

IFSCC 2025 full paper (IFSCC2025-975)

## **“Emotions in Atopic Dermatitis: a new parameter for a better evaluation by parents and children”**

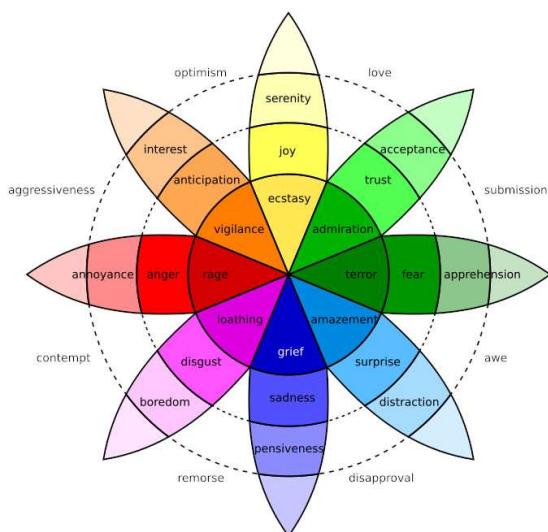
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### **1. Introduction**

Emotion is a response of the organism to a particular stimulus (person, situation or event), usually an intense and short duration experience. There are usually 6 “simple” emotions considered: sadness, happiness, fear, anger, surprise and disgust, but many other also exist and are expressed by people. A typical representation of existing emotions can be made using a color wheel as illustrated figure 1. Characterization of emotions still represent a research area and they are difficult to fully explain without controversies [2][3].



**Figure 1.** Example of emotions represented in a color wheel [1].

In a first project on emotions linked to cosmetic products, we showed that they differ in quality and intensity among categories of products: best emotions for care, neutral for protection, less pleasant for change and hygiene. Verbalization of emotions was difficult both for parents and children and pictures were helpful. We created a toolbox to help them to evaluate emotions

generated by “parent-child-cosmetic product” interaction during skin care, completed by a “Napping sensory method” to compare 8 products [4][5]. During this first project we highlighted that the Atopic Dermatitis (AD) domain was very particular.

AD is a chronic inflammatory skin disease, common in children (~20%) and it usually disappears around 6-10 years of age but may persist in adults. It is characterized by overall dry skin with localized intense redness/itching progressing in flare-ups alternating with periods of calm. AD impacts highly the quality of life of the child and his family due to itching and sleep disorders. The treatment is based on daily moisturizing of the skin with emollients and the application of corticosteroids in the event of a flare-up.

The AD is thus particular with a context of use that is sometimes difficult for parents and children leading to negative emotions. Due to the characteristics of the skin of AD subjects, moisturizing products for the daily management of this disease have a particular sensoriality: they are fragrance-free with usually a thick film-forming texture to protect the skin of external aggressions. That does not encourage compliance which is a key to limit the frequency of flare-ups.

In AD domain, quality of life including physical, psychological and social well-being is evaluated in general dermatology and Atopic Dermatitis (AD) but usual questionnaires include few questions about emotions, for example 10 questions in Skindex 29, 1 in DFI, DLQI, some in Itchyqol, but not all the emotions fields are covered.

The objectives of the present project are:

- to explore the emotions specific to the AD domain in order to understand the emotional area related to AD and AD care products.
- to characterize in a Napping study the emotional perception of different AD products to validate this approach in the AD domain.

The final objective is to generate knowledge on AD products to better evaluate their characteristics and perception, optimize their formulation and directly improve the compliance of their daily use.

## 2. Materials and Methods

### Exploring emotions related to AD: creation of the AD Emotions Toolbox

In order to understand the emotions felt by parents and children linked to AD and AD care products, we organized 2 focus groups with 12 parents of children with AD, 1 group with children with recent AD (< 1 year) and 1 group with children with “well installed AD” (>2 years). The focus group consisted of different phases:

- Explorative phase about the knowledge of AD.
- Emotions spontaneously evoked for AD and AD products.
- Creative phase from a list of words, faces expressing different emotions (parents and children), pictures chosen from newspapers of different fields (culture, travel, home ...) and a set of colors.

- Finally, a creative phase with 3 different products designed for AD offered first in blind and then branded with different packaging was carried out to assess the impact of these elements on emotions.

An example of illustrative materials proposed to parents and children during these focus groups is shown in Figure 2.



**Figure 2.** Example of pictures and colors proposed to parents and children to help expression of emotions linked to AD domain.

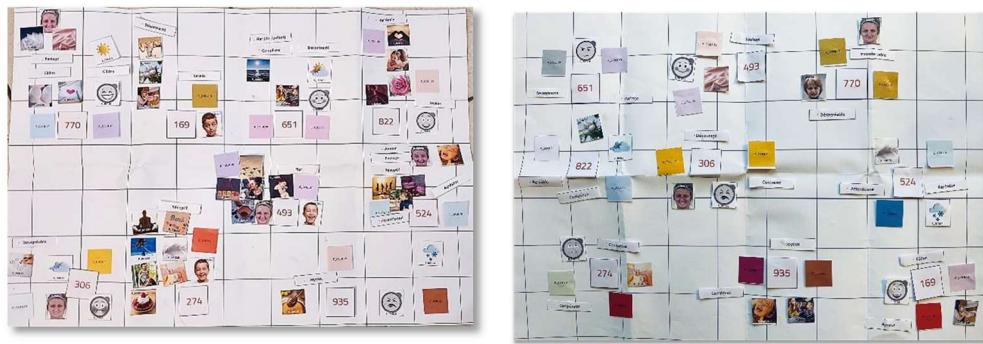
At the end of this first part, using the elements expressed by parents and children, a toolbox composed of images of words and colors relevant to the expression of emotions related to the AD was created.

#### Exploring emotional perception of AD products: Using the Toolbox in a Napping Study

The objective of this second part is to use the created Toolbox to characterize different AD products. For that a Home Use Test has been performed with 97 parents of children between 4 to 9 years old with mild to moderate AD. These subjects tested 8 products (with 1 replicate) designed for AD care with different sensorial characteristics. The products were used by the subjects with a sequential monadic randomized plan (2 days for each product).

The Napping method previously validated for moisturizing products [5] was used to discriminate the AD products from emotional point of view. Every 2 days, parent and child should place on a nappe (A2 sheet of paper) the label of the product and add around it all items of their toolbox they wanted to illustrate the emotions they both felt during the application of the product. Then, they added the second product on the nappe. If the emotions are similar, the product and emotion labels are close, and if they are different, they are far from each other.

At the end, all tested products were placed on the nappe, with the toolbox items relevant for parents and children. An example of nappe obtained is shown Figure 3.



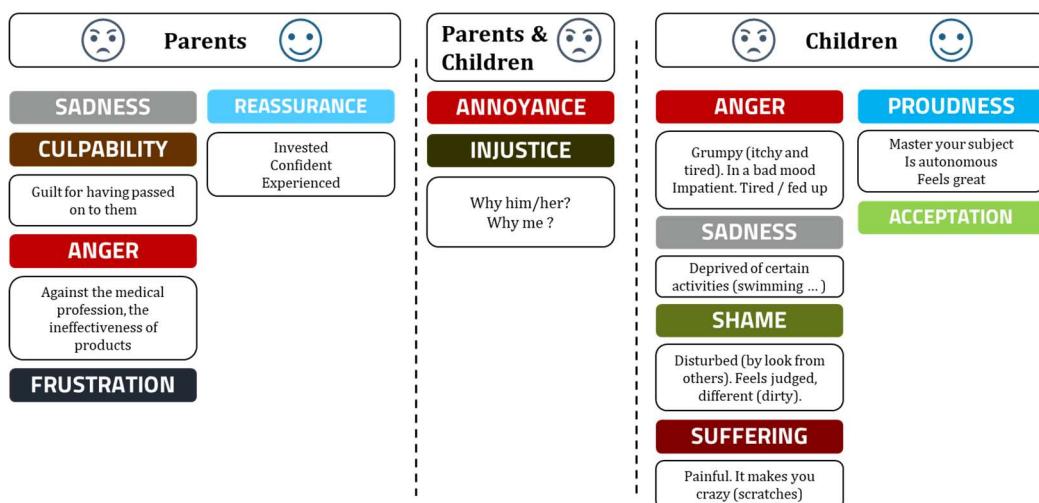
**Figure 3.** Examples of nappe obtained at the end of the Napping study from parents and children.

All the nappes were reported informatically and processed by a specific contingency algorithm to associate the products with the items of the toolboxes. During this study a general (perception of the texture, odor ...) and hedonic (emotional intensity and valence) appreciation questionnaires for each product were also completed by the parent-child duo.

### 3. Results

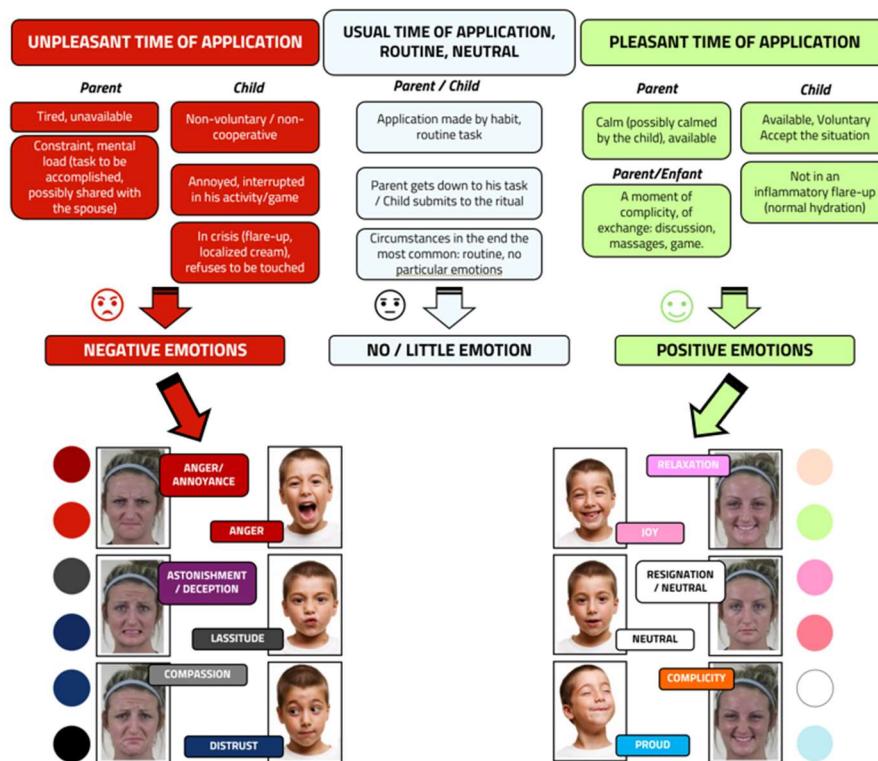
#### Emotions related to AD domain

Emotions generated by AD are mostly negative and primarily triggered by symptoms. They are similar, whatever the parents' experience of the disease is. However, some positive emotions can come out, for example a feeling of pride when the child feels autonomous when taking charge of his AD. An illustration of emotions expressed by parents and children concerning AD is shown Figure 4.



**Figure 4.** Emotions linked to AD expressed by parents and children.

During product applications, emotions depend upon the timing of applications. When the parent is calm and the child available with no AD flare, emollient care provides joy and proudness for parents, sweetness, and reassurance for children. When the parent is tired or the child is uncooperative, it leads to negative emotions like anger or disappointment. We also observe that the application can be done in a routine setting and then no or few emotions are generated. These situations are illustrated Figure 5.

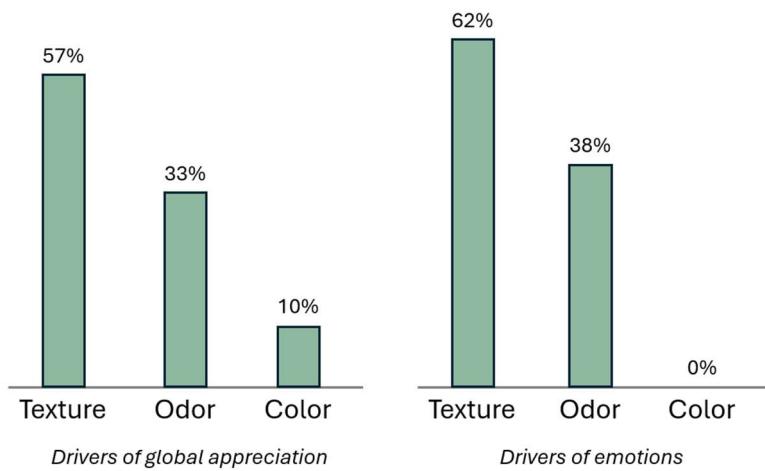


**Figure 5.** Illustration of the emotions generated according to the timing of applications.

Packaging can also indirectly impact emotions by provoking reassurance depending on the knowledge of the product on the market. The elements expressed by the parents and children made it possible to create 2 toolboxes composed of images, colors and words for each which was used in the second part of this work.

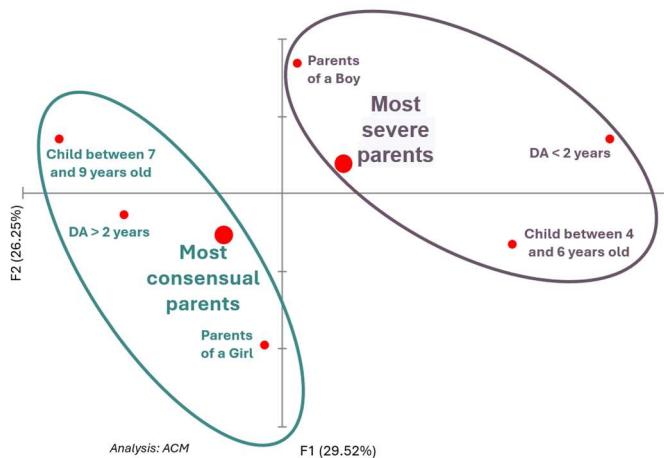
#### Emotional perception of AD products: Napping study results

Results of the Napping study shown that the drivers of global appreciations and emotions generated by different products during the use test are the same (Figure 6). The appreciation of each product was correlated to the emotions generated, mostly depending on the consistency/ texture. Odor, despite the fact that the tested products are without fragrance, is the second driver.



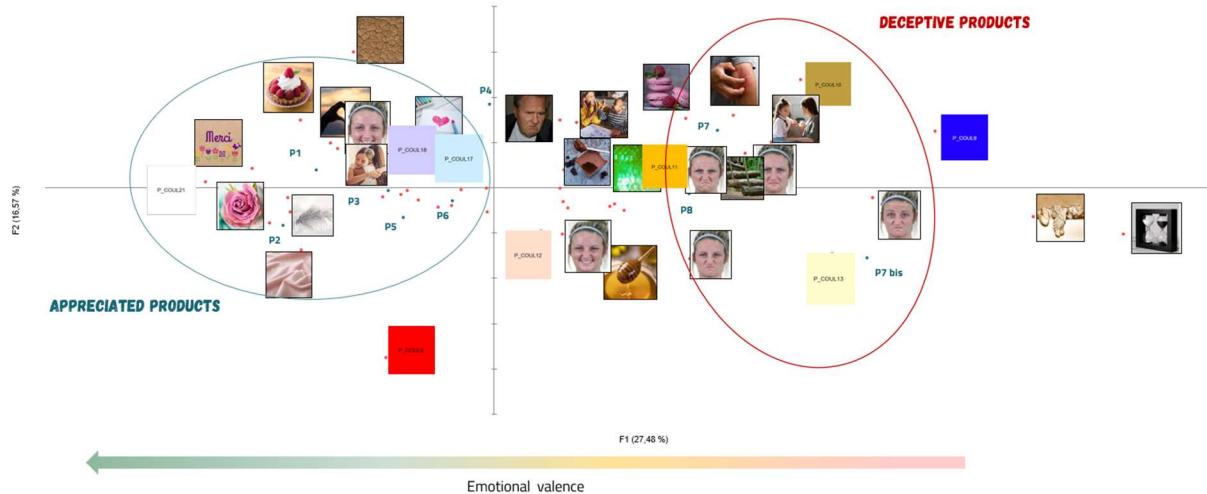
**Figure 6.** Drivers of global appreciation and emotions of products.

Interestingly we identified 2 clusters of parents according to the emotional appreciation of the different products. Recent AD less than 2 years, small age and being a boy impact negatively the perception of the products whereas AD present for more than 2 years, age over 7 years and having a girl impact less the negative appreciation of the products (Figure 7).



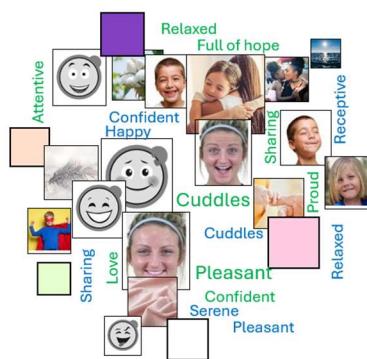
**Figure 7.** Illustration of the impacts of child characteristics on the emotional appreciation of the products by the parents.

All the nappes obtained during the study made it possible to generate an average nappe that represents the emotional appreciation of the products in 2 dimensions. The average nappe obtained by considering only the images is shown in Figure 8. We can see that products are clearly discriminated against each other, with products on the left that are appreciated from an emotional point of view and on the right products that are more deceptive. It should be noted that the x-axis of this nappe is correlated with the emotional valence expressed by the subjects through the questionnaire.



**Figure 8.** Global nappe obtained from the Napping study.

For each product we can extract the elements of the toolboxes (colors, words and images) associated with it. The results obtained during the napping study thus make it possible to build an emotional portrait of a given product as illustrated in Figure 9.



**Figure 9.** Example of emotional portrait of a product tested during the Napping study. Green words are from parents and blue words from children..

## 4. Discussion

In the cosmetic field, beyond the safety and effectiveness of products, consumers expect products to provide well-being and positive emotions through the sensoriality of the formulas offered, even more so when products create an interaction between a parent and their child.

The field of AD care using cosmetic emollients is special because it is a context of disease with sometimes difficult situations for the parent and the child. The results obtained during the focus groups showed that emotions related to the field of atopic dermatitis were mostly negative, even though the products can generate positive emotions through the management of AD.

Expressing one's emotions spontaneously remains a difficult exercise and the toolboxes generated thanks to the focus group allow to have a support for the expression of the emotions of the parent and the child. These toolboxes are different from the toolboxes generated in the previous work [4] and therefore it is interesting to have adapted supports to the domains of the DA for the Napping phase.

This Napping method applied to the field of AD shows that it is possible to discriminate products and to identify the emotions felt by the parent and their child when using a product.

The texture remains the main driver of appreciation in this area of AD but the smell remains important. Despite the fact that these products must be fragrance-free with regard to the characteristics of AD skin, it is therefore important to offer products with a pleasant smell in order to facilitate compliance for subjects and thus improving the management of subjects with AD.

The study also highlighted that the perception of care is different depending on the typology of the parents and the history of the onset of AD. Parents who have children with AD for a short time are the most demanding, and they must be the subject of special attention.

## 5. Conclusion

This work has made it possible to generate new toolboxes for emotions to help communicate with AD patients of all ages in a pleasant and playful way. These media are key to discriminating products from each other from an emotional point of view. This work also made it possible to validate the Napping method in the field of AD.

## References

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