Evolution of makeup attributes - Sensations and emotions studied by neuroscience

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Introduction:

The use of neuroscience to complement consumer research using traditional self-report continues to grow in popularity [1]and is expected to hold an important position in neuroergonomics [2]. This growth has been fueled by the hope that as brain data does not rely on self-report or conscious behavioral responses, it will be less influenced by cognitive biases, fabrication et cetera and further catalyzed by several findings that have found a link between brain activity with a particular neural structure and some commercially relevant outcome such as purchase behavior

The texture of cosmetic products is an important factor in consumer satisfaction. It is considered that the texture originated from various physical properties [4].

For the color cosmetics science, it is an increasing desire for scientists to be always evolving regarding the evaluation of textures, colors, and innovative fragrances that are applied in the products. With these innovations, we can bring differentiated communication and focus on new attributes to be explored in color cosmetics.

Modern cosmetics are associated with beauty and well-being. Beauty has been appreciated since the beginning of civilization, and the development of cosmetics has progressed with human history, drawing on both scientific and cultural evolution. The cosmetic sector is highly competitive, and industries related to this area have, more than ever, the challenge of expanding the market through innovation. Integral to the development of better cosmetic products is the ability to quantify the interaction with the senses when a consumer is faced with a set of stimuli produced by a cosmetic product. Therefore, we use neuroscience as an essential tool to understand the different physiological reactions that occur with the consumer of colored cosmetics when products with different textures, colors, and new smells are exposed.

In this present work, we evaluated how consumers' senses can trigger different sensations when applying and using a cosmetic.

Materials & Methods:

Formulas Development

The team of scientists with in-depth technical knowledge developed 07 different textures that can be applied to different types of makeup

Cloud Texture	Ref.: 2020.930.005.06
Creamy Texture	Ref.: 2020.930.010.01
New Jelly Texture	Ref.: 2020.970.001.03
Melting Wax Texture	Ref.: 2020.930.006.01
Water Soft Texture	Ref.: 2020.930.008.04
Oil Gel Infused Texture	Ref.: 2020.982.003.01
Gel to Glass Texture	Ref.: 2020.982.004.02

Neuroscience evaluation

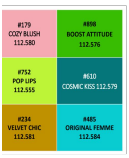
Fragrances and colors were evaluated by neuroscience, by using the Implicit Association Test (IAT) method.

Previous to IAT, the Self-Assessment Manikin (SAM) Overview was applied to participants.

In this study, the IAT was designed to assess consumer associations between 6 test fragrances and 10 colors for particular moods and attributes.

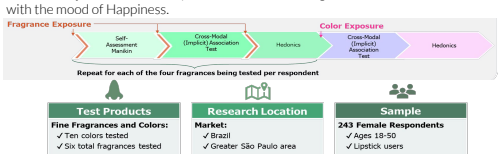
After a few trials of these pairings, final implicit scores were calculated and ranked for each fragrance, color, mood, and fragrance and color descriptor, to reveal high/medium/low strengths of association. High/medium/low assignments are calibrated at the participant level, within each mood. A high ranking indicates a strong relationship between the concept or fragrance/color and a descriptor. A medium ranking indicates there is some association, but not strong. A low ranking indicates there is little to no association between that concept or fragrance/color and the descriptor. Emphasis should be placed on the attributes with high associations.

FRAGRANCES



COLORS

The main objective of this study was to find the best fragrances and colors associated with the mood of Happiness.



Psychometric Assessment

Our study was conducted by a team of specialists in sensory evaluation, and expert in the makeup category, where they performed a psychometric evaluation of the 07 textures developed regarding their performance, according to the way of use, through the application of the products. The 07 textures were evaluated separately to determine which sensations were aroused by each one of them, following the CATA technique (Check-AllThat-Apply). Sensory analysis is a tool that uses the sense organs to evaluate products. Several techniques are used, including the CATA, a method used to collect information about consumers' perception of the sensory characteristics of products. It is effective to describe and discriminating samples. The CATA methodology evaluates products in a monadic way, being an affective sensory technique widely used due to its simplicity and a high potential for sample description.

Results & Discussion:

Formulas Development

Cloud Texture we chose a facial foundation formulation with a high percentage of water in formulation 41%. This high concentration of water in a water-in-silicone emulsion was made possible by a balance of emulsifiers, emollients, and treated pigments. Its high concentration of pigment provided a result of high coverage and can be applied both as a face foundation and as a concealer. We chose the mood of confidence and color gold/yellow.

Creamy Texture we chose an anhydrous formulation but developed with silicones and with almost 50% of Caprylic/Capric Triglyceride, which provided a dry sensorial. This type of formulation developed made it possible to make a product that can be used in any area of the face and lips. It can be a good texture for face illuminators, eyeshadows, and lip balm.

We chose the mood happy and colors like coral and orange to complement the texture.

New Jelly Texture we chose a gelatinous and fun formulation, due to its thixotropic characteristics. This also contains a large amount of water in its formulation and can be applied using dyes or shimmering pigments. This formulation developed made it possible to make a product that can be used in any area of the face if the dyes and their application are respected. We chose the mood of joy, fun, and color red for being attractive.

Melting Wax Texture we chose an anhydrous formulation, rich in vegetable waxes, butters, and Hydrogenated farnesene. Results in a product with a low melting point, which can melt when applied to the skin. Therefore, it is a great option for makeup removers because we can reach a powerful structure even to remove waterproof makeup. We choose to leave the formulation without the addition of pigments, but we can apply it if we wish. The formulation itself is white. We chose the mood relaxing and color green.

Water Soft Texture we chose a formulation with a high concentration of water 72% but with a silicone elastomer sensory. For this, after a lot of research, we found a differentiated carbomer in the raw material market that allowed us to achieve the desired texture. This formulation can be quite interesting for the use of actives that help in the treatment of the skin. We chose the mood relaxation and left the product colorless.

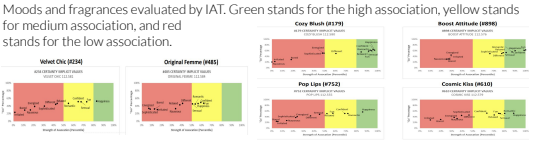
Oil Gel Infused Texture we chose an anhydrous and gelatinous formulation, rich in vegetable oils and waxes. Results in an oily, high-gloss product that can be easily applied as a liquid lipstick. This structure allows the incorporation of pigments dispersed in vegetable oil and sparkling pigments that make it possible to develop a great possibility of colors.

We chose the mood of sensuality and color brown.

Gel to Glass Texture we chose an anhydrous, oily formulation, rich in vegetable oils and velvety touch emollients. Results in an oily product with a very high shine, so it can be easily applied as a gloss. We chose the mood romantic and color pink.

Neuroscience evaluation

Moods and fragrances evaluated by IAT. Green stands for the high association, yellow stands for medium association, and red stands for the low association.



Psychometric Assessment

Oil Gel Infused Texture	Gel to Glass Texture	New Jelly Texture	Cloud Texture	Melting Wax Texture	Water Soft Texture	Creamy Texture
high pigmentation	high shine	with natural effect	with natural effect	melt your makeup	refreshing feeling	high pigmentation
comfortable feeling	comfortable texture	color that brings life to the skin	glow texture	Removes makeup and leaves skin feeling cared for	smooth as water	pigment on first application
elegant shine	with natural effect	Cheeks No tightness / feeling hydrated	build coverage		high feeling of hydration	
shining lips	feeling of hydration	velvety touch	smooth touch	remove waterproof	smooth touch	practical 2 in 1 (face and lips)
harmonic shine	elegant shine	comfortable texture	delicate texture		not sticky	
feeling of hydration	luminosity to your lips	Jelly texture with a sparkling touch	Silky, non-sticky touch		feeling of care	build coverage
pigmentation with shine	does not flow	Fleshed and vibrant skin	light coverage		take it like the breeze	fast drying
smooth touch	Does not accumulate in the creases and corner of the mouth	Fresh/refreshing feeling when applying	fast drying		matte texture	dry touch
comfortable texture			disguise imperfections		non oily	natural appearance
uniform color		does not accumulate	light texture		blur effect	
Non-sticky gloss effect		practical and comfortable	smooth skin			
not oily		blush and ready for everyday				
glossy lips						

Conclusions:

The research was carried out using advanced research methods, that made it possible to understand the consumer's perception regarding the connection between colors and fragrances related to moods and sensations. An understanding of texture associated with fragrance and color can be well accepted and arouse feelings and emotions for the consumer, what is important and makes difference in the choice and satisfaction during the application and permanence with the product. We conclude that for an evolution in the attributes communicated about a cosmetic product and especially makeup, it is necessary that we always have evolution in the methods of evaluation and complementation between them. As for texture, it is the scientist's role to be always evolving in the search for new textures, apply in makeup products, and suggest new options for the consumer. These textures can still have a better acceptance when fragrances that arouse sensations and emotions during the consumption journey are incorporated into the formulation.

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References:

1. Lee, N., Broderick, A. J., and Chamberlain, L. (2007). What is 'neuromarketing'? A discussion and agenda for future research. Int. J. Psychophysiol. 63, 199–204. DOI: 10.1016/j.ijpsycho.2006.03.007
2. Curtin, A., and Ayaz, H. (2018). The age of neuroergonomics: towards the ubiquitous and continuous measurement of brain function with fNIRS. Jpn. Psychol. Res. 60, 374–386. DOI: 10.1111/jpr.12227
3. Plassmann, H., O'Doherty, J., and Rangel, A. (2007). The Orbitofrontal cortex encodes willingness to pay in everyday economic transactions. J. Neurosci. 27, 9984–9988. doi: 10.1523/JNEUROSCI.2131-07.2007
4. Ayamo NAKAMURA, Atsushi SSOGABE, Akiko MACHIDA, and Isamu KANEDA (2009) Novel Attempt for Quantitative Sensory Evaluation of Cosmetics Using the Nutting Parameters. - https://www.jstage.jst.go.jp/article/rheology/37/5/37_5_247/_article/-char/ja/ - (accessed 06/15/2022)
5. Brasil, Ministério da Saúde; Agência Nacional de Vigilância Sanitária, Resolução 07 de 10 de fevereiro de 2015. Provides for technical requirements for the regularization of personal hygiene products, cosmetics and perfumes and provides other measures. ...