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Beyond the clear skin ideal: how a model's facial skin appearance influences consumer attention to cosmetic advertising and brand attitude

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ABSTRACT

Cosmetic brands have traditionally featured models with flawless, clear skin in their advertising. However, a recent trend has emerged where brands showcase models with facial skin imperfections, raising questions about the effectiveness of this approach. To address this gap, this research conducts an online experiment ($n = 235$) and an eye-tracking experiment ($n = 116$) to assess brand attitude and visual attention. Drawing on Self-Congruity Theory, we propose that models with visible acne in cosmetic advertising increase self-brand congruity differently depending on individuals' acne-related psychosocial impact. Results revealed that self-brand congruity is more negative among consumers who do not relate to acne problems, which negatively affects brand attitude. Nevertheless, featuring a model with visible acne tends to increase ad noticeability, emotional arousal, and interest for the ad. These findings highlight the strategic value of atypical visual cues in cosmetic advertising and the psychological mechanisms behind responses to nontraditional beauty portrayals.

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Facial skin appearance; acne; cosmetics; self-congruity theory; eye tracking

1. Introduction

Skin Care includes cosmetic products designed to protect the skin. In 2025, the Skin Care market is projected to generate US$198.35 billion worldwide (Statista 2024). The portrayal of beauty in cosmetic advertising has been dominated by idealized images, frequently featuring models with flawless skin (Laham 2020; Yang, Lou, and Tandoc 2023). These visual conventions have shaped consumer perceptions of beauty standards, reinforcing an often unattainable ideal (Laham 2020).

While most cosmetic brands still avoid showing models with facial skin imperfections—typically using retouching, sometimes with disclaimers (Yang, Lou, and Tandoc 2023)—a growing number now feature them. CeraVe emphasizes skin health and includes models and influencers with visible acne or eczema, promoting transparency and realism. Glossier, similarly, uses models with textured skin, freckles, and acne

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scars in its "Skin First" approach, offering a more inclusive beauty vision. Though limited, this trend departs from traditional beauty norms and raises questions about how consumers respond to nontraditional portrayals.

Although featuring models with facial skin imperfections can signal honesty (Yang, Lou, and Tandoc 2023), its marketing effectiveness remains underexplored. Little is known about how this imagery affects consumer attention, brand identification, and evaluation. While research has identified attention-grabbing ad strategies (De Pelsmacker, Geuens, and Van den Bergh 2021; Rossiter, Percy, and Bergkvist 2018), the use of models with visible acne remains unstudied. This research proposes that such deviations from beauty norms can influence attention to the ad. Self-Congruity Theory (Sirgy 1982, 1985, 2018) also suggests that consumers respond more positively to brands that reflect their self-image. Accordingly, advertising featuring models with visible acne may lead to greater self-brand congruity among individuals who have experienced acne-related psychosocial impact, and lower self-brand congruity among those who have not.

To address these gaps, this research examines the psychological and behavioral consequences of featuring models with visible acne in cosmetic ads, focusing on patterns of visual attention and attitudinal responses. Across two studies—an online experiment and an eye-tracking experiment—this research investigates (1) how visible acne affects consumer attention to advertisements, and (2) how individuals' psychosocial experiences with acne condition their responses in terms of self-brand congruity and brand attitude. The goal is to provide insights into the strategic use of atypical models' facial features in advertising and understand how deviations from conventional beauty norms influence gaze behavior and brand perception. This research contributes to the literature on cosmetic advertising, beauty standards, and self-brand congruity by elucidating the conditions under which nontraditional beauty portrayals can enhance or hinder brand evaluations. It also provides practical guidance for marketers navigating evolving expectations of authenticity and inclusivity in the cosmetic industry.

2. Theoretical background and hypotheses

2.1. Visible acne as an atypical facial feature driving attention

In today's oversaturated media environment, where countless ads compete for consumers' limited attention and digital spaces grow increasingly cluttered, capturing attention has become one of advertisers' greatest challenges (Beuckels et al. 2021; Duff and Segijn 2019). As Rossiter, Percy, and Bergkvist (2018, p. 220) assert, attention has emerged "the single biggest barrier facing advertising right now". One consistently effective strategy involves leveraging human faces, which are biologically and socially salient stimuli that naturally attract visual attention (Adil, Lacoste-Badie, and Droulers 2018; Guido et al. 2019; Xiao and Ding 2014), brand recognition (Guido et al. 2019), or brand recall (Adil, Lacoste-Badie, and Droulers 2018). Human faces are processed and recognized faster and more accurately than any other visual stimuli (Bruce and Young 1986), making them powerful visual anchors within advertisements (Rossiter, Percy, and Bergkvist 2018).

Although the attentional pull of faces is now well established, less is known about which specific facial features contribute most to this effect. We propose that visible acne functions as an atypical and perceptually salient feature, heightening visual attention to the model's face because it deviates from normative expectations of facial uniformity. This effect can be explained through three complementary perspectives: (1) evolutionary anomaly detection, (2) attentional bias toward socially salient or stigmatized features, and (3) the perceptual salience of atypical visual features.

First, humans have evolved a perceptual sensitivity to deviations from expected physical patterns, particularly in faces, because such anomalies may signal health risks, social threats, or reproductive fitness issues (Ackerman et al. 2009; Schaller and Duncan 2007; Zebrowitz and Montepare 2008). This hypersensitivity to facial irregularities is rooted in evolutionary survival mechanisms: unusual facial features may have historically been associated with disease or genetic disorders, and thus required immediate attention. Such detection is thought to be part of the behavioral immune system, a set of psychological responses that trigger attentional and avoidance reactions when encountering potential pathogen cues (Schaller and Duncan 2007). Research has shown that disease-relevant signals are likely to hold disease-sensitive perceivers' attention, even in the absence of memory consolidation (Ackerman et al. 2009).

Second, acne is also socially meaningful. It is often associated with stigmas around hygiene, attractiveness, or personal responsibility, and thus may violate implicit cultural expectations. Research has shown that visible facial differences are commonly perceived as socially undesirable and become focal points in interpersonal perception (Rumsey and Harcourt 2004). Skin clarity is known to influence judgments of attractiveness, with skin imperfections reducing aesthetic appeal (Jones et al. 2004). This mechanism differs from biological vigilance in that it relies on socially constructed norms and stereotypes. Moreover, humans are emotionally attuned to aesthetic deviation, particularly in faces, making such features more attention-grabbing (Etcoff 2011).

Third, from a cognitive psychology standpoint, atypical features increase perceptual salience by disrupting visual uniformity. Salient stimuli attract gaze automatically due to their contrast with surrounding elements (Brüns and Meißner 2023; Itti and Koch 2001; Xie et al. 2024). In this view, attention is guided less by social interpretation and more by low-level visual mechanisms: facial features such as acne should draw attention not because of their social or emotional meaning, but because their irregular texture and color contrast sharply with the surrounding skin, making them visually distinctive.

Across evolutionary, social, and perceptual perspectives, a common pattern emerges: atypical facial features such as visible acne function as salient visual cues that attract attention. This initial attentional capture has downstream effects. Increased attention to a model's face in an advertisement can serve as an attentional gateway, guiding viewers to process other elements of the ad more thoroughly, such as the brand name, product, or overall advertisement. This phenomenon aligns with the concept of attention transfer, where initial focus on a salient pictorial element facilitates subsequent attention to related components within the advertisements (Pieters and Wedel 2004). Previous research shows that facial features increase the viewer's attention to the advertisement as a whole and also influence their gaze patterns and attention

distribution across the advertisement's elements, including directing visual attention to the ad copy (Pfiffelmann, Dens, and Soulez 2020).

Consistent with this view, visible acne, as an atypical and perceptually salient facial feature, should heighten the initial noticeability of the model's face, thereby creating conditions conducive to attention transfer. When perceptual salience increases early visual engagement, this heightened noticeability may extend downstream to emotional and cognitive processing, influencing how viewers attend to other ad components. While the magnitude of such transfer may differ depending on the nature of the areas of interest (AOIs), the presence of visible acne should generally increase visual engagement with the overall advertisement and other ad elements. Accordingly, we hypothesize:

H1: The presence of visible acne on the model (vs. clear skin) will increase the noticeability of the advertisement's visual elements, as reflected in (a) a higher proportion of viewers attending to relevant ad areas and (b) shorter times to first fixation to these areas.

H2: The presence of visible acne (vs. clear skin) will elicit higher emotional arousal, as indicated by greater average pupil dilation when viewers fixate on the advertisement's visual elements.

H3: The presence of visible acne (vs. clear skin) will increase cognitive processing of the advertisement, as reflected in a higher average duration of fixations on the advertisement's visual elements.

H4: The presence of visible acne (vs. clear skin) will enhance interest in the advertisement and its components, reflected in (a) a higher number of fixations and (b) longer total visit durations across the advertisement's visual elements.

2.2. Model's facial skin appearance and self-brand congruity

Self-Congruity Theory provides a foundational framework for understanding how individuals evaluate marketing stimuli based on perceived similarity between themselves and brand-related representations. Originating from self-concept theory, self-congruity is defined as the degree of match between a consumer's self-concept and the image of a brand, product, or associated stimuli (Sirgy 1982, 1985, 2018). Self-brand congruity, a more specific application of this theory, refers to the perceived match between a consumer's self-concept and the brand's image (Sirgy 1982). When consumers perceive a brand as aligning with their self-concept, they are more likely to form positive attitudes and evaluations toward the brand (Malär et al. 2011; Michel et al. 2022). This congruity can involve different facets of the self-concept—actual (how consumers see themselves), ideal (how they would like to be), social (how they believe others see them), or ideal social (how they would like to be seen by others)—each shaping emotional and evaluative responses to the brand (Sirgy 1982; 2018; Sirgy and Su 2000).

In advertising, models' physical appearance can serve as a powerful cue that activates self-referential processing. Consumers often compare themselves to advertising models—either consciously or unconsciously—assessing how well the models reflect or contradict their own identity, experiences, or social standing (Choi and Rifon 2012; Martin and Gentry 1997; Richins 1991; Yang, Lou, and Tandoc 2023). Such comparisons are central to the development of self-brand congruity, as they help consumers evaluate how closely the brand aligns with their self-image. Recent findings show that these

evaluations are not purely visual but often shaped by moral and authenticity cues, such as the presence of retouch-free disclaimers (Yang, Lou, and Tandoc 2023).

Advertising literature also suggests that consumers' perceptions of models' facial skin appearance are embedded within culturally dominant beauty norms, in which clear skin is associated with idealized femininity, social status, and even moral character (Frith, Shaw, and Cheng 2005; Krishen, LaTour, and Alishah 2014; Yang, Lou, and Tandoc 2023). In this regard, an individual's subjective experience of facial skin and the psychosocial impact of acne on their quality of life becomes a particularly salient lens through which advertising imagery is interpreted, carrying symbolic and emotional significance that can influence self-brand congruity.

For individuals who have faced acne and its associated psychosocial effects on daily life, the presence of a model with visible acne may increase perceived similarity between the self and the representation in the advertisement. This perceived resemblance can strengthen self-brand congruity, as the ad reflects aspects of their self-image (Malär et al. 2011; Sirgy 1982). When consumers recognize elements of their lived experience in advertising portrayals, they are more likely to see the brand as relevant and consistent with their self-view (Choi and Rifon 2012; Lee, Chang, and Zhang 2022). In contrast, individuals with no personal history of acne-related psychosocial distress may perceive the model with visible acne as incongruent with their self-image. The lack of perceived similarity can lower self-brand congruity. In this way, the psychosocial impact of acne experienced by individuals may function as a moderating factor, influencing the degree to which the model's skin appearance contributes to or detracts from the perceived match between the consumer's self-image and the brand.

Our reasoning is grounded in the broader tradition of congruity theory (Osgood and Tannenbaum 1955), which posits that individuals seek consistency between their existing evaluative frame of reference and new information and adjust their evaluations toward greater congruity. Self-congruity theory (Sirgy 1982, 1985, 2018) extends this principle to the consumer-brand domain by focusing on the perceived match between the self-concept and brand-related stimuli. In our context, the model's facial skin appearance functions as a symbolic cue about the type of consumer for whom the brand is "meant". When this cue aligns with an individual's self-concept and past experiences (e.g. high psychosocial impact of acne), self-brand congruity is expected to increase, whereas misalignment (e.g. very low psychosocial impact of acne) should reduce perceived congruency with the brand.

In our conceptualization, the psychosocial impact of acne represents a relatively stable, person-level characteristic that predates exposure to the ad. It captures how strongly acne has affected individuals' quality of life and therefore serves as a boundary condition that determines the self-relevance of acne-related cues. Accordingly, we treat it as a moderator of the effect of facial skin appearance on self-brand congruity. Self-brand congruity, by contrast, is conceived as a situationally activated state that reflects the perceived congruency between one's self-concept and the brand image after viewing the ad, and thus serves as the mediating mechanism linking facial skin appearance to brand attitude. Therefore, drawing on congruity theory (Osgood and Tannenbaum 1955) and self-congruity theory (Sirgy 1982, 2018), we anticipate that:

H5: The presence of visible acne on the model (vs. clear skin) will have a differential effect on self-brand congruity, depending on the individual's psychosocial impact of acne. For

individuals who have a high (vs. low) psychosocial impact of acne, exposure to a model with visible acne (vs. clear skin) will increase (vs. decrease) self-brand congruity.

Moreover, self-congruity dimensions may not be equally sensitive to visual cues related to the model's facial skin appearance. Facial skin condition is a concrete and immediately observable attribute that primarily activates aspects of the actual self (how individuals see themselves) and the social self (how they believe they are seen by others). These two facets of self-concept are rooted in the individual's current physical reality and social perception, making them particularly responsive to physical appearance cues in advertising (Sirgy 2018; Sirgy and Su 2000). In contrast, ideal and ideal social selves reflect aspirational or future-oriented identity goals that are less directly tied to physical features and more influenced by broader symbolic or value-based brand meanings (Malär et al. 2011). Because visible acne constitutes a realistic, non-idealized cue, it is more likely to influence congruity evaluations grounded in actual and socially perceived identity rather than idealized self-conceptions. Thus, the model's facial skin appearance may differentially affect the various dimensions of self-brand congruity, with stronger effects expected on actual and social self-brand congruity.

2.3. Self-brand congruity and brand attitude

Self-brand congruity has been consistently shown to influence consumer evaluations and attitudes toward brands. When consumers perceive that a brand reflects or reinforces aspects of their self-identity, they are more likely to show preference for the brand (Eklund and Helmefalk 2022; Malär et al. 2011; Michel et al. 2022; Park, Jaworski, and MacInnis 1986). Higher levels of self-brand congruity are associated with stronger emotional connections between consumers and brands (Amaral and Torelli 2018; Sirgy 1982). The more congruent a brand image is with the consumer's self-image, the higher the consumer's evaluation of the brand due to a match in self-expression (Holmes 2021; Li et al. 2022). Based on the self-brand congruity effect (Sirgy 1982) and this body of evidence, it is hypothesized that higher levels of self-brand congruity will lead to more positive brand attitudes.

H6: Higher levels of self-brand congruity will lead to more favorable brand attitudes.

In sum, we propose that individuals will devote more visual attention to an advertisement when the featured model has visible acne, as atypical facial features are more likely to trigger automatic attentional processes because they deviate from internalized beauty norms. Drawing on Self-Congruity Theory (Sirgy 1982, 1985, 2018), such imperfections are expected to enhance self-brand congruity among individuals for whom acne has had a significant psychosocial impact, as the model's appearance aligns more closely with their self-image. Conversely, for individuals whose quality of life has not been significantly impacted by acne, the presence of visible acne may reduce self-brand congruity, as internalized beauty norms continue to shape perceptions of attractiveness and brand fit, making the model's appearance less aligned with their self-image. Finally, in line with prior research indicating that self-brand

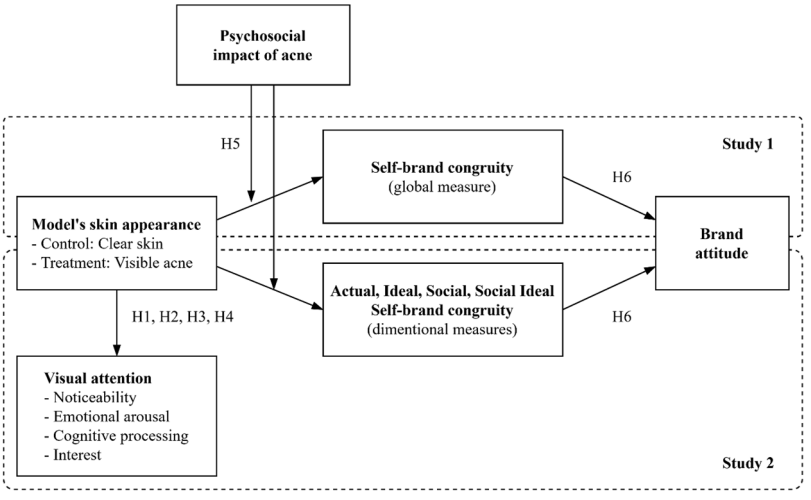

Figure 1. Conceptual model.

congruity positively influences brand evaluations, we expect that higher self-brand congruity will, in turn, lead to more favorable brand attitudes. Therefore, the following moderated mediation hypothesis is proposed:

> **H7:** The presence of visible acne on the model (vs. clear skin) will lead to more (vs. less) self-brand congruity among individuals reporting a high (vs. low) psychosocial impact of acne, thereby resulting in more favorable (vs. less favorable) brand attitudes.

The conceptual model is presented in Figure 1.

3. Study 1: online experiment

3.1. Research design and procedure

In April 2025, a between-subjects online experiment was conducted using the Qualtrics survey platform. Participants were exposed to an advertisement for a cosmetic product—a skin care product—from a fictitious brand, "DERMOVIVE." Each participant was randomly assigned to one of four experimental conditions in a 2 (skin appearance: clear skin vs. visible acne) × 2 (model gender: female vs. male) factorial design: (1) woman with clear skin ($n = 57$), (2) woman with visible acne ($n = 62$), (3) man with clear skin ($n = 59$), or (4) man with visible acne ($n = 57$) (see Appendix A). Participants were given free exposure to the advertisement and could proceed at their own pace. However, they were instructed to carefully pay attention to the ad because they would later be asked questions about its content.

The key experimental manipulation involved varying the appearance of the model's facial skin. Participants either saw a model with clear skin ($n = 116$) or the same model with visible acne ($n = 119$). Model gender was included as a replication factor, given that for unisex products, cosmetic advertisements often feature male or female models, regardless of the consumer's gender. For the main hypothesis tests, data were aggregated across model gender within each skin-appearance condition (clear skin vs.

visible acne), as preliminary analyses revealed no significant main or interaction effects of model gender on any of the dependent variables. Model gender was therefore treated as a replication factor and later controlled for in robustness analyses. Apart from variations in the model's facial skin appearance, model gender, and advertisement background, all other aspects of the ad remained identical across conditions. Following exposure to the ad stimulus, participants were asked to complete a questionnaire that included established measurement scales relevant to the study.

3.2. Participants

Participants were recruited *via* the Prolific platform and were restricted to U.S. residents. Two attention check questions were included to ensure data quality, and after excluding 22 participants who failed these checks, the final sample consisted of 235 participants. The sample was predominantly female (51.9%), with participants aged 18–31 years ($M = 25.72$, $SD = 3.11$). The participants were generally well-educated, with the majority holding either a bachelor's degree (53.2%) or a master's degree (21.3%). Most were employed full-time (48.1%) or part-time (30.2%), while smaller proportions were students (8.1%), self-employed (6.0%), or unemployed (7.2%).

Participants reported a variety of skin types, with combination (26.4%) and normal skin (26.0%) being the most common. Skincare product use was frequent, with 53.2% of participants using them daily and 24.3% using them several times a week. Spending patterns were moderate, with most participants investing between $20 and $100 (USD) per month. Table 1 presents the detailed sample characteristics for the background variables.

Overall, the sample was relevant to the study's focus on skincare advertising, as participants represented a commercially important segment with frequent skincare use and purchasing behavior. This aligns with industry findings indicating that younger consumers, particularly those under 35, are driving significant growth in the skincare market (Cosmetics Business 2024). Chi-square tests were conducted to assess the association between the model's facial skin appearance manipulation (0 = Clear skin, 1 = Visible acne) and all background variables. None of the associations were statistically significant, indicating that random assignment was successful and that there was no evidence of confounding based on background variables.

3.3. Measures

All constructs were measured using 7-point Likert or semantic differential scales (Appendix B). Attitude toward the brand was assessed using four items selected from MacKenzie, Lutz, and Belch (1986) semantic differential scale ($M = 5.14$, $SD = 1.67$, $\alpha = .972$). Participants evaluated the brand DERMOVIVE on four adjective pairs (bad/good, unappealing/appealing, unpleasant/pleasant, and unfavorable/favorable).

Self-brand congruity was measured using Sirgy and Su (2000) four-item scale ($M = 5.29$, $SD = 1.41$, $\alpha = .958$), with participants indicating their agreement with statements such as "This brand is consistent with how I see myself" and "This brand is consistent with how I would like others to see me."

Table 1. Sample characteristics.

Background variable	Category	Study 1			Study 2		
		n	%	Chi-square test	*n*	%	Chi-square test
Gender	Female	122	51.9	$p = .349$	55	47.4	$p = .601$
	Male	112	47.7		60	51.7	
	Non-binary / Other	1	0.4		1	0.9	
Age	18–20	11	4.7	$p = .401$	78	67.2	$p = .467$
	21–24	72	30.6		34	29.3	
	25–27	74	31.5		4	3.4	
	28–31	78	33.2		0	0	
Level of education	Some high school	1	0.4	$p = .728$	0	0	$p = .727$
	High school diploma or equivalent	15	6.4		78	67.2	
	Some college/university	37	15.7		0	0	
	Bachelor's degree	125	53.2		22	19.0	
	Master's degree	50	21.3		16	13.8	
	Doctorate or equivalent	7	3.0		0	0	
Occupation	Student	19	8.1	$p = .043$	116	100	–
	Employed full-time	113	48.1		0	0	
	Employed part-time	71	30.2		0	0	
	Self-employed	14	6.0		0	0	
	Unemployed	17	7.2		0	0	
	Other	1	0.4		0	0	
Skin type	Oily	48	20.4	$p = .734$	29	25.0	$p = .175$
	Dry	42	17.9		16	13.8	
	Combination	62	26.4		35	30.2	
	Normal	61	26.0		18	15.5	
	Sensitive	17	7.2		12	10.3	
	Not sure	5	2.1		6	5.2	
Skincare products usage frequency	Daily	125	53.2	$p = .611$	44	37.9	$p = .111$
	Several times a week	57	24.3		19	16.4	
	Occasionally	46	19.6		32	27.6	
	Rarely/Never	7	3.0		21	18.1	
Spending on skincare products per month	Less than $20	73	31.1	$p = .532$	48	41.4	$p = .911$
	$20–$50	89	37.9		35	30.2	
	$50–$100	52	22.1		10	8.6	
	More than $100	18	7.7		3	2.6	
	I don't buy skincare products	3	1.3		20	17.2	

Note: Chi-square tests were conducted to assess the association between the facial skin appearance (0 = Clear skin, 1 = Visible acne) and the background variables.

The psychosocial impact of acne on quality of life was assessed using five items selected from Chernyshov et al. (2024) Quality of Life Relevance-Acne scale ($M = 3.40$, $SD = 1.65$, $\alpha = .929$). Participants rated how frequently they had experienced situations such as dissatisfaction with their self-appearance or difficulty communicating with others because of acne. This scale captures respondents' past quality-of-life consequences of acne and represents a stable, trait-like individual difference that is conceptually independent from the ad stimulus. Although measured in the same post-exposure questionnaire, it is theoretically unaffected by the brief exposure to the advertisement. This contrasts with self-brand congruity, which is measured after ad exposure and reflects a situational judgment about the perceived congruency between the self and the brand.

Finally, perception of the model's facial skin imperfections was evaluated as a manipulation check using a five-item semantic differential scale ($M = 3.81$, $SD = 2.06$, $\alpha = .975$), where participants rated the model's skin on adjective pairs including clear skin/acne-prone skin, smooth/blemished, healthy/problematic, imperfection-free/

imperfection-visible, and no acne/severe acne. Participants also rated their familiarity with the brand using a multi-item scale (α = .974).

3.4. Manipulation check and control

An independent-samples *t*-test comparing the two skin-appearance conditions (collapsed across model gender) confirmed that participants perceived greater facial skin imperfections in the visible-acne condition ($M = 5.19$) than in the clear-skin condition ($M = 2.41$). This difference was statistically significant ($t = -14.02$, $df = 233$, $p < .001$), indicating that the model's facial skin appearance manipulation was successful. Further, reported unfamiliarity with the brand ($M = 3.22$, $SD = 2.10$) was significantly lower than the midpoint of 4 on the 1–7 scale ($t = -5.68$, $p < 0.001$), indicating that participants were unfamiliar with the brand, as expected.

3.5. Model testing

Hypotheses were tested using Model 7 of the PROCESS macro v3.5 for SPSS (Hayes 2017), which estimates a moderated mediation model in which the first stage of mediation is moderated. Analyses were based on 5,000 bootstrap samples to compute 95% bias-corrected bootstrap confidence intervals. In the model, facial skin appearance manipulation was specified as a dichotomous independent variable (0 = Clear skin, 1 = Visible acne), self-brand congruity as a mediating variable, and attitude toward the brand as a dependent variable. The psychosocial impact of acne was modeled as a continuous moderator between facial skin appearance and self-brand congruity. Finally, model gender was specified as a control variable. Continuous variables were mean-centered.

Descriptive statistics are shown in Table 2, which presents the means and standard deviations of self-brand congruity and brand attitude for clear skin versus visible acne conditions. Although mean scores suggest relatively small differences across conditions, formal hypothesis testing was conducted using PROCESS Model 7. Table 3 presents the unstandardized regression coefficients obtained from the PROCESS analysis. Facial skin appearance (0 = clear skin, 1 = visible acne) had no significant direct effect on self-brand congruity ($b = -0.163$, $SE = 0.180$, $p = .366$, 95% CI [−0.517, 0.191]) or on brand attitude ($b = -0.151$, $SE = 0.108$, $p = .162$, 95% CI [−0.364, 0.061]).

However, a significant interaction was found between facial skin appearance and the psychosocial impact of acne on self-brand congruity ($b = 0.308$, $SE = 0.111$, $p = .006$, 95% CI [0.088, 0.527]). Figure 2 illustrates the conditional effect of facial skin

Table 2. Means and standard deviations of self-brand congruity and brand attitude by experimental condition (Study 1).

		Self-brand congruity	Brand attitude
Experimental condition		*M* (*SD*)	*M* (*SD*)
Man	Clear skin	5.31 (1.39)	5.14 (1.78)
	Visible acne	5.20 (1.44)	4.98 (1.63)
Woman	Clear skin	5.43 (1.16)	5.44 (1.37)
	Visible acne	5.26 (1.59)	5.01 (1.84)
Total	Clear skin	5.37 (1.28)	5.28 (1.59)
	Visible acne	5.23 (1.52)	4.99 (1.74)

Table 3. PROCESS results—unstandardized regression weights (Study 1).

	Self-brand congruity (*M*)			Brand attitude (*Y*)		
	b	*SE*	*t*	*b*	*SE*	*t*
Constant	5.398	0.127	42.466***	−0.306	0.219	−1.399
Skin with visible acne (*X*)	−0.163	0.180	−0.906	−0.151	0.108	−1.402
Psychosocial impact of acne (*W*)	0.132	0.054	2.428*			
XW Interaction	0.308	0.111	2.762**			
Model gender	−0.216	0.184	−1.173	−0.066	0.108	−0.610
Self-brand congruity (*M*)				1.033	0.038	26.867***
R^2	0.058, $F(4, 230) = 3.519$**			0.760, $F(3, 231) = 243.787$***		
ΔR^2	0.031, $F(1, 230) = 7.628$**					

Notes: *: $p \leq .05$, **: $p \leq .01$, ***: $p \leq .001$.

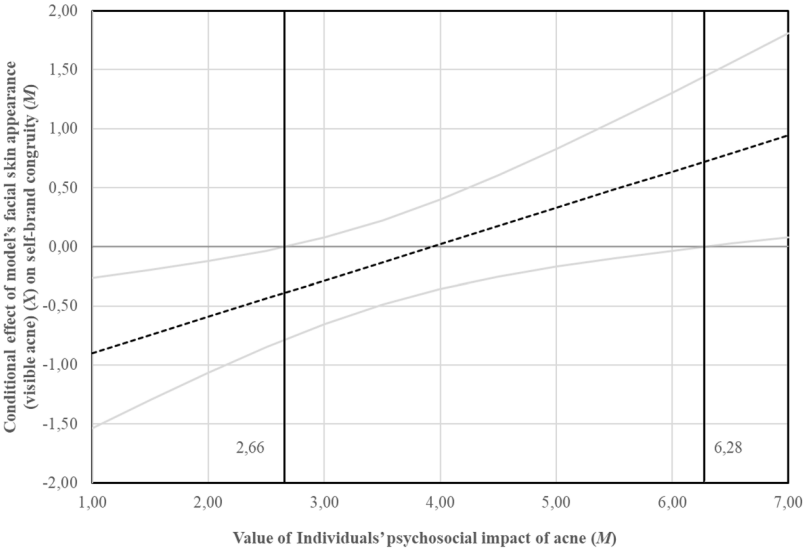

Figure 2. Conditional effect of a model's facial skin appearance (i.e. visible acne) on self-brand congruity at different levels of individuals' psychosocial impact of acne (Study 1).

appearance on self-brand congruity across different levels of psychosocial impact of acne. Specifically, the effect of visible acne on self-brand congruity was negative and significant for participants with low psychosocial impact of acne, non-significant for participants with moderate psychosocial impact, and positive and significant for participants with high psychosocial impact.

Johnson-Neyman analyses identified regions of significance at moderator values of 2.66 and 6.27. Specifically, visible acne negatively influenced self-brand congruity among participants scoring below 2.66 on the psychosocial impact of acne (35.32% of the sample) and positively influenced self-brand congruity among participants scoring above 6.27 (3.83% of the sample). No significant effect was observed at moderate levels of psychosocial impact of acne. These results support H5. It should be noted that for approximately 60% of the participants, facial skin appearance made no significant difference in self-brand congruity, indicating that the effect was limited to individuals with particularly high or low levels of psychosocial impact of acne.

Self-brand congruity was positively associated with brand attitude ($b = 1.033$, $SE = 0.038$, $p < .001$, 95% CI [0.957, 1.109]), supporting H6. Finally, the index of

moderated mediation was positive and significant (index = 0.318, $SE = 0.115$, 95% CI [0.094, 0.551]), supporting H7. This result indicates that the indirect effect of facial skin appearance on brand attitude through self-brand congruity was contingent upon participants' psychosocial impact of acne. Specifically, the indirect effect was stronger among participants with a higher psychosocial impact of acne, suggesting that individuals for whom acne had a greater personal impact perceived stronger self-brand congruity when exposed to the visible acne condition, leading to more favorable brand evaluations. Conversely, for participants reporting lower psychosocial impact of acne, the facial skin appearance with visible acne had a negative influence on their perceived congruity with the brand and, subsequently, on brand attitude.

To rule out potential confounding effects of model gender, a supplementary analysis (PROCESS Model 3; Hayes 2017) was conducted, including model gender as a second moderator. Neither the interaction between facial skin appearance and model gender ($b = -0.12$, $p = .75$) nor the three-way interaction with psychosocial impact of acne was significant ($b = 0.10$, $p = .67$), confirming that the moderating effect of psychosocial impact of acne on self-brand congruity was robust across male and female models.

3.6. Discussion

Study 1 examined whether the model's facial skin appearance influences brand evaluations through self-brand congruity, while accounting for individuals' psychosocial experiences with acne. Results showed no direct effect of visible acne on self-brand congruity or brand attitude. However, self-brand congruity was significantly moderated by the psychosocial impact of acne: visible acne decreased self-brand congruity among individuals for whom acne had little psychosocial relevance, had no effect for those with moderate levels, and slightly increased self-brand congruity among a very few participants reporting a strong psychosocial impact. Self-brand congruity, in turn, positively predicted brand attitude, and the moderated mediation analysis confirmed that the indirect effect of facial skin appearance on brand attitude was contingent on the psychosocial relevance of acne.

These findings indicate that visible acne in advertising does not universally enhance or reduce brand perceptions; rather, its effectiveness depends on the personal meaning acne holds for viewers. Importantly, this first study assessed self-brand congruity globally, without distinguishing its underlying dimensions. Study 2, therefore, extends this work by (1) examining separately the four dimensions of self-brand congruity (actual, ideal, social, and ideal social) and (2) incorporating eye-tracking measures to test H1–H4 regarding visual attention to ads featuring models with visible acne, including noticeability, emotional arousal, cognitive processing, and interest.

4. Study 2: eye-tracking experiment

4.1. Research design

To investigate the impact of a model's skin imperfections on visual attention to cosmetic advertisements, we conducted a between-subjects eye-tracking experiment in

which participants were exposed to a static mock-up of "ELLE", a worldwide magazine renowned for its diverse content, including fashion, beauty, society, and lifestyle. This made the context in which the ad is shown both relevant to cosmetic ads and familiar to participants. The page featured typical elements of a lifestyle magazine website, including a header with the iconic ELLE logo, social media buttons, a login section, and a button inviting users to subscribe to the magazine. Just below, a navigation menu provides access to sections such as fashion, beauty, society, and culture. However, the menu was not clickable because the page was static and did not allow scrolling. On the webpage, an article titled "Qu'est-ce que l'Aloe Vera?" ("What is Aloe Vera?") was prominently displayed, accompanied by descriptive text and a "Learn more" button, enhancing the realism and editorial coherence of the stimulus.

Additionally, a relatively prominent contextual display advertisement was shown to the right of the article, occupying approximately 30% of the page. A contextual display ad is a visual advertisement integrated into the content of a webpage, selected based on the page's theme or topic—in this case, a health and beauty article. The ad featured a product from a fictitious skincare brand, "DERMOVIVE": an anti-blemish serum that promised visible results within 24 h. The advertisement featured a female model whose facial skin appearance varied across experimental conditions. Participants were randomly assigned to view either the ad featuring a model with clear skin ($n = 58$) or the ad featuring visible acne ($n = 58$). The advertisement and article were presented in French, consistent with participants' native language. For clarity, English translations of the ad and the article title are provided in Appendix C. Aside from the model's facial skin appearance, the two ad versions and the webpages were identical in all other respects.

4.2. Participants

The sample comprises 116 students from a French university. Participants ranged from 18 to 26 years old ($M = 19.99$, $SD = 1.97$), with 47.4% of women (Table 1). Regarding education, 67.2% were pursuing a bachelor's degree, while 32.8% were enrolled in or had completed a higher-level program. Chi-square tests revealed no significant associations between the experimental conditions and gender ($\chi^2 = 1.02$, $df = 2$, $p = .601$), age group ($\chi^2 = 1.52$, $df = 2$, $p = .467$), education level ($\chi^2 = 0.64$, $df = 2$, $p = .727$), employment status ($\chi^2 = 0.98$, $df = 3$, $p = .111$), skin type ($\chi^2 = 7.68$, $df = 5$, $p = .175$), skincare routine frequency ($\chi^2 = 6.01$, $df = 3$, $p = .111$), or monthly skincare budget ($\chi^2 = 0.99$, $df = 4$, $p = .911$). These results indicate no evidence of baseline differences across conditions, thereby ruling out these variables as potential confounding factors.

4.3. Procedure

Data collection took place between October and November 2025 in a university laboratory equipped for eye-tracking research. Participants were recruited on campus by the author, with support from a trained student assistant who approached students in the university hallways. In line with ethical guidelines, the study's purpose and

experimental manipulation were not disclosed during recruitment to preserve the integrity of the design.

The sessions took place in a quiet, well-lit laboratory environment with minimal distractions, ensuring participant comfort and optimal recording conditions for reliable eye-tracking data. Eye-tracking data were gathered using a 24-inch laptop equipped with the Tobii Pro Spark (60 Hz) and managed *via* Tobii Pro Lab software. Each session lasted approximately 20 min. The author or the student assistant seated participants at the computer, adjusted the chair for optimal alignment, and conducted the eye-tracking calibration procedure. Once calibration was completed, participants read on-screen instructions that explained the task. They were informed that they would be viewing a webpage from the magazine ELLE and were asked to read the article as naturally as they would in a real-life context. They were allowed to read the article at their own pace and were instructed to press the space bar once they had finished. No time constraint was imposed, allowing participants to engage freely with the content and minimizing both time pressure and disengagement (Orquin and Holmqvist 2018). Immediately afterward, they completed the questionnaire measuring the attitudinal constructs and background variables.

4.4. Self-report measures

After exposure to the stimulus, attitude toward the brand ($M = 4.97$, $SD = 0.89$, $\alpha = .789$) was assessed using the four-item semantic differential scale from MacKenzie, Lutz, and Belch (1986). Next, self-brand congruity was measured along its four classic dimensions—actual ($M = 3.98$, $SD = 1.29$, $\alpha = 885$), ideal ($M = 4.16$, $SD = 1.24$, $\alpha = .894$), social ($M = 3.84$, $SD = 1.35$, $\alpha = .927$), and ideal social ($M = 4.04$, $SD = 1.25$, $\alpha = .861$)—using the scales from Kim and Hyun (2013). Each dimension was captured through three items on 7-point Likert scales (e.g. "This brand is similar to how I see myself," "This brand is similar to how I would like to see myself," "This brand is similar to how I am seen by others," "This brand is similar to how I would like to be seen by others"; see Appendix B for scale details). The psychosocial impact of acne on quality of life ($M = 2.93$, $SD = 1.55$, $\alpha = .901$) was then assessed using five items from Chernyshov et al. (2024). Finally, perceived facial skin imperfections were evaluated as a manipulation check using the same five-item semantic differential scale employed in Study 1 ($M = 3.29$, $SD = 1.76$, $\alpha = .968$), and participants also reported their familiarity with the brand ($\alpha = .903$).

4.5. Areas of interest

Six areas of interest (AOIs) were defined on the advertisement to analyze participants' visual attention to specific elements of the stimulus (Appendix D). The ad area AOI encompassed the entire advertisement displayed on the right side of the page. The brand name AOI isolated the "DERMOVIVE" brand label at the top of the ad. The effectiveness claim AOI encompassed the text stating "Efficacy in 24" located at the bottom of the advertisement. The model face AOI outlined the female model's face, while the model acne AOI highlighted the facial regions with visible acne. Finally, the

product image AOI focused on depicting the skincare product itself—a bottle labeled "Anti-Blemish Serum" from the fictitious brand.

4.6. Eye-tracking measures

A fundamental unit of analysis in eye-tracking research is the fixation, defined as the moment when the eyes remain sufficiently stable to process visual information (Holmqvist et al. 2011; Rayner 2009). In the present study, six eye-tracking measures were extracted to assess four key dimensions of participants' visual attention toward the AOIs: noticeability, emotional arousal, cognitive processing, and interest. This categorization follows established interpretations in applied eye-tracking research (Bojko 2013).

Noticeability was captured through two metrics: Fixation likelihood, indicating how many participants fixated on an AOI at least once, and Time to First Fixation (TFF), reflecting how quickly an AOI attracted the participant's gaze after stimulus onset. These measures signal how effectively an element captures initial attention, with shorter TFF values and higher viewer % indicating greater target noticeability and visual salience (Bojko 2013; Glaholt and Reingold 2011).

Emotional arousal was assessed through Average Pupil Dilation, a widely used physiological indicator of affective or cognitive activation (Beatty and Lucero-Wagoner 2000). Larger pupil dilations are generally associated with higher levels of arousal and increased mental or emotional load.

Cognitive processing was evaluated using Average Duration of Fixation, which represents the mean time spent per fixation within an AOI. Longer fixation durations typically reflect deeper cognitive processing, while shorter durations tend to reflect superficial scanning or reduced attentional engagement (Just and Carpenter 1980; Rayner 2009).

Finally, interest was operationalized using two metrics: Number of Fixations, the number of times participants fixated within an AOI, and Total Duration of Visit (TDV), the total time spent viewing the AOI across all visits. Higher fixation counts and longer TDV values are commonly interpreted as evidence of greater engagement, interest, or visual exploration (Orquin and Loose 2013).

Together, these six measures provide a multidimensional characterization of how participants attended to the advertisement, capturing not only whether an AOI was noticed, but also how strongly it elicited arousal, how deeply it was processed, and the extent to which it maintained visual interest.

4.7. Heat maps visualizations

Heat maps were created to qualitatively explore participants' visual attention patterns (Maslowska et al. 2020). Heat maps are visual representations of aggregated eye-tracking data, illustrating where participants looked most frequently or for the longest durations. In this visualization, colors correspond to different levels of visual attention: red areas indicate zones with the highest concentration of fixations, followed by yellow and green for moderate attention, while transparent or non-colored areas reflect little to no visual attention.

Figure 3. Heat map of the clear skin condition.

Figure 4. Heat map of the visible acne condition.

The comparative heat map analysis shows that participants' visual patterns are relatively similar across the clear skin condition (Figure 3) and the visible acne condition (Figure 4). The ad elements that traditionally attract attention—the product, the model's face, the brand name, and the efficacy claim—do so consistently whether the model has clear skin or acne.

The only substantial difference concerns the model acne AOI: Participants seem to allocate additional focused attention when acne is visible, indicating that skin imperfections may function as a diagnostic visual cue that participants evaluate more carefully. Thus, while the overall structure of attention remains stable, the presence

of acne seems to subtly redistribute attention within the model's face, without altering engagement with the core advertising elements.

4.8. Eye-tracking analysis

The analysis of the eye-tracking data reveals several noteworthy effects of the model's facial skin condition on visual attention to the advertisement. Table 4 presents the mean values of eye-tracking measures for AOI under both experimental conditions.

Regarding noticeability, the proportion of participants who fixated on most AOIs was generally comparable across conditions, although slightly higher rates were observed in the visible-acne condition for the model face (36% viewer vs. 26% in the clear skin condition) and for the acne area itself (53% viewer vs. 47% in the clear skin condition). Time to First Fixation values were consistently shorter in the visible-acne condition across all AOIs, suggesting that the presence of acne increased the speed at which several elements of the advertisement attracted attention. This effect reached statistical significance for the effectiveness claim, as indicated by a Mann-Whitney test (p = .02) and showed a strong tendency for the model acne AOI, although this difference did not reach statistical significance (p = .20). H1 is therefore only partially validated: while skin imperfections appear to accelerate initial attentional capture for some AOIs, this effect is inconsistent and not significant across all visual elements.

Regarding emotional arousal, Mann-Whitney tests revealed that average pupil dilation tended to be higher when participants viewed the advertisement featuring a model with visible acne. Although these differences did not reach conventional

Table 4. Mean values of eye-tracking measures for each area of interest (AOI), comparing control and treatment conditions.

		Noticeability				Emotional arousal		Cognitive processing		Interest			
		Fixation likelihood (count)		Time To First Fixation (*ms*)		Average Pupil Dilation		Average Duration of Fixation (*ms*)		Number of Fixation (count)		Total Duration of Visit (*ms*)	
AOI	Condition	*n*	% viewer	*M*	*p*	*M*	*p*	*M*	*p*	*M*	*p*	*M*	*p*
Ad area	Clear skin	52	90%	24128.60	.36	2.87	**.09**	188.56	.86	7.47	**.10**	1821.62	**.04**
	Visble acne	54	93%	20132.15		2.94		190.89		10.31		2666.91	
Brand name	Clear skin	36	62%	31060.92	.73	2.92	.41	211.69	.26	1.09	.52	233.62	.65
	Visble acne	33	57%	28586.49		2.96		178.03		1.28		254.17	
Effectiveness claim	Clear skin	42	72%	38459.83	**.02**	2.83	**.06**	195.12	.13	1.90	.77	381.78	.53
	Visble acne	36	62%	28283.42		2.93		209.94		2.38		556.88	
Model acne	Clear skin	15	26%	32273.93	.20	2.85	.22	147.80	.96	0.26	**.00**	38.22	**.00**
	Visble acne	21	36%	20093.67		3.00		168.81		0.74		181.43	
Model face	Clear skin	27	47%	20763.63	.58	2.86	**.08**	184.00	.61	1.28	**.01**	274.12	**.00**
	Visble acne	31	53%	16178.77		3.00		165.00		2.34		616.17	
Product image	Clear skin	29	50%	34843.66	.38	2.86	**.10**	222.69	.53	2.29	.35	610.88	.17
	Visble acne	31	53%	30618.13		2.97		243.84		2.81		788.66	

Notes. p-values ≤ .10 are indicated in bold. *ms* = milliseconds. Average pupil dilation values represent normalized pupil diameter measures expressed in the device's arbitrary units. Mann–Whitney tests are used for Time to First Fixation, Average Pupil Dilation, and Average Duration of Fixation; these measures are computed only for participants who visited the corresponding AOI. Negative binomial regressions are used for Number of Fixations and Total Duration of Visit because of the high frequency of zero values; these two tests are computed on the full sample (58 participants per experimental condition).

significance thresholds ($p < .05$), several AOIs—including the ad area, the effectiveness claim, the model face, and product image—showed marginally significant effects at $p \leq .10$, indicating slightly greater physiological arousal in the visible-acne condition. Taken together, these findings indicate a modest yet coherent increase in emotional arousal in response to skin imperfections, thereby providing partial support for H2.

Measures of cognitive processing, captured through the average duration of fixations, did not differ significantly across conditions for any AOI, as indicated by Mann-Whitney tests. While some AOIs exhibited numerically longer fixation durations in the visible-acne condition (e.g. the acne area and the product image), these variations were small and statistically non-significant, indicating that the presence of acne did not alter the depth of cognitive processing devoted to the advertisement's elements. Accordingly, H3 is not supported and must be rejected.

In contrast, the results concerning visual interest provide clear evidence of systematic differences between conditions. Negative binomial regressions—used for the number of fixations and total visit duration due to the high frequency of zero values—revealed significantly higher fixation counts in the visible-acne condition for several AOIs, including the model acne area ($p < .001$), the model face ($p = .01$), and, to a lesser extent, the ad area ($p = .10$). Total visit durations were also substantially longer when acne was present, with strong effects observed for the ad area ($p = .04$), the model acne AOI ($p < .001$), and the model face ($p < .001$). These results indicate that visible acne not only attracts attention earlier but also sustains deeper visual engagement, particularly toward the regions of the face where imperfections are present. Taken together, these findings provide strong support for H4.

Statistical power varied across the eye-tracking analyses because the number of viewers differed by AOI. Since Mann-Whitney tests were performed only on participants who fixated on a given AOI, statistical power was higher for AOIs viewed by many participants—such as the ad area ($n = 52$ vs. 54), the brand name ($n = 36$ vs. 33), and the effectiveness claim ($n = 42$ vs. 36)—allowing adequate detection of medium to large effects. In contrast, AOIs with fewer viewers, such as the model acne region ($n = 15$ vs. 21), offered reduced sensitivity, a common constraint in eye-tracking research. For the measures analyzed with negative binomial regression (number of fixations and total visit duration), full-sample analyses (58 participants per condition) provided sufficient power to detect effects across conditions. Consequently, the study is well powered for most AOIs, whereas findings for less frequently viewed AOIs should be interpreted with caution with respect to the Mann-Whitney tests.

Taken together, these findings provide partial and pattern-based support for the first hypothesis, which predicted increased noticeability of visual elements under the visible-acne condition. The second hypothesis, concerning heightened emotional arousal, was not statistically supported at conventional thresholds; however, the effects were almost consistently marginally significant at $p < .10$, indicating a coherent pattern of increased arousal in the visible-acne condition. The third hypothesis, predicting increased cognitive processing, was not confirmed. Finally, the fourth hypothesis receives strong empirical support, as the presence of visible acne clearly increased both the intensity and duration of viewers' engagement with multiple components of the advertisement.

4.9. Manipulation check and control

An independent-samples *t*-test comparing the two skin-appearance conditions confirmed that participants perceived significantly greater facial skin imperfections in the visible-acne condition ($M = 3.61$) than in the clear-skin condition ($M = 2.97$). This difference was statistically significant ($t = -1.99$, $df = 114$, $p = .049$), confirming that the manipulation of the model's facial skin appearance was successful and replicating the pattern observed in Study 1. Brand familiarity was low ($M = 2.00$, $SD = 1.33$) and significantly below the scale midpoint of 4 ($t = -16.14$, $p < .001$), confirming that participants were unfamiliar with the fictitious brand.

4.10. Model testing

In this study, we estimated four separate moderated mediation models (PROCESS Model 7; Hayes 2017) to examine whether the effect of facial skin appearance on brand attitude operated through each dimension of self-brand congruity (i.e. actual, ideal, social, and ideal social self-congruity) and whether this indirect effect was contingent on the psychosocial impact of acne. In each model, facial skin appearance was specified as a dichotomous independent variable (0 = clear skin, 1 = visible acne), one self-brand congruity dimension as the mediator, and brand attitude as the dependent variable. The psychosocial impact of acne was modeled as a continuous moderator between facial skin appearance and self-brand congruity dimensions. All continuous variables were mean-centered.

Across all four models, facial skin appearance did not exert a significant direct effect on brand attitude ($-0.18 \leq b \leq -0.13$, all $p > .25$), replicating the absence of a main effect observed in Study 1. The psychosocial impact of acne was positively associated with all four self-brand congruity dimensions ($0.16 \leq b \leq 0.27$, all $p < .05$), indicating that participants reporting stronger psychosocial consequences of acne tended to feel more congruent with the brand overall, irrespective of the model's facial skin appearance.

For actual self-brand congruity, the interaction between facial skin appearance and the psychosocial impact of acne was significant ($b = 0.356$, $SE = 0.151$, $p = .020$, 95% CI [0.057, 0.656]). Probing this interaction showed that visible acne significantly reduced actual self-brand congruity at low levels of the psychosocial impact of acne (−1 *SD*; $b = -0.939$, $p = .005$), had a non-significant negative effect at mean psychosocial impact of acne ($b = -0.376$, $p = .104$), and showed no significant effect at high psychosocial impact of acne (+1 SD; $b = 0.178$, $p = .590$), despite the coefficient being slightly positive. Actual self-brand congruity positively predicted brand attitude ($b = 0.217$, $SE = 0.062$, $p < .001$, 95% CI [0.095, 0.340]), and the index of moderated mediation was positive (index = 0.077, $SE = 0.039$, 95% CI [0.013, 0.162]), indicating that the indirect effect of facial skin appearance on brand attitude through actual self-brand congruity became more positive as the psychosocial impact of acne increased.

Ideal self-brand congruity was positively related to brand attitude ($b = 0.225$, $SE = 0.063$, $p < .001$, 95% CI [0.099, 0.351]). The interaction between facial skin appearance and the psychosocial impact of acne on ideal self-brand congruity, however,

was not significant ($b = 0.166$, $SE = 0.149$, $p = .268$, 95% CI [−0.129, 0.461]). Although the conditional a-paths and indirect effects followed a similar pattern—negative at low psychosocial impact of acne and slightly positive at high psychosocial impact of acne (indirects: from $b = -0.092$ at low psychosocial impact of acne to $b = 0.024$ at high psychosocial impact of acne)—the evidence for moderated mediation *via* ideal self-brand congruity alone was weaker.

For social self-brand congruity, the interaction between facial skin appearance and the psychosocial impact of acne was significant ($b = 0.322$, $SE = 0.157$, $p = .043$, 95% CI [0.010, 0.634]). Visible acne decreased social self-brand congruity among participants low in psychosocial impact of acne (−1 *SD*; $b = -0.732$, $p = .034$), but this effect was non-significant at mean levels of psychosocial impact ($b = -0.231$, $p = .336$) and at high levels of psychosocial impact (+1 *SD*; $b = 0.270$, $p = .431$), despite the change in direction. Social self-brand congruity in turn positively predicted brand attitude ($b = 0.119$, $SE = 0.061$, $p = .052$, 95% CI [−0.001, 0.239]), and the index of moderated mediation was again positive but non-significant (index = 0.038, $SE = 0.030$, 95% CI [−0.006, 0.108]).

Finally, ideal social self-brand congruity was significantly associated with brand attitude ($b = 0.203$, $SE = 0.064$, $p = .002$, 95% CI [0.076, 0.331]). The interaction between facial skin appearance and the psychosocial impact on ideal social self-brand congruity did not reach significance ($b = 0.211$, $SE = 0.150$, $p = .162$, 95% CI [−0.086, 0.507]). Nonetheless, the conditional a-paths again suggested a pattern whereby visible acne had a negative effect on ideal social self-brand congruity at low psychosocial impact of acne ($b = -0.618$) and a near-zero effect at high psychosocial impact of acne ($b = 0.037$), with corresponding indirect effects ranging from negative at low psychosocial impact of acne ($b = -0.125$) to slightly positive at high psychosocial impact of acne ($b = 0.008$).

Because the advertisement featured a female model in both conditions, Study 2 does not allow us to directly test the impact of model gender. However, to examine whether gender differences in responses could have biased our findings, we ran supplementary regression models in which participant gender (0 = male, 1 = female) was included as an additional moderator of the effect of facial skin appearance (and its interaction with the psychosocial impact of acne) on each self-brand congruity dimension and on brand attitude. Neither the interaction between facial skin appearance and participant gender nor the three-way interaction with psychosocial impact of acne reached significance for any of the models (all ps ≥ .08). These results indicate that the moderated mediation pattern described above was comparable for male and female participants and that the use of a female model did not differentially bias consumers' evaluations.

5. General discussion

5.1. Summary of findings

Across two complementary studies, this research examined how featuring a model with visible acne in cosmetic advertising affects visual attention, self-brand congruity, and brand evaluations. Together, the findings highlight that the impact of visible acne

is neither uniformly positive nor negative; rather, it depends on how individuals process the visual cue and how personally relevant acne is for them.

Study 1, an online experiment, revealed that visible acne did not exert a direct effect on self-brand congruity or brand attitude. However, its impact was contingent on participants' psychosocial experience with acne. Individuals for whom acne had little psychosocial relevance perceived significantly lower congruity with the brand when exposed to the visible-acne condition, whereas those reporting high psychosocial impact showed a slight increase in congruity. For the majority of participants—those at moderate levels of psychosocial impact—the model's skin condition did not meaningfully influence their evaluations. Self-brand congruity consistently predicted brand attitude, and a significant index of moderated mediation confirmed that the indirect effect of facial skin appearance on brand attitude depended on acne's psychosocial relevance. Thus, visible acne operates not as a universally meaningful identity cue but as one whose effectiveness varies according to viewers' personal experiences.

Study 2, using an eye-tracking experiment, provided finer-grained evidence on how visible acne shapes visual attention. For noticeability, visible acne tended to increase the likelihood of fixating on the model's face and acne area and generally shortened Time to First Fixation for several AOIs, with a significant effect for the effectiveness claim. Regarding emotional arousal, pupil dilation was consistently higher in the visible-acne condition and reached significance for key AOIs—including the ad area, the effectiveness claim, the model acne region, and the product image—indicating a clear increase in physiological activation. However, because pupil dilation is sensitive to both affective arousal and cognitive load, this effect should be interpreted more broadly as increased physiological activation rather than as purely emotional arousal, especially given that fixation durations did not differ between conditions, suggesting a similar depth of cognitive processing once elements were fixated. Finally, measures of interest showed the strongest effects: visible acne reliably increased fixation counts and total viewing time across multiple AOIs—particularly the face and acne region—demonstrating that skin imperfections both attract and sustain greater visual engagement within the advertisement.

At the attitudinal level, Study 2 replicated the absence of a direct effect of acne on brand attitude. When examining the four self-brand congruity dimensions separately, moderated mediation patterns were most pronounced for the actual and social self-brand congruity dimensions. Visible acne significantly reduced these forms of congruity among participants with low psychosocial impact of acne, but its effects became negligible—and even slightly positive, though non-significant—among those reporting higher psychosocial impact. Although not significant, ideal and ideal social self-congruity showed similar but weaker trends. Across all models, the psychosocial impact of acne was positively related to overall congruity, but in practice, the effect of visible acne was mainly driven by a significant decrease in congruity at low levels of psychosocial impact, with only weak, non-significant positive tendencies at higher levels.

In a nutshell, the two studies revealed that visible acne shapes attention and attitudinal responses through different mechanisms. On the one hand, acne reliably attracts visual engagement, drawing viewers' eyes to the model's face, especially to the imperfections themselves. On the other hand, its influence on brand-related

judgments depends strongly on whether acne carries personal meaning for the viewer—and is predominantly negative: for most participants, especially those for whom acne has low psychosocial relevance, visible acne decreases self-brand congruity and, in turn, weakens brand evaluations. These results underline that advertising strategies featuring non-idealized skin may resonate differently across audiences, functioning as a meaningful identity cue for a minority of consumers but remaining largely detrimental, despite their perceptual salience, for the broader public.

5.2. Theoretical implications

This study contributes to the literature on nontraditional beauty portrayals in advertising by empirically examining consumer responses to a model's facial skin imperfections, specifically acne. While recent work has highlighted growing consumer interest in authenticity in beauty portrayals (Laham 2020; Yang, Lou, and Tandoc 2023), few studies have explored how such representations influence both visual attention and brand-related judgments. Our results show that visible acne functions as an atypical visual cue that reliably affects certain behavioral and psychological responses—such as gaze patterns, visual interest, and emotional arousal—while exerting no uniform direct effect on brand attitude across consumers. In doing so, the findings nuance the assumption that nontraditional or inclusive beauty portrayals are inherently beneficial for brands: visible acne makes the ad more visually engaging, but its implications for brand evaluations are conditional and sometimes negative.

We also contribute to the literature on the effects of advertising tactics on visual attention (De Pelsmacker, Geuens, and Van den Bergh 2021; Rossiter, Percy, and Bergkvist 2018) by investigating how atypical facial features (i.e. visible acne) affect gaze behavior in online media environments. Prior research has highlighted the attentional pull of faces in general (Adil, Lacoste-Badie, and Droulers 2018; Guido et al. 2019; Xiao and Ding 2014) and the salience of deviations from expected physical patterns (Ackerman et al. 2009; Rumsey and Harcourt 2004). Our findings refine this knowledge in three ways. First, they show that visual irregularities such as acne do not increase deeper cognitive processing of the ad—as reflected in average fixation durations—nor do they uniformly accelerate noticeability across all ad elements, although most AOIs exhibit a strong tendency toward faster initial attention capture in the visible-acne condition. Second, participants in the visible-acne condition exhibited higher emotional arousal, as reflected in consistently larger pupil dilation across several AOIs. This indicates that atypical facial features can elicit stronger affective activation without necessarily altering the duration of each fixation. Third, participants tended to fixate more frequently and for longer total durations on the model's face and acne-specific regions, and on the advertisement as a whole, which contained all ad elements (e.g. brand name, product image). While these effects should be interpreted as indicative patterns rather than strong confirmatory evidence, this extends prior work on attention transfer in advertising (Pieters and Wedel 2004) by indicating that norm-violating facial features may reallocate gaze within the acne-specific regions and between the ad elements, thereby decoupling visual salience from broader persuasive message processing.

Our findings further extend Self-Congruity Theory (Sirgy 1982, 1985, 2018) by specifying boundary conditions under which nontraditional beauty portrayals influence self-brand congruity and brand evaluations. Prior research on self-congruity has primarily examined how generalized self-concept dimensions (actual, ideal, social, ideal social) influence responses to brand imagery (Malär et al. 2011; Michel et al. 2022; Sirgy and Su 2000), and has shown that consumers tend to respond more positively when they recognize elements of their lived experiences in advertising (Choi and Rifon 2012; Lee, Chang, and Zhang 2022). Building on this work, we identify individuals' psychosocial impact of acne (Chernyshov et al. 2024)—a domain-specific, trait-like psychological variable—as a significant moderator of the relationship between the model's facial skin appearance and self-brand congruity. Across both studies, facial skin appearance does not exert a consistent main effect on self-brand congruity or brand attitude. Instead, moderated mediation analyses reveal an asymmetric pattern: for individuals reporting low psychosocial impact of acne, visible acne decreases self-brand congruity and, indirectly, brand attitude; for individuals with high psychosocial impact of acne, visible acne produces small positive or neutral effects on self-brand congruity and corresponding indirect effects on brand attitude; and for the majority of participants with moderate psychosocial impact, facial skin appearance has little effect. Thus, rather than claiming uniformly stronger self-brand congruity when lived experiences are reflected, our results refine self-congruity theory by showing that a stigmatized, non-idealized cue can simultaneously foster congruity for a narrow, high-relevance segment while undermining it for a larger low-relevance segment.

Finally, by distinguishing between actual, ideal, social, and ideal social self-brand congruity in Study 2, we shed light on which facets of the self are most responsive to realistic facial skin cues. The moderating role of the psychosocial impact of acne is most pronounced for actual and social self-brand congruity: visible acne tends to reduce congruity among low-impact individuals and leave it unchanged or slightly more positive among those with higher psychosocial impact. Effects for ideal and ideal social congruity follow a similar direction but are weaker and mostly non-significant. This asymmetry suggests that realistic, non-idealized cues such as visible acne are more likely to activate identity processes grounded in consumers' self-perceptions of their appearance and perceived social image, rather than aspirational self-concepts that are typically associated with idealized beauty portrayals in cosmetic advertising. This pattern is consistent with the idea that non-idealized, realistic cues primarily activate current self-perceptions and perceptions of how one is seen by others, rather than aspirational self-views (Malär et al. 2011; Sirgy and Su 2000).

In addition, our findings are conceptually related to research on authenticity in beauty advertising, particularly studies on perceived honesty and moral value of non-retouched models (Yang, Lou, and Tandoc 2023). Although we do not directly measure perceived honesty or moral evaluations in this study, we document a complementary psychological process—self-relevant identification with realistic skin depictions—that may help explain when authenticity cues are experienced as identity-congruent versus identity-threatening. Our findings also reinforce a broader insight emerging in the authenticity literature: visual deviation from ideal beauty norms does not automatically produce authenticity or positive evaluations. Prior research

shows that authenticity depends on how appearance-related cues are interpreted—whether they signal concealment or self-expression (Smith, Vandellen, and Ton 2021). In our context, visible acne functions as an identity-relevant cue that some consumers experience as self-relevant and authentic, whereas others interpret it as misaligned with their own appearance norms. Thus, authenticity perceptions—like self-brand congruity—are not intrinsic to the cue itself but contingent on viewers' identity frameworks.

5.3. Managerial implications

This research offers several practical insights for cosmetic brand managers considering the use of models with visible acne in advertising. Overall, visible skin imperfections strongly influence visual attention but do not uniformly improve brand evaluations. Their impact depends on how much acne has affected viewers' quality of life, which calls for a more selective and strategic use of such imagery.

First, the findings underline the importance of audience segmentation based on the psychosocial relevance of acne. Across both studies, visible acne tended to reduce self-brand congruity and, indirectly, brand attitude among individuals for whom acne had little impact, while effects were neutral or slightly positive among those reporting high psychosocial impact. Importantly, these effects were concentrated among consumers at the extremes of psychosocial impact of acne, while for the majority of participants, facial skin appearance did not meaningfully influence self-brand congruity. This suggests that visible acne should be considered a niche targeting tool rather than a universal advertising strategy. Thus, acne-inclusive campaigns should not be deployed indiscriminately to mass audiences. Instead, brands should prioritize targeted digital campaigns for consumers more likely to identify with acne (e.g. those searching for anti-acne products, visiting acne-related pages, or engaging with relevant content). For the general public, managers should be aware that inclusive skin imagery alone does not guarantee better brand outcomes and may even weaken perceived brand congruency among low-relevance segments.

Second, the eye-tracking evidence shows that visible acne reliably increases visual engagement with the advertisement. Participants exposed to the visible-acne condition made more fixations and spent longer viewing times on the ad area, the face, and the acne region, and tended to orient their gaze more quickly toward several elements. This suggests that skin imperfections can function as an attentional entry point into the ad. Creative teams should therefore deliberately link this attentional hotspot to key brand and product cues—for example, by placing the brand logo, product image, and efficacy claim near the model's face. In doing so, they can convert initial curiosity into more meaningful processing of the brand message.

Third, the results indicate that visible acne primarily affects actual and social self-brand congruity, rather than purely aspirational selves. Brands that position themselves around "real skin", transparency, or psychological support may accept some loss of congruity among low-relevance consumers in exchange for stronger identification among those with meaningful acne experiences. Conversely, brands that rely on more idealized beauty standards may prefer to use only subtle or limited forms of skin imperfections, or to feature them only in specific contexts where they do not conflict with the brand's aspirational positioning.

Overall, managers should treat visible acne not as a universal authenticity shortcut but as a precision tool that requires careful segmentation, thoughtful creative design, and systematic pre-testing before large-scale deployment.

5.4. Limitations and further research

This research has several limitations that warrant consideration. For instance, the experimental designs focused on short-term reactions and did not assess memory-based outcomes such as brand recall or recognition, which are crucial indicators of advertising effectiveness. Future research could extend these findings by examining how facial skin appearance influences cognitive outcomes, such as ad recall, product memory, or purchase intention, over time.

In addition, although this study isolated acne as the focal imperfection, it remains unclear whether similar effects would occur with other visible facial skin imperfections, such as scars, eczema, or rosacea. Exploring these variations would help determine the generalizability of the observed effects across broader representations of non-traditional beauty.

Another consideration concerns the cross-cultural context of the two studies. Study 1 relied on a U.S. sample, whereas Study 2 used a French sample. While cultural differences in beauty norms or stigma associated with acne may influence perceptions of skin imperfections, the broadly consistent patterns observed across the two studies strengthen the external validity of the findings. Future research could nevertheless examine these relationships more explicitly in cross-cultural designs to better understand how cultural norms shape responses to nontraditional beauty portrayals.

Finally, future research should further investigate the psychological meaning of increased fixations on acne areas—whether they reflect heightened interest, surprise, or discomfort. Combining eye-tracking with emotional responses (i.e. facial expression analysis) would help clarify the underlying processes behind consumer reactions to authenticity in beauty portrayals. At the same time, although Study 2 collected eye-tracking and attitudinal data from the same participants, it was not designed to test a full process linking visual attention, self-brand congruity, and brand attitude. Exploratory analyses using global indicators of attention to the ad and the model's face did not reveal clear associations with the four dimensions of self-brand congruity, possibly due to limited statistical power and the inherent variability of eye-tracking data. Future research should specify which aspects of visual attention are theoretically expected to influence specific dimensions of self-brand congruity, enabling more rigorous examination of how gaze patterns may translate into brand-related evaluations.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

Data available upon request from the first author.

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Appendix A. Stimuli used in the online experiment (study 1)

	Facial skin appearance: Clear skin	Facial skin appearance: Visible acne
Model gender: Woman		
Model gender: Man		

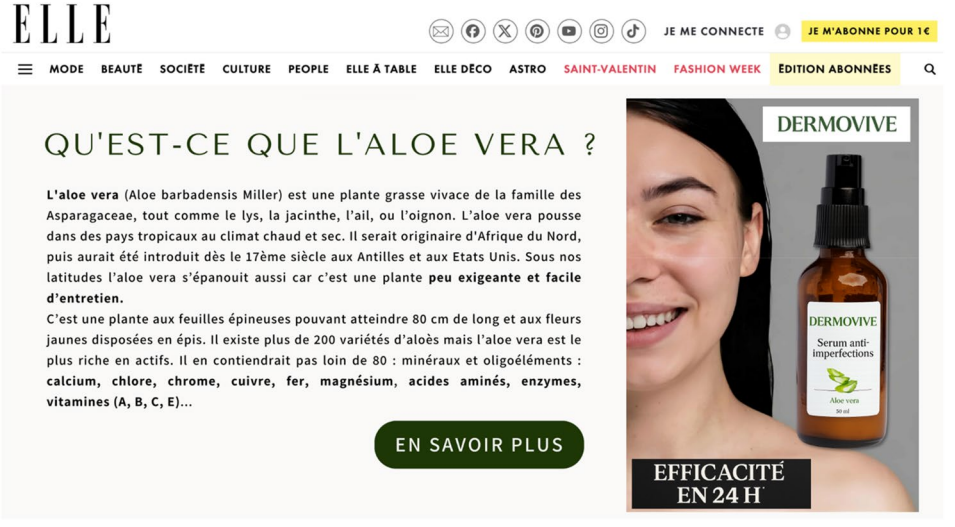
Appendix B. Measurement scales and reliability statistics

Constructs, scale sources, and items	Cronbach'α and factor loadings Study 1	Study 2
Attitude toward the brand[2] (MacKenzie, Lutz, and Belch 1986)	α = .972	α = .789
Please indicate your overall impression of the brand DERMOVIVE by selecting the position that best represents your opinion on each of the following pairs.		
- Bad / Good.	.965	.816
- Unappealing / Appealing.	.955	.788
- Unpleasant / Pleasant.	.961	.802
- Unfavorable / Favorable.	.963	.729
Self-brand congruity[1] (Sirgy and Su 2000)	α = .958	–
- This brand is consistent with how I see myself.	.941	–
- This brand is consistent with how I would like to see myself.	.935	–
- This brand is consistent with how I believe others see me.	.946	–
- This brand is consistent with how I would like others to see me.	.957	–
Actual self-brand congruity[1] (Kim and Hyun 2013)	–	α = .885
- This brand is similar to how I see myself.	–	.930
- This brand is identifiable with myself at present.	–	.852
- The image of this brand is highly consistent with how I see myself.	–	.923
Ideal self-brand congruity[1] (Kim and Hyun 2013)	–	α = .894
- This brand is similar to how I would like to see myself.	–	.947
- This brand is identifiable with my ideal self-image.	–	.855
- This brand is identifiable with my ideal self-image.	–	.928
Social self-brand congruity[1] (Kim and Hyun 2013)	–	α = .927
- This brand is similar to how I am seen by others.	–	.944
- This brand is identifiable with myself as I am seen by others.	–	.919
- The image of this brand is highly consistent with how I am seen by others.	–	.939
Ideal social self-brand congruity[1] (Kim and Hyun 2013)	–	α = .861
- This brand is similar to how I would like to be seen by others.	–	.873
- This brand is identifiable with my ideal image as seen by others.	–	.889
- The image of this brand is highly consistent with how I would like to be seen by others.	–	.890
Psychosocial impact of acne[1] (Chernyshov et al. 2024)	α = .929	α = .901
Please indicate how frequently each statement has been true for you at any point in your life.		
I have been dissatisfied with my self-appearance because of my acne.	.886	.912
I felt lacking in self-confidence because of my acne.	.911	.920
I was upset about having acne.	.884	.891
People offered advice, or said things to me about my acne when I had not asked them to do that.	.841	.730
I found it difficult to communicate with others because of my acne.	.888	.778
Perceived facial skin imperfections[2] (manipulation check)	α = .975	α = .968
Please indicate your perception of the model's facial skin by selecting the point on each scale that best reflects your impression.		
- Clear skin / Acne-prone skin	.973	.951
- Smooth / Blemished	.962	.955
- Healthy skin / Problematic skin	.954	.950
- Imperfection-free / Imperfection-visible	.936	.921
- No acne / Severe acne	.942	.930
Brand familiarity[2]	α = .974	α = .903
Regarding the DERMOVIVE brand, you are:		
- Unfamiliar / Familiar.	.975	.910
- Inexperienced / Experienced.	.966	.918
- Uninformed / Well-informed.	.985	.925

Notes: [1]: Likert-type scale ("Strongly disagree" to "Strongly agree"),[2]: Semantic differential scale (bipolar).

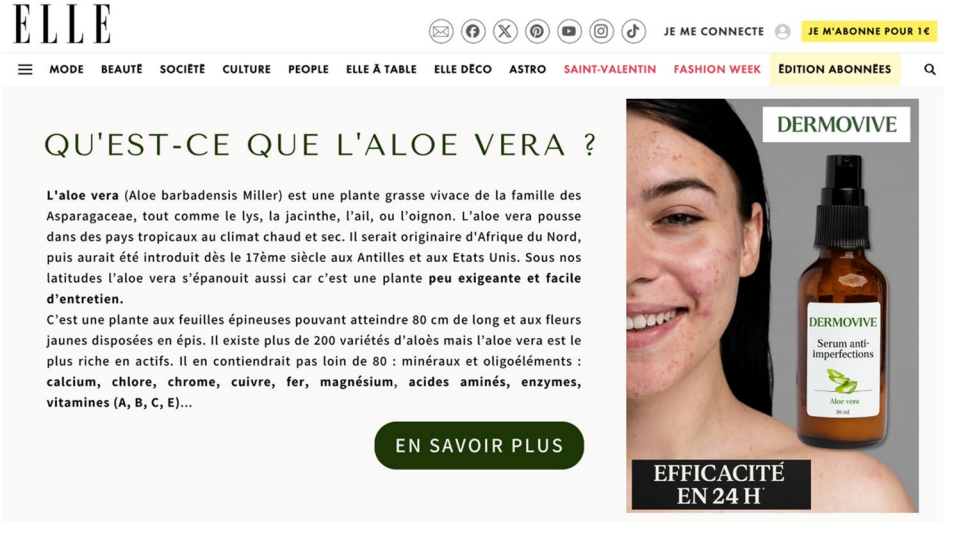
Appendix C. Stimuli used in the eye-tracking experiment (study 2)

C.1. Control condition: Ad with a model with clear skin.



Note: Stimuli were originally in French; English translations are provided for clarity: Article: "What is Aloe Vera?" (Qu'est-ce que l'Aloe Vera?); Ad: "Anti-blemish serum" (Sérum anti-imperfections), "Effectiveness in 24 h" (Efficacité en 24 h).

C.2. Treatment condition: Ad with a model with visible acne.



Appendix D. Areas of interest (AOIs) (study 2)