De-coding the multisensory dynamics in cosmetics: implicit associations and consumer perceptions of color, fragrance and application

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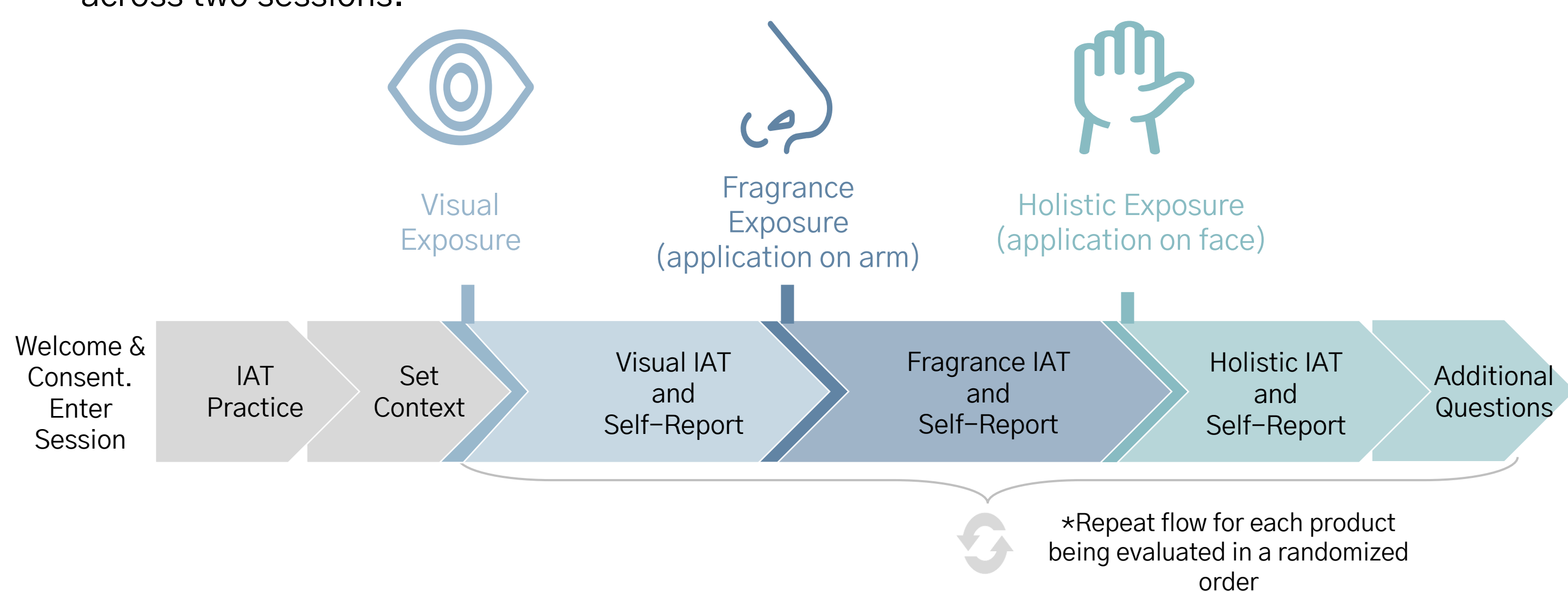(1)L'Oréal USA; (2)Nerdoscientist, LLC; (3) RIWI

L'ORÉAL

Understanding consumer reactions and perceptions is vital for product developers and sensory researchers. This study delves into the interplay between cognitive processes and sensory drivers of consumer experiences, with a focus on the multi-sensory nature of cosmetic products. Crossmodal associations among the senses influence how consumers evaluate products, with integration of sensory information shaping overall perception. Consumer reactions, influenced by cognitive processes, expectations, and emotional responses significantly impact product acceptance. In this study we used implicit reaction time testing to measure subconscious associations, providing insights into crossmodal effects and higher-order perceptions of facial balms differing in color and fragrance. Eighty participants evaluated 4 test products with varying colors and corresponding aromas using implicit association and self-report. Expectations were apparently first set by visual cues. Fragrance emerged as the predominant factor impacting emotion, significantly influencing both overall product liking and product perceptions. Application experiences governed by the degree of harmony across color, fragrance, and texture, varied across products, with certain products aligning better with intended effects. Implicit associations revealed additional benefits of color and scent beyond explicit measures and control product. Overall, the findings underscore the pivotal role of sensorial harmony in shaping product perceptions, with fragrance notably shaping the overall product experience. Understanding these dynamics informs product development strategies, ensuring products align with consumer expectations for enhanced market success.

KEY TAKEAWAYS:

- **Multi-Sensory Influence**: Consumer perceptions of cosmetics are shaped by the interplay of cognitive processes and sensory drivers.
- **Fragrance Dominance**: Fragrance significantly impacts emotions and overall product appeal, often guided by visual cues.
- **Harmonious Design**: Aligning color, fragrance, and texture enhances consumer experiences and acceptance.
- **Strategic Development**: Leveraging these insights can optimize product development and align offerings with consumer expectations.

Study Flow: n = 80 evaluations per test product

*Evaluating four test products (different fragrance/color mixes) in a complete block design across two sessions.

Welcome & Consent. Enter Session → IAT Practice → Set Context → Visual IAT and Self-Report → Fragrance IAT and Self-Report → Holistic IAT and Self-Report → Additional Questions

*Repeat flow for each product being evaluated in a randomized order

Test Products:
1. Mix 1 (fragrance 1/color 1)
2. Mix 2 (fragrance 2/color 2)
3. Mix 3 (fragrance 3/color 3)
4. Control (no added fragrance or color)

Each IAT consists of:
- Functional/Descriptive Attributes
- Emotional/Higher Order Benefits

Priming:

Visual Exposure → Fragrance Exposure → Holistic Exposure (application)
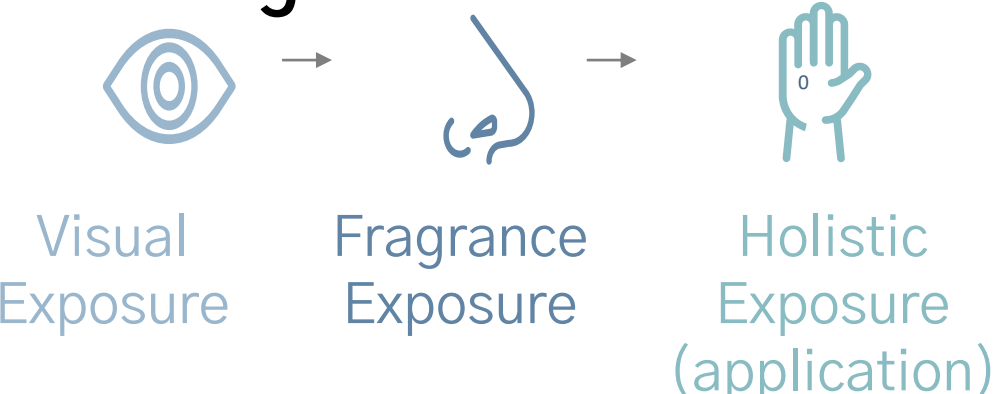
Note that each exposure will prime and influence subsequent exposures. For example, perceptions of the fragrance will be influenced by the visual of the product. Furthermore, the holistic exposure will be primed by both the visual and fragrance of the test product. This is representative of the real-world product experience yet allows us to evaluate the influence of each sensory cue.

The products (identified as "cream," "balm," or "moisturizer,") performed similarly across explicit measures but stood out in expected effects and certain hedonic preferences.

- All products were expected to be smoothing based on color.
- Mix 1 was more expected to be hydrating, Mix 2 to reduce redness, and Mix 3 to be brightening, aligning with target effects.
- Only Mix 2 showed alignment between expectations and application experience, particularly for reducing redness.
- Mix 2 had the best match between color and scent and the most well-liked fragrance.

	Measure	Mix 1 (A)		Mix 2 (B)		Mix 3 (C)		Control (D)	
VISUAL	Color Liking (Mean)	3.8		3.9		3.6		4.0	
	Expected Effects (Top 3)	Smoothing	76%	Smoothing	70%	Smoothing	68%	Smoothing	73%
		Hydration	65%	Reduced redness	63%[ACD]	Mattifying	57%	Hydration	65%
		Calming	60%	Hydration	62%	Hydration	56%	Calming	49%
	Target Effect	Hydration	65%	Reduced redness	63%[ACD]	Brightening	52%	n/a	n/a
FRAGRANCE	Fragrance Liking (Mean)	3.6[D]		4.3[AD]		3.8[D]		2.7	
	Color and Scent Match (Matches it very well)	36%		63%[A]		48%		44%	
APPLICATION	Application Liking (Mean)	3.5		3.9		3.8		3.4	
	Ease of Application	4.3		4.5		4.6		4.5	
	Actual Effect (Top 3)	Softened	68%	Softened	80%	Softened	80%	Softened	78%
		Hydrated	53%	Hydrated	65%	Hydrated	68%	Hydrated	63%
		Mattified	40%	Mattified/Blurred	39%	Mattified	34%	Mattified	38%
	Target Effect	Hydrated	53%	Less Red	33%	Brightened	30%	n/a	n/a
OVERALL	Likelihood to Purchase	3.3		3.7		3.5		3.3	
	Likelihood to Recommend	3.3		3.7		3.5		3.3	

Implicit associations (especially for Mix 2) reveal the added benefits of color & scent versus the control.

NOTE: Only **high** associations are shown. Underlining indicates overlap across stages (i.e., multiple aspects of the product are conveying the attribute)

		Mix 1		Mix 2		Mix 3		Control	
		The product is···	The product makes me feel···	The product is···	The product makes me feel···	The product is···	The product makes me feel···	The product is···	The product makes me feel···
Visual Exposure		Hydrating Nourishing Smoothing Velvety	Beautiful Nurtured Peaceful Refreshed Satisfied	Nourishing Smoothing Velvety	Confident Nurtured Refreshed	Smoothing		Conditioning Hydrating Nourishing Smoothing	Beautiful
+ Fragrance Exposure		Conditioning Lightweight Nourishing Smoothing	Refreshed	Hydrating Lightweight Nourishing Smoothing Velvety	Beautiful Confident Peaceful Radiant Refreshed Satisfied	Nourishing Smoothing Velvety	Beautiful Refreshed		
+ Application Exposure		Smoothing		Conditioning Hydrating Lightweight Smoothing Velvety	Beautiful Peaceful Refreshed Satisfied	Hydrating Lightweight Nourishing Smoothing Velvety	Beautiful Nurtured Peaceful Refreshed Satisfied	Smoothing	
= Overall Product Experience		Conditioning Hydrating Lightweight Nourishing Smoothing Velvety	Beautiful Nurtured Peaceful Refreshed Satisfied	Conditioning Hydrating Lightweight Nourishing Smoothing Velvety	Beautiful Confident Nurtured Peaceful Radiant Refreshed Satisfied	Hydrating Lightweight Nourishing Smoothing Velvety	Beautiful Nurtured Peaceful Refreshed Satisfied	Conditioning Hydrating Nourishing Smoothing	Beautiful

Differentiated Experiences Driven Entirely By Sensory Inputs

All products, including the control, are perceived as **hydrating**, **nourishing**, and **smoothing**, and make consumers feel **beautiful**.

However, the inclusion of color and fragrance enables the products to bring in additional associations beyond a formula with no added fragrance or color*:

*Unique associations vs. control are shown.
**Reducing redness is based on self-reported responses

Mix 1

This product is···
- Lightweight
- Velvety

This product makes me feel···
- Nurtured
- Peaceful
- Refreshed
- Satisfied

Mix 2

This product is···
- Good at reducing redness**
- Lightweight
- Velvety

This product makes me feel···
- Confident
- Nurtured
- Peaceful
- Radiant
- Refreshed
- Satisfied

Mix 3

This product is···
- Lightweight
- Velvety

This product makes me feel···
- Nurtured
- Peaceful
- Refreshed
- Satisfied