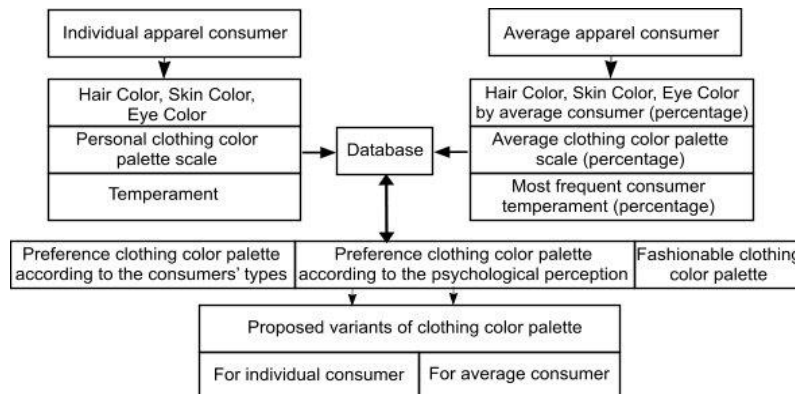

Figure 3. Structural and Information Scheme of Selection of Preference Clothing Color Palette

Results and Findings

On the first stage of our research we compiled the lists of the recommended colors for the consumers' types in the table 1. As input data for the list we used recommendations, which were described by Jackson (1987), Spillane & Sherlock (1995), Freer (2015), Henderson, & Henshaw (2010), and Zakharkevich, Kuleshova, & Shvets (2015).

Table 1. Your personal coloring

Consumer type	№	Hair Color	Skin Color	Eye Color
Warm (Golden or yellow undertone)	1	Coppery (red-brown)	Golden beige	Dark brown
	2	Golden brown	Peach	Golden brown
	3	Golden blond	Golden beige	Amber
	4	Strawberry blond	Peach	Light golden brown
	5	Flaxen blond	Golden beige	Hazel
Cool (Blue or gray undertone)	6	Ash blond	Creamy	Blue
	7	Ash brown	Rosy	Gray blue
	8	Charcoal black	Ivory	Blue
Mixed	9	White blond	Rosy	Gray blue

10	Flaxen blond	Creamy	Brown
11	Red	Ivory	Blue
12	Golden brown	Golden beige	Gray
13	Black	Golden beige	Gray blue

With the base on the modern computer technology and taking into account results of Martha Gill works (2000) we used the CMYK color model (C – Cyan, M – Magenta, Y – Yellow, K –Key) in order to represent certain color in the table 2. The value of each color tone for the real materials samples might be obtained by any raster graphics editor (for example, GIMP). Thus the selection of the color palette for the person coloring could be done even through online-catalog with images of the materials samples. Also it is useful in personal online shopping.

Table 2. Recommended colors clothes for consumers' types (Monochrome Harmony)

Type		CMYK	Chromatic, %						Achromatic, %
			red	**green**	**blue**	**yellow**	**violet**	**natural**	
Consumer type	COOL — Winter	C	10…40	67…91	30…100	6…11	30…100	0…35	0
		M	30…100	5…39	2…88	6…19	25…100	0…20	0
		Y	0…70	50…74	0…31	69…89	0	0…20	0
		K	0…10	0…39	0…17	0	15…55	0..100	0…100
	COOL — Summer	C	0…36	35…84	30…100	12…20	25…100	0…30	0…35
		M	40…100	0…18	2…88	3…8	15…90	5…40	0…20
		Y	0…70	19…60	0…31	29…62	0	0…55	0…20
		K	0…40	0…3	0…17	0	0…55	0…55	10…75
	WARM — Autumn	C	0	88…59	50…100	10…13	40…80	0	10…40
		M	40…100	18…35	0…47	19…47	80…100	60…100	5…40
		Y	35…95	75…100	15…47	77…91	0	80…100	20…90
		K	0…40	15…30	0…27	0	25…55	25…65	5…40
	WARM — Spring	C	0	27…86	31…84	2…8	20…80	0	5…35
		M	45…100	0…24	1…28	9…15	25…100	7…60	5…20
		Y	25…80	61…100	2…32	55…88	0	12…100	20…55
		K	0	0…12	0…2	0	0…45	0…65	5…30

As we said before, an adequate choice of clothes color palette must be determined by the psychological characteristics of the certain individual.

Colors were used in psychological methods for a long time now. Goethe was the first who systematically studied the physiological effects of color, and his observations on the effect of opposed colors led him to a symmetric arrangement of his color wheel that was called "Rose of temperaments". Such color wheel shows the psychological effect of each color. The "Rose of temperaments" matching six colors to human character traits grouped in the four temperaments: choleric, sanguine, melancholic, and phlegmatic. Goethe divided all colors into two groups - the plus side (from red through orange to yellow, choleric → sanguine) and minus side (from green through blue to purple, phlegmatic→melancholic). On the figure 4 we represented modern interpretation of "Rose of temperaments".
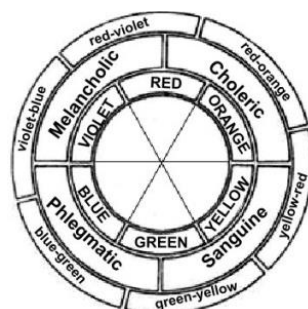

Figure 4. The "Rose of Temperaments"

Dr. Max Luscher believed that colors have an emotional value and that a person's reaction to color reveals his or her basic personality traits. Hence, the conception of "The 4-Color Person" that was proposed by M. Luscher use a color test as a method. The conception is based on the doctrine of temperaments and psychological color theory. At the figure 5 we can see one of the representations of the conception.
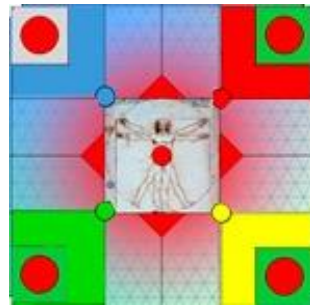

Figure 5. The 4-Color person

In this way Max Luscher correlated colors and emotions. Each color has been identified as that that wields by certain properties. Luscher divides his four fundamental colors into the following fundamental categories:

Red – Self confidence. Activity, drive and the reaction to challenges.

Yellow – Development. Attitude of anticipation, attitude towards future development and towards new encounters.

Green – Self-respect. Inner control of willpower and the capacity to enjoy.

Blue – Contentment. Feeling of belonging, the inner connection and the relationship to one's partner.

Thus, each type of temperament must be related to respective color as follows: red – choleric, yellow – sanguine, green – phlegmatic, blue - melancholic.

Eysenck initially conceptualized personality as two, biologically-based categories of temperament: Extraversion/Introversion and Neuroticism/Stability (figure 6). Two dimensions or axes (extraversion-introversion and emotional stability-instability) define four quadrants.

High N and high E = Choleric type (unstable extraverts): qualities such as - touchy, restless, excitable, changeable, impulsive, irresponsible.

High N and low E = Melancholic type (unstable introverts): qualities such as - quiet, reserved, pessimistic, sober, rigid, anxious, moody.

Low N and high E = Sanguine type (stable extraverts): qualities such as - outgoing, talkative, responsive, easygoing, lively, carefree, leadership).

Low N and low E = Phlegmatic type (stable introverts): qualities such as - calm, even-tempered, reliable, controlled, peaceful, thoughtful, careful, passive.

Moderate N and Moderate E = Centroversion (synthesis of extra- and introversion).
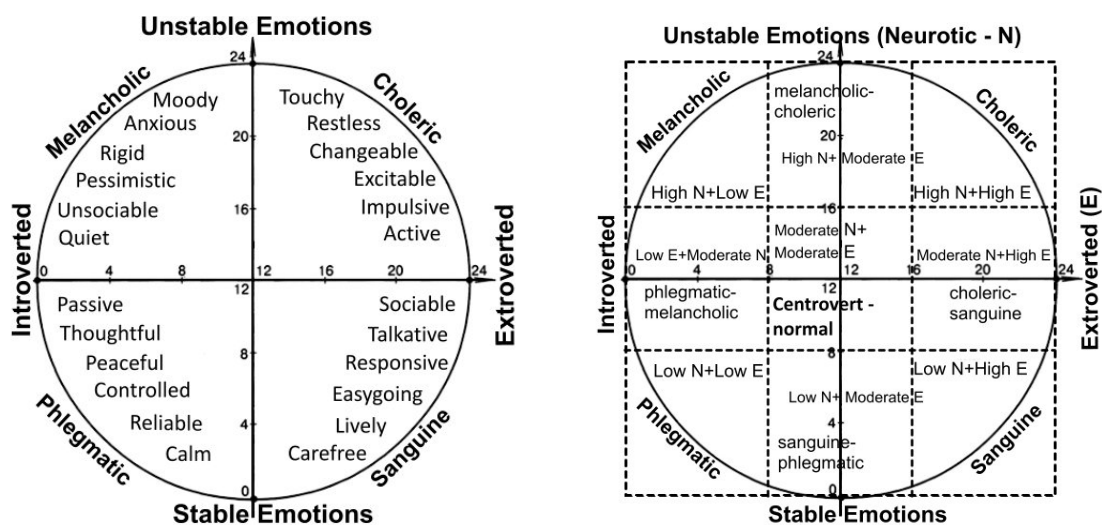
Figure 6. Hans Eysenck: Circular diagram about Eysenck's personality types

In order to define personality type simultaneously with color preferences and recommended color palette we developed graphical model of the temperaments space. Graphical model of the temperaments space includes "Rose of temperaments" by Goethe, Circular Diagram about Eysenck's Personality Types, "four psychological primary colors" by dr. Max Luescher and their relationship to different traits (all of them were described in

Boeree (2009)), as well as Leonardo da Vinci's Circle and Square proportional for his drawing of the Human Proportions (Kozlova, 1988), and Sierpinski carpet.

We considered and compared the represented schemes in order to determine the similarities in the graphical models and in the fractal structures. Hence, we assumed that in further development of the graphical model it is possible to use fractal structures as mechanism of determination of the pattern in image clothing. As it shown on the figure 7, an implementation of the fractal structure allows extension the bounders in current research as well as it give a possibility to precise its internal particularities.
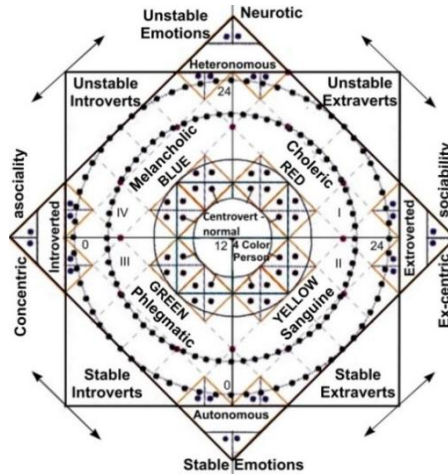

Figure 7. Fractal space of the temperaments

The rules of identification the best color palette are formalized and represented as an incidence matrix in table 3.

Table 3. The incidence matrix of the best color palette for person's body coloring

Dress colors		Consumer type												
		Warm					Cool				Mixed			
		1	2	3	4	5	6	7	8	9	10	11	12	13
Achromatic	White	1	1	1	1	1	0	1	1	1	1	1	1	1
	Black	1	1	1	1	1	0	1	1	1	1	1	1	1
	Grey	1	1	1	0	1	0	0	1	1	1	1	1	1
Chromatic	Red	1	1	0	0	1	1	1	1	0	0	0	1	0
	Yellow	0	0	1	0	0	0	0	0	0	1	1	0	1
	Brown	0	1	1	0	0	0	1	0	0	1	1	1	1
	Green	1	1	1	1	1	1	1	1	1	1	0	1	1
	Blue	1	0	1	1	1	1	1	1	1	1	1	1	1
	Violet	1	1	1	1	1	1	1	1	1	1	1	1	1

In order to select the clothing color palette according to the consumers' types and their temperaments we chose the Big Five personality traits that was described by Costa & McCrae (1992).

The Big Five personality traits, also known as the five factor model (FFM), is a widely examined theory of five broad dimensions used by some psychologists to describe the human personality and psyche. The five factors have been defined as openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Beneath each proposed global factor, a number of correlated and more specific primary factors are claimed. For example, extraversion is said to include such related qualities as gregariousness, assertiveness, excitement seeking, warmth, activity, and positive emotions.

The Five Factor Theory presumes follows color preferences:
1. Openness to experience: (inventive/curious vs. consistent/cautious)
Expressivity - Red, Yellow, Violet
Practical - Green, Blue, Grey, Black
2. Conscientiousness (efficient/organized vs. easy-going/careless)
Organized - Green, Blue, Grey
Impulsive - Red, Yellow, Violet
3. Extroversion (outgoing/energetic vs. solitary/reserved)
Outgoing - Red, Yellow
Reserved - Green, Blue, Violet, Grey, Black

4. Agreeableness (friendly/compassionate vs. analytical/detached)
Detached **-** Green, Violet, Grey, Black
Friendly **-** Red, Yellow, Blue,
5. Neuroticism (sensitive/nervous vs. secure/confident)
Nervous – Yellow, Brown, Blue, Violet
Stable - Red, Green, Grey

The relationship between clothing colors and personality traits are formalized and represented as an incidence matrix in table 4.

Table 4. The incidence matrix of the relationship between clothing colors and personality traits
(For choleric)

Dress colors	Personality traits									
	Openness to experience		Conscientiousness		Extroversion		Agreeableness		Neuroticism	
	Expressivity	Practical	Organized	Impulsive	Outgoing	Reserved	Detached	Friendly	Nervous	Stable
Red	1	0	0	1	1	0	0	1	0	0
Brown	0	0	0	0	0	0	0	0	1	0
Yellow	1	0	0	1	1	0	0	1	1	0
Green	0	0	0	0	0	0	0	0	0	0
Blue	0	0	0	0	0	0	0	1	1	0
Violet	1	0	0	1	0	0	0	0	1	0
Grey	0	0	0	0	0	0	0	0	0	0
Black	0	0	0	0	0	0	0	0	0	0

The main concept of image clothing is that a person that faced with a color choice will be choosing the color for his or her clothes that will bring emotional balance.

As we know from Lusher (1977), colors have specific meanings. Color is not just about aesthetics — it also communicates specific information. Color meanings are grounded in two basic sources: personal experience that forms subjective color meaning, and social communicative experience that forms objective color meaning.

Thus, in order to achieve psychological comfort of the clothes that is in harmony with person's body coloring and personality traits we recommend to use the information in the incidence matrix for particular temperament as well as the information in the table 5.

Table 5. Effects of color on behavior and character of the individual

Temperament (internal color)	Psychological features (traits of character)	Recommendations for the external colors	
		warm	cool
Choleric person (**red**)	Expressivity, Impulsive, Outgoing, Friendly, Nervous	They cause the increase of frivolity. Hence, they are not recommended because it means increase of the "Force of Will": ex-centric, active aggressive, competitive, action, desire, excitement, sexuality	Cool colors help to restraint the behavior. That's why they are recommended.
Sanguine person (**yellow**)	Expressivity, Organized, Outgoing, Friendly, Stable	They reduce the level of consciousness. Hence, they are not recommended because it means increase of the "Spontaneity": ex-centric, active, projective, aspiring, expectancy, exhilaration	Cool colors help to increase the attention. That's why they are recommended.
Phlegmatic person (**green**)	Practical, Organized, Reserved, Detached, Stable	Warm colors help to enhance the intellectual abilities. That's why they are recommended.	They cause a sense of detachment. Hence, they are not recommended because it means increase of the "Elasticity of Will": passive, concentric, defensive, persistence, self-esteem/assertion, pride, control

Melancholic person (**blue**)	Practical, Impulsive, Reserved, Detached, Nervous	Warm colors help to increase the sociability. That's why they are recommended.			They cause a sense of offishness. Hence, they are not recommended because it means increase of the "Depth of Feeling": passive, concentric, tranquility, calm, tenderness

Graphical interpretation of the connections between the components of color dress creation is the embodiment of the methodology of image perception. This is a step towards unraveling the science of relationships between "image" and "clothing".

The proposed capsule dress is the combination of triad blocks that are follows: Image ↔ Color ↔ Impression. Triad blocks are shown on the figure 8.
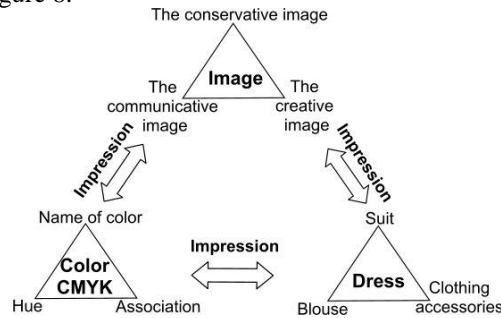

Figure 8. Triads of the image formation

Conclusion

As a result of this work we can conclude that the first stage of image clothing is definitely selection of the recommended color palette. Besides that, color palette must be related to person coloring and coordinated with personal type.

In order to achieve those purposes simultaneously we propose the graphical fractal model that shows all temperaments and their color preferences. The incidence matrixes are the base for informed choice of the color palette. And triad blocks Image ↔ Color ↔ Impression were used to show the perceptive component in process of image clothing itself.

Recommendations

Results of the study could be shown in tables that include recommendations for using the combinations of recommended color palettes. Recommendations of using the combinations of three achromatic colors in dress presented in table 6 as an example of the developed recommendations.

Table 6. Black, white and gray in dress

Group of hues	Color	Association	Alternative name	Tint percentage in color %				Impression	Recommended colors
				C	M	Y	K		
			The conservative image						
Light hues	White	clean, breezy, festive	Alabastrine	0	0	0	0	Light hues are light and carefree. They radiate purity, harmony and perfection.	Suit: medium and dark hues of gray are restrained and serious.
	Pearl gray	elegant, romantic, exquisite	Chalky	0	0	0	12,5		Blouse: white, light and bright

	Silvery	serious, strong, decisive	white clouds, white roses, white lilies, marble	0	0	0	25	They combine minimalism, calm and nobility.	colors look authoritative. Accessories: black, neutral and dark colors highlight conservatism.

The communicative image

Grey hues	Mousey	restrained, balanced, passive	Smoky, Steel, Light-Gray, Gray moss, Beton	0	0	0	40	Grey hues are elegant, tranquil, exquisite. Gray is full of dignity, it is elegant and refined. This is a true noble of the colors.	Suit: Light hues look exquisitely. Blouse: White and pastel colors create an elegant image. Accessories: gray and unsaturated colors highlight sophistication.
	Gray	sturdy, costly, noble	Granitic, pebbles, Plumbum	0	0	0	50		
	Anthracite	rich, provoking, luxurious	Graphite, Coal, Twilight thunderstorm sky	0	0	0	63		

The creative image

Dark hues	Wet asphalt	authoritative, conservative, serious	Black iron	0	0	0	75	Dark hues are changeable and various, causing many feelings. They may be sinister, magical, luxurious, youth and sexy.	Suit: white, black or trendy shade of gray create an unusual image. Blouse: white, black and bright colors attract attention by their daring combination. Accessories: bright colors highlight individuality and creativity.
	Ebonite	strong, official, decisive	Black lacquer, Jet	0	0	0	87,5		
	Black	smart, official, restrained	Black ink	0	0	0	100		

According to the psychology of coloring with taking into account purposes of image clothing and particular person coloring, as well as recommendations for using the combinations of recommended color palettes we have formed a dress capsule that is shown in table 7. Obviously, that such capsule can be represented for each color palette as well as recommendation for using its combinations.

Table 7. Achromatic colors - basic color of dress

Image	Restrained	Enigmatic	Romantic	Seditious	Elegant
Colors	medium gray, beige, black	black, white, dark-gray	white, black, light-gray	white, black, dark-gray	black, white, light-gray
Impressions	elegant, reserved, intelligent	enigmatic, intricated, gracefully	romantic, vaguely, mysteriously	informally, avant-garde, irrespective	easy, stylish, effectively

Reversible garment sample that is shown on the figure 9 was developed as an example of a dress style Op-Art in achromatic color palette. It achieves an aim of forming the impression with taking into account the harmony perception of the whole person's image.

Figure 9. Seditious image of reversible garment: informally, avant-garde, irrespective

As we can see the fractal space of the temperaments on the figure 7 along with the information in tables 1-6 can be used as the base of the studying course for professional dress designer. Developments of the dress capsules for the certain person coloring and psychological type by students can provide their understanding of any possible adjustments in image clothing. Obviously, the garment sample that we described in this work is not the only one to use in designers education but it was used as a real instance of implementation of image clothing in education.

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