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# *"Emotional assessment of product experience of facial skincare creams in the selective market: implementation of a specific verbal evaluation methodology"*

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## 1. Introduction

Emotions occupy a fundamental place for perception. Decoding the emotions elicited by the cosmetic experience, especially in the luxury sector, provides insights in order to better understand consumer choices. Emotion is defined as an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems in response to the evaluation of an external or internal stimulus event as relevant to major concerns of the organism [14].

Among the many methods available to assess emotional components, questionnaires — which measure the subjective feeling component — offer several advantages [11], [3]. In addition to being well documented in the scientific literature — we have identified over 34 published questionnaires which have substantial internal consistency. In particular, 11 methods have been recognized as relevant for supporting product development and consumer insight efforts [3]. These methods are simple and quick to administer, easily adaptable to ecological conditions such as home-use tests, and have demonstrated their ability to discriminate among the emotions associated with the experience of food products, odors or fragrances. For these reasons, such evaluation methods represent a significant potential for applications in cosmetics, especially in the luxury sector.

However, even when the relevance of affective terms has been carefully validated [7], it must be conceded that these tools remain highly product-specific (e.g., foods and particularly snacks: [4]; fragrances used in body care products: [2] and may therefore not be easily transferable to other products or specific odorants. Thus, in this context, it seems essential to focus on the specific feelings associated with premium facial skincare creams.

In this research we focus on the subjective affective experience [12], [14] wich is one component of emotion. To achieve this, we adopted a well-established methodology previously used to define a scale for measuring emotions associated with odors. This methodology is advantageous as it addresses emotional feelings and results in a simple, easy-to-use measurement scale [1]; [5], [6], [10]. Inspired by academic research related to odors, the aim of our study is to develop an exhaustive and discriminating list of emotional terms specific to the product experience within the universe of selective market skincare creams.

## 2. Materials and Methods

This project conducted in France with 170 women aged 35 to 65, was conducted in four main methodological step based on the evaluation of various premium facial skincare creams. An initial qualitative approach, conducted in November 2019 through focus groups and individual interviews, enabled the generation of an exhaustive semantic emotional universe. An online questionnaire conducted in March 2023, assessed the comprehension and relevance of these terms to optimize the semantic universe. The final two quantitative stages aimed to reduce and validate the questionnaire and assess its ability to discriminate between products and evaluation stages (packaging and usage) were conducted in April 2023.

### 2.1. Panel

For all steps, 170 participants were recruited from a panel of women aged 35 to 65 years; all were regular users of premium facial skincare creams, and lived in the Île-de-France region, which confers validity to the tools beyond laboratory conditions and for the specific audience of selective market facial skincare users of this area market.

Recruitments were carried out in compliance with European GDPR regulations, and all participants were informed about the study's objective, signed an informed consent form including image rights upon arrival, and received a gift for their participation at the end of the test.

### 2.2 Step 1: Generation of an exhaustive semantic emotional universe

A first qualitative approach via focus groups and individual interviews aimed to generate a list of feelings associated with the cosmetic experience of premium skincare creams.

8 women attended a 2.5-hour session which was structured according to a classic focus group discussion guide. In addition to the questions and interactions among participants, boards displaying premium skincare creams and six physical products were presented and handled by participants to facilitate immersion into the product universe. These six products were selected for their premium positioning, their different packaging and sensory characteristics and their top-selling positions (source internal, unpublished research study).

The feelings/terms emerging from the focus group were recorded and structured based on their semantic similarities and dissimilarities — that is, according to what the feelings/terms mean and the significance they carry.

In addition, 8 individual interviews were conducted. These participants had not taken part in the focus group.

Interviews were conducted following the Repertory Grid Interview (RGI) method — an interview-based technique originally developed by George Kelly (1955). This method was adapted to focus specifically on the emotional representations associated with the experience of premium skincare creams and to collect associated emotional terms.

Feelings/terms that emerged from the individual interviews but had not been generated during the focus group were added to the corpus.

### 2.3. Step 2: An online questionnaire to assess the comprehension and relevance of the terms identified in step 1.

This questionnaire was sent to 68 women, aged 35 to 65 years with an average completion time of 15 minutes. For each feeling/term identified in Step 1, participants were asked about

their degree of familiarity and its relevance to describing a cosmetic experience associated with the use of a premium skincare cream.

Participants answered the following questions using a 4-point Likert scale (ranging from "not at all familiar/relevant" to "very familiar/relevant"):

- *1 – "To what extent are you familiar with each of these terms? (familiar = known = commonly used) Not at all familiar / Somewhat unfamiliar / Somewhat familiar / Very familiar."*
- *2 - "To what extent is each of these terms relevant for describing your feelings related to the experience of a premium facial skincare cream? Not at all relevant / Somewhat irrelevant / Somewhat relevant / Very relevant."*

All terms were presented in random order; to prevent fatigue effects, "distraction" questions were inserted among the evaluation.

In accordance with the study conducted by Ferdenzi *et al.[*6], we applied both quantitative criteria and an expert judgment:

- Familiarity: Exclude terms considered "not at all familiar" or "somewhat unfamiliar" by more than 5% of the panelists on our rating scale.
- Relevance: Exclude terms considered "not at all relevant" or "somewhat irrelevant" by more than 33% of the panelists for describing a cosmetic experience related to a premium skincare cream.

Strict application of these quantitative criteria was modulated by a qualitative approach, aiming to retain terms associated with unpleasant experiences, even if their relevance rating was somewhat low. We also retained certain terms deemed important by expert judgment to capture feelings particularly suited to the study context.

### 2.4. Step 3: Central location test (CLT) conducted in Neuilly-sur-Seine

The panel consisted of 66 participants aged 35 to 65 years, all selected based on their regular use of premium facial skincare creams.

Tests were carried out in a facility specially equipped for these evaluations, accommodating 6 to 8 participants per 90-minute session. Each panelist had access to equipment allowing facial cleansing and skin preparation before the test (Figure 1).

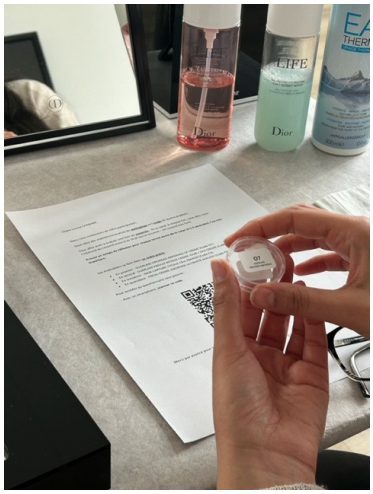
Eight products were evaluated during this step. These eight products were selected for their premium positioning, their different sensory characteristics and their top-selling positions (source internal, unpublished research study).

Each participant tested the 8 products over two sessions: 4 products per session. The sessions were held within the same week, with a minimum of 2 days and a maximum of 3 days between sessions.

Products were presented monadically, following a balanced presentation plan across participants. Each product was evaluated in two phases (Figure 1):

- First evaluation: focused on the packaging — assessing the feelings associated with the experience of handling the pack. Participants were instructed to manipulate the packaging as they would in a store or at home, without testing the product itself.
- Second evaluation: focused on product usage — assessing the feelings associated with product application. Each panelist received 2 ml of product in a Petri dish after completing the first part of the packaging questionnaire, allowing them to apply the cream. The branded packaging remained beside them. Again, they were instructed to use the product according to their usual skincare routine.

Packaging evaluation



Product application evaluation

**Figure 1**

Products were presented under their brand names with the objective of evaluating emotional responses as closely as possible to real-life experiences, under the most ecologically valid conditions. For this reason as well, panelists applied the products following their own skincare routines rather than according to an imposed protocol.

For each evaluation — packaging and usage — participants rated the perceived intensity of each feeling on a scale from 0 to 10, where 0 indicated no feeling and 10 indicated a high intensity of the perceived feeling.

### 2.5. Step 4: Central location test (CLT) conducted in Neuilly-sur-Seine.

This step mirrored the previous one (Step 3) to verify the stability of the questionnaire. Tests were conducted in the same room, with the same setup allowing 6 to 8 participants at a time. The panel consisted of 68 women aged 35 to 65 years, all regular users of premium facial skincare creams. These participants were different from those involved in Step 3.

The products evaluated were the same as those tested in Step 3: 4 products per test session. Sessions were held during the same week, with a minimum of 2 days and a maximum of 3 days between sessions. Each participant therefore tested all 8 products. Products were presented monadically following a balanced presentation plan across participants.

### 2.6. Data Acquisition

Data collection for Steps 2, 3, and 4 was carried out using an online data collection solution provided by the software EvalAndGo. It is a CAWI (Computer-Assisted Web Interview) type solution.

- For Step 2, questionnaires were emailed to panelists, who received a personalized link, allowing them to access to the survey, compatible with PC, tablet, or smartphone.
- For Steps 3 and 4, questionnaires were made accessible via a QR code. Participants responded using either a smartphone or a computer.

### 2.7. Statistics

For Steps 2, 3, and 4, data analyses were performed using XLSTAT Version 2022.1, Copyright © 2022, Addinsoft. Statistical analyses focused on the results from Steps 3 and 4.

For Step 3 and for each evaluation stage (packaging and usage), Correspondence Factor Analyses (CFA) with Varimax rotation were conducted. These analyses allow assessment of each feeling/term's contribution to the construction of the emotional universe. The contributions assist in interpretation and help identify the terms most correlated with the dimensions of the emotional universe modeled by CFA.

For Steps 3 and 4, to verify the discriminatory capacity of each feeling, ANOVA was used — a standard method for multiple comparisons to determine whether the parameters corresponding to the different modalities of a factor are significantly different. In our case, two aspects were evaluated:

- The extent to which the products differed in their ability to induce a given feeling.
- Whether a given product could be characterized by different feelings.

Multiple comparisons were performed using Tukey's HSD test, commonly applied in this type of research. They allow us to assess the discrimination capacity of each term.

The alpha risk for all analyses was set at 5%.

Finally, for Step 4, paired tests (Tukey's HSD) were performed to measure the coherence and stability of the measurement scale between Steps 3 and 4.

Principal Component Analyses (PCA) were also conducted to visualize the proximity and correlations between feelings and the stability of the emotional universe representation.

These analyses comply with methodologies used for the development of new emotional measurement scales [1] [5] [6].

## 3. Results

### Qualitative Phase Results: Step 1

The first qualitative approach via focus groups and individual interviews enabled to generate an exhaustive semantic emotional universe of 146 terms. These terms have been grouped into 10 categories defined by a qualitative approach. The foundations of the qualitative analysis are based on the component process model [13], in which emotions arise from an appraisal process. This appraisal of the event (in this case, the experience of the pack or product) includes, for example, pleasantness, dominance, degree of control over its consequences, and alignment with personal values or social norms. This framework enables the classification of emotional terms into categories grounded in a theoretically constructed and validated model.17 of these terms had a negative connotation, and 129 had a positive connotation, consistent with previous research in food and odors demonstrating a higher number of positive terms compared to negative ones [4] [6] [13].

### Quantitative Phase Results: Step 2

In line with the study conducted by Ferdenzi *et al.*[6], we applied quantitative criteria complemented by expert judgment to retain a list of 31 terms: 10 negative and 21 positive.

For example, the results of the analysis for three feelings are presented in Table 1.

| Feeling | % relevant | % irrelevant | % familiar | % unfamilliar | Conclusion |
|---|---|---|---|---|---|
| “Fière” | 71% | 29% | 85% | 15% | No |
| “Forte” | 74% | 26% | 99% | 1% | Yes |
| “Embar-rassée” | 10% | 90% | 59% | 41% | Yes |

[Table 1: Results Step 2 – relevance and familiarity]

• The feeling *“*Fière” *(proud* was not retained due to a lack of familiarity.
• The feeling *“*Forte*” (strong)* was retained, as its relevance and familiarity scores met the inclusion criteria.
• The feeling “Embarrassée” (*embarrassed)* was retained despite not meeting the relevance and familiarity thresholds, as it was one of the most familiar negatively connoted feelings, and we wished to retain this type of term at this stage of the analysis.

**Central Location Test Results: Step 3**

Contributions of each feeling/term to the construction of the affective space are presented in Table 2.

| Feelings | CFA - PACK Contribution D1 | CFA - PACK Contribution D2 | CFA – USE Contribution D1 | CFA – USE Contribution D2 | ANOVA - PACK (Number of Groups - Tukey HSD) | ANOVA - USE (Number of Groups - Tukey HSD) | Final Inclusion |
|---|---|---|---|---|---|---|---|
| Negative Feeling 1 | -0,31 | -0,67 | -0,61 | -0,45 | 4 | 4 | No |
| Negative Feeling 2 | -0,11 | -0,77 | -0,56 | -0,68 | 2 | 4 | Yes |
| Negative Feeling 3 | -0,13 | -0,70 | -0,32 | -0,60 | 2 | 3 | No |
| Négative Feeling 4 | -0,35 | -0,84 | -0,72 | -0,52 | 4 | 7 | Yes |
| Feeling 5 | 0,81 | 0,33 | 0,92 | 0,01 | 5 | 5 | No |
| Feeling 6 | 0,66 | 0,23 | 0,76 | -0,23 | 7 | 8 | Yes |
| Feeling 7 | 0,75 | 0,34 | 0,85 | -0,20 | 5 | 3 | No |
| … | … | … | … | … | … | … | … |

[Table 2: Results Step 3 – Variable Contributions (CFA Varimax), Tukey HSD.]

Feelings/terms with low discriminatory power and contributions to the construction of the CFA emotional universe were removed. Once again, strict application of quantitative criteria was moderated by a qualitative approach. From the 31 terms tested in Step 3, 20 feelings were retained.

**Central Location Test Results: Step 4**

The results confirmed the emotional universe's stability between Steps 3 and 4 and the tool's discrimination capacity (figures 2, 3, and 4).

Indeed, among the 20 feelings/terms tested, only one negative feeling differed significantly between steps 3 and 4. Pairwise tests (Tukey's HSD) showed identical results, demonstrating the stability of the measurement scale.

In addition, the modelled PCAs show an almost identical representation of the emotional universe, with a very close percentage of data retention for the representation : 79,53% for the step 3 (with 31 terms) and 78,47% for the step 4 (with 20 terms).

The second part of the results validates the tool's ability to discriminate products and evaluation stage. Indeed, all of the feelings can be used to discriminate between products, both when the pack is discovered and when the product is used. The products exhibit distinct emotional profiles. (Figure 2).

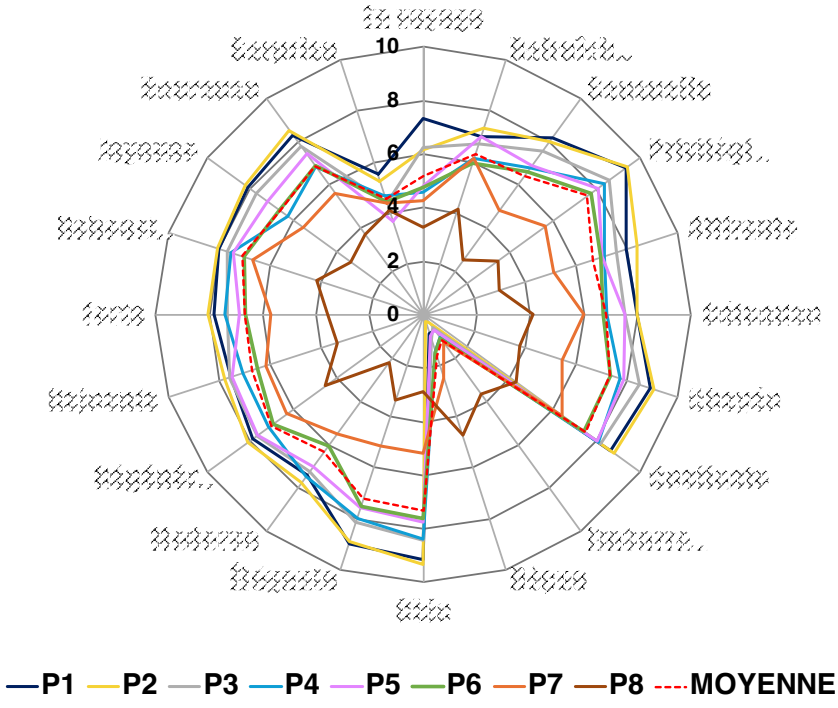



**Figure 2 :** Differences in the impact and emotional signatures of products on discovery of **the pack**

Feelings discriminate between products on an evaluation stage (figure 3 and 4). The results demonstrate the consistency of the proposed emotional experience associated with premium facial care creams. The experience may increase in intensity, decrease or remain unchanged.

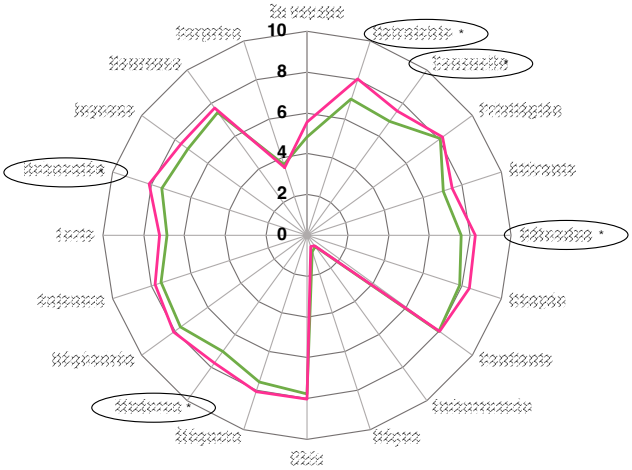



**Figure 3** : intensity progression
Stage effect on product 5 Pack: —
vs Usage: —

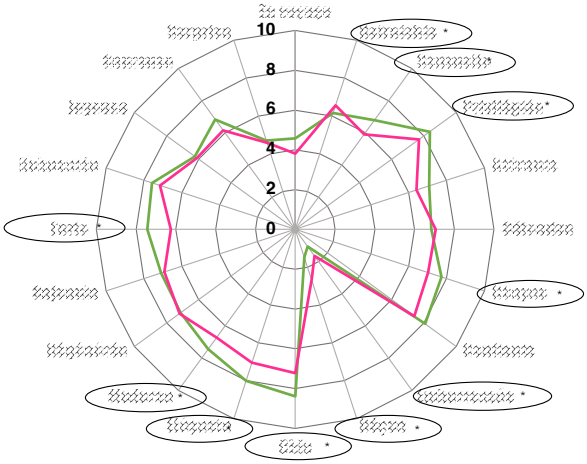



**Figure 4 :** decrease in intensity
Stage effect on product 4 Pack: —
vs Usage: —

The final questionnaire consisted in a list of 20 specific emotional terms divided into 10 categories defined by a qualitative approach grounded in a theoretically constructed and validated model, constituting a stable, validated, exhaustive and discriminating tool. Two indicators were highlighted: the intensity of emotional engagement at each evaluation stage, and emotional consistency from packaging discovery to use.

## 4. Discussion

Although numerous emotional questionnaire tools exist, scientific literature notes that they are highly product-specific [7], [4], [2]. Hence the importance of creating tools dedicated to specific product categories using validated methods. This is the case here with the development of an emotional evaluation tool for facial skincare creams in the selective market.

This method is simple and easy to implement. It is noteworthy that results between Steps 3 and 4 were stable, ensuring reproducibility under the experimental conditions used — i.e., test conditions and tested products. Nevertheless, the stability of the questionnaire could be further challenged with other selective market products or tests conducted in different contexts or with panels recruited by different operators.

Another advantage of this evaluation method lies in its ability to enable a transversal assessment of the product experience: namely, comparing the emotional impact of the same product at different stages — the discovery of the packaging versus actual use. This yields interesting insights for understanding the evolution of the consumer experience in is affective dimension:

- Products showing an increasing emotional intensity, especially for positively connoted feelings (Figure 3).
- Products whose emotional impact decreases between stages, particularly for positive feelings, indicating a lack of consistency (Figure 4).

- Products displaying strong emotional consistency across stages.

Moreover, this questioning approach demonstrates its ability to capture distinct product effects:

- At a given stage, differences linked to variations in emotional impact intensity — for instance, products from the same brand (but different range) inducing different intensities, especially at the packaging evaluation stage, with differences diminishing during usage evaluation.
- Differences in emotional profiles, which could be described as emotional signatures, where some feelings are more strongly impacted while others are less affected, as observed in Figure 2 across the 8 evaluated products.

Potential future research directions include:

- Validating the stability and discriminatory power of the questionnaire through blind product presentations, as has notably been done with reference frameworks such as the EsSense Profile [7] or the EmoSensory Wheel [15], which combine emotional and sensory/hedonic responses.
- Applying this methodology across different cultures, particularly in high-stakes markets such as Asia and North America, as was done for odors using the UniGEOS framework [4].

It is also pertinent to mention the potential use of psychophysiological techniques like Electrodermal Activity (EDA) to assess other dimensions of emotional response. These techniques have the advantage of not relying on participants attention or expressive abilities. However, they often fall short in distinguishing among various positive emotions [3] [4] [8]. Moreover, physiological measurements require significant equipment, are invasive, and may limit spontaneous participant responses. Finally, interpreting physiological responses such as EDA remains complex, as large variations may reflect processes of detection, orientation, or information processing rather than pure emotional response [9], [11].

## 5. Conclusion

The development of a method grounded in emotion theory (component process model) and adapted to field data has led to a short, exhaustive, stable, discriminating, and easily deployable semantic questionnaire, aimed at studying the emotional experience related to facial skincare creams in the selective market. This ability of the questionnaire to capture a broad range of emotional impacts depending on the product highlight the complexity and richness of the emotional responses elicited by cosmetic product experiences and suggests the relevance of expanding this type of methodology to deepen consumer experience understanding. R&D and marketing teams could integrate such evaluations into product development processes to complement more traditional metrics, including multimodal approach to offer a more comprehensive perspective and open promising avenues for both product development and consumer research.

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