

Usage Patterns and Self-Esteem of Female Consumers of Antiaging Cosmetic Products

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Abstract: Aging is an irreversible process of the human body, resulting from a progressive decrease in the biological functions of the organs, including the skin. This study analyzed the relationship between usage patterns of different types of anti-aging cosmetic products, sociodemographic variables, appearance schemes, psychological morbidity, perfectionism, and aging perception of aging with self-esteem. This cross-sectional study included a sample of 260 women, aged between 25 and 64 years, who are users of anti-aging cosmetics and/or aesthetic treatments. Participants were assessed on psychological morbidity (Hospital Anxiety and Depression Scale), appearance schemes (Appearance Schemas Inventory—Revised), perfectionism (Frost Multidimensional Perfectionism Scale), aging perceptions (Brief Aging Perceptions Questionnaire), and self-esteem (Rosenberg Self-Esteem Scale). The use of facial-firming cosmetics positively correlated with self-esteem. The results of regression analysis revealed that psychological morbidity and perfectionism contribute negatively to self-esteem, while marital status, professional status, and aging perceptions (positive consequences) contribute positively. According to the results, intervention programs to promote women’s self-esteem should focus on the reduction in psychological morbidity and the promotion of adaptive patterns of perfectionism and address aging perceptions. Longitudinal studies might help explain the complex relationship between the use of anti-aging cosmetic products and psychological variables, particularly self-esteem in women.

Keywords: self-esteem; anti-aging cosmetics; usage patterns; perfectionism; aging perceptions

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1. Introduction

Aging is an irreversible process of the human body, resulting from a progressive decrease in the biological functions of the organs, including the skin [1,2]. Skin aging occurs due to intrinsic factors (chronological aging) or extrinsic factors (extrinsic aging) [2–4]. Hormonal changes that occur in women during menopause result in more prominent signs of loss of skin elasticity and firmness [5,6].

Intrinsic, or chronological, aging occurs in sun-protected skin as a natural process that goes along with age, depending on the genetics of individuals, affecting skin structural integrity. This type of skin aging is closely related to the length of the telomeres of chromosomes, which decreases with each cell cycle until its senescence [2,3,5,7,8]. Intrinsic skin aging is characterized by an atrophic skin with salient and decreased vascularity, loss of elasticity, and dermal thickness, with a reduction in the number of collagen and elastic fibers as well as fibroblasts [3,9,10]. There is also a flattening of the dermal–epidermal junction with the loss of dermal papillae and a decrease in the epidermal turnover with the reduced proliferative capacity of skin cells, such as keratinocytes and fibroblasts. This process results in an aged skin defined by dryness, laxity, loss of firmness, fine

wrinkles, benign neoplasms, skin tears, increase in healing time, and sensitivity [3,7,9,10]. The decrease in melanocytes of the skin hair follicles results in graying of the hair [5,9].

The process of extrinsic aging encompasses several contributing factors: exposure to sun radiation and blue light, which is also called photoaging; exposure to pollution or tobacco; poor nutrition; and poor sleep quality and mental health [2,4,5,8], collectively known as the skin aging exposome. Photoaging results in the cumulative effects of chronic sun radiation exposure, which induce the formation of reactive oxygen species (ROS) by UV radiation (UVA and UVB), visible light, and infrared radiation [2–4,11,12]. The oxidative stress interferes with membrane and nuclear signaling in skin cells. Solar-mediated damage leads to an inflammatory state of the skin and promotes a reduction in dermal matrix formation, an increase in matrix degradation, and an increase in protein oxidation and oxidative damage in cellular DNA [1–4,11,12]. Photoaged skin is characterized by a chronic inflammation state causing hypertrophy, coarse wrinkles, irregular hyperpigmentation, benign and malignant neoplasms, telangiectasia, sallowness, laxity, and dryness [1,3,7].

Nowadays, with current beauty standards, the pursuit of eternal youth leads individuals to increasingly seek for anti-aging cosmetics and aesthetic treatments [13–15]. There is a wide variety of anti-aging cosmetic products that incorporate active ingredients tested to prove their effectiveness in the prevention or reversal of signs of skin aging [8,16–18]. An anti-aging routine includes the use of several cosmetic products, such as sunscreens, face and body moisturizers, exfoliants, face- and eye-firming and anti-wrinkle serums and creams, body-firming products, hair dyes, and depigmenting products. The foundation of a good skincare regimen is the use of products that protect and repair skin. Sunscreens protect skin against UV radiation, one of the main causes of photoaging [19,20]. Antioxidant-based serums and creams (applied on the face or eye contour) can help reduce wrinkles and boost firmness and elasticity by scavenging ROS [19,20]. Firming and anti-wrinkle products can also contain ingredients that act on the deeper layers of the skin, activating and regenerating skin cells [19,20]. Another step to consider in the skincare routine is the use of exfoliants and moisturizers [8,19]. Exfoliants, physical or chemical, are important to the renewal of skin cells and to smooth the skin texture and promote the penetration of the active ingredients into the skin [19]. In addition, face and body moisturizers increase skin water content, reducing dehydration wrinkles, enhancing skin smoothness, and enhancing the delivery of active anti-aging ingredients [19]. Depigmenting products can be used to even out skin tone due to irregular hyperpigmentation that may occur with extrinsic skin aging [20]. Additionally, hair dyes are widely used to disguise the hair graying that occurs with age.

The use of cosmetics reflects the individuals' desire to feel good about themselves. Recently, management of the private and public self, attractiveness in the workplace, mate attraction, and use for fun and creativity were reported as the most important reasons women use decorative cosmetics [21].

Self-esteem is defined as the subjective assessment of one's own worth, including the feeling of self-acceptance and a positive attitude toward oneself [22]. Javed and Khan (2018) found self-esteem having a negative relationship with appearance schemas, i.e., individuals dissatisfied with their appearance reported low self-esteem when compared with those who considered their body beautiful [23,24]. The dissatisfaction with one's body could be the result of perfectionist characteristics. Individuals with high perfectionism believe others to have high expectations toward them, have more concerns that their performance would be negatively evaluated, and report low self-esteem and low general well-being [25,26]. The experience of aging is different for every person, but physical and mental health have a significant influence on aging perceptions [27]. Self-esteem plays a significant role in the adaptation to the ageing process since when individuals accept the changes that come with aging, they view themselves more positively as they grow old, are more self-confident with new life challenges, and participate more in social life [22]. Self-esteem is also an indicator of mental health, a mature personality, and one's capacity

to adapt, which is usually negatively correlated with low life satisfaction, loneliness, and depression and anxiety [27,28].

There are few studies that correlate psychosocial variables with the use of cosmetic products [29–38] (Figure 1), and the results are difficult to compare due to differences in the category of cosmetics analyzed and the study methodology.

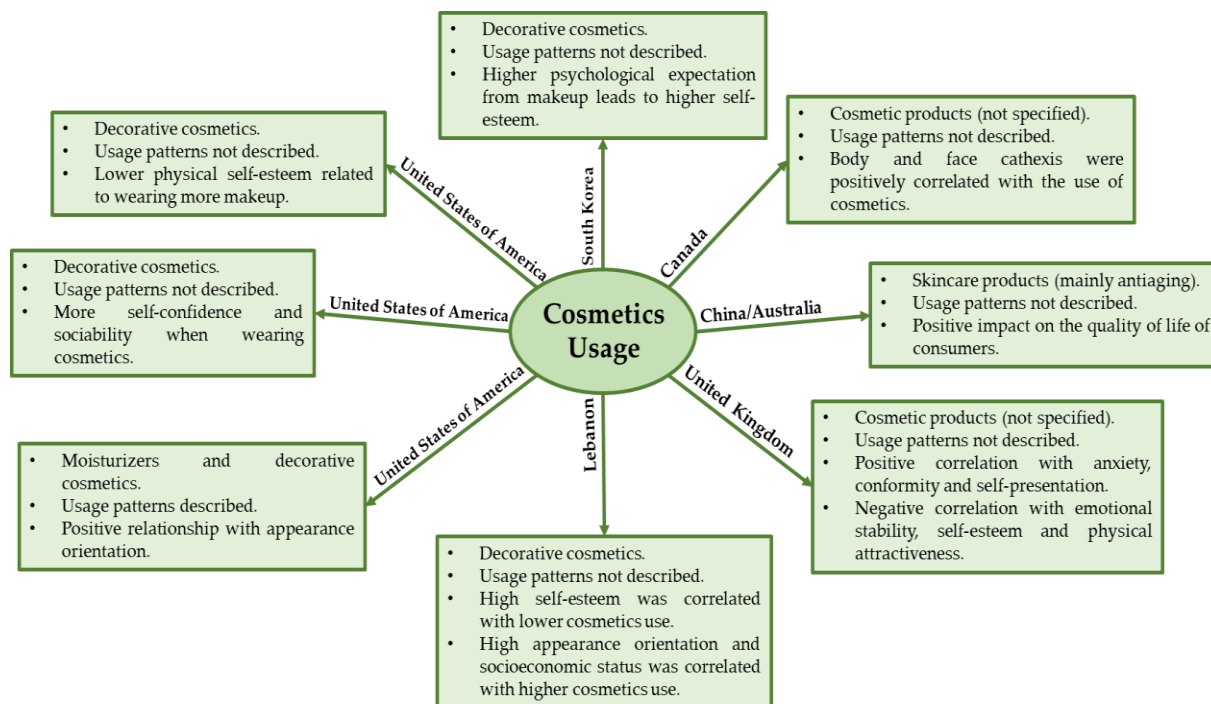


Figure 1. Relationship between the use of cosmetics and psychological variables [29–31,33,35–38].

The relationship between usage patterns of anti-aging cosmetic products (including body, face, and hair products) and women’s self-esteem has been seldom described in the literature [29], and until now, it was not studied in Portugal, one of the countries with the oldest population in Europe. This study aims to fill this knowledge gap.

This study had the following goals: (i) to characterize the consumption pattern of anti-aging cosmetics in a sample of Portuguese women; (ii) to analyze the relationship between sociodemographic variables, use of anti-aging cosmetics, and psychological variables, including self-esteem; and (iii) to find the variables that contribute the most to women’s self-esteem.

2. Materials and Methods

2.1. Participants

The sample included 260 women recruited through online platforms. The inclusion criteria were (1) female sex, (2) being a Portuguese resident, (3) age equal to or greater than 25 years (the age group was established according to the beginning period of collagen decrease [39]), and (4) using (or having used/performed in the last 12 months) an anti-aging cosmetic product/aesthetics treatment that was not prescribed as a disease treatment.

2.2. Instruments

Sociodemographic and Use of Cosmetic Products Questionnaire [40]. This questionnaire developed for the study assesses sociodemographic (e.g., sex, age, marital status, professional status, and household income) and clinical (e.g., experiencing menopause and duration, existence of diseases associated with the performed treatments) variables. Regarding cosmetics’ use, this questionnaire asks which cosmetic products (e.g., hair dye,

sunblock, anti-wrinkle face products) and/or aesthetic treatments (e.g., BOTOX, peeling, hyaluronic acid) are used by participants and how often (never, daily, once a week, two or more times a week, once a month, every 3 months, every 6 months, annually).

Appearance Schemes Inventory (ASI-R) [41,42]. This instrument assesses the personal investment in appearance, including beliefs about the importance, meaning, and influence that appearance has on the individual throughout life. The ASI-R includes 20 items to evaluate two factors: Self-Evaluative Salience of Appearance (12 items; e.g., “When I see good-looking people, I wonder about how my own looks measure up”), which assesses personal beliefs regarding the influence of the physical appearance on one’s personal and social value and sense of identity, and Motivational Salience of Appearance (8 items; e.g., “I try to be as physically attractive as I can be”), which evaluates the efforts implemented by the individual to maintain or increase his/her physical attractiveness and to manage his/her appearance. Items are rated in a 5-point scale from “totally disagreeing” to “strongly agreeing.” Higher scores indicate higher schematic investment regarding physical appearance. The original ASI-R version showed a global Cronbach alpha of 0.84, and in the Portuguese version, Cronbach alpha was 0.89. In this study, only the total scale was used, and Cronbach alpha was 0.85.

Hospital Anxiety and Depression Scale (HADS) [43,44]. HADS measures psychological morbidity and is composed of 14 items divided into two subscales, Anxiety and Depression. Each subscale is composed of seven multiple-choice questions on depressive (e.g., “I still take pleasure in the things I used to enjoy”) and anxious (e.g., “I have a sense of fear, as if something terrible is about to happen”) symptoms. Items are rated on a 4-point Likert scale. Higher scores for the total scale suggest greater psychological morbidity. The study of Roberts et al. (2001) obtained a Cronbach alpha of 0.89 for the full scale. The Portuguese version presented a Cronbach alpha of 0.70 for the global scale. In this study, only the total score was used, and Cronbach alpha was 0.88.

Frost Multidimensional Perfectionism Scale (FMPS) [45,46]. This scale evaluates self-directed perfectionism through 35 items using a 5-point Likert scale from 1 for “strongly disagree” to 5 for “strongly agree”. The FMPS includes six subscales: Personal Standards, which reflects the setting of high standards (e.g., “I am very good at focusing my efforts on attaining a goal”); Concern over Mistakes, indicating excessive concerns about mistakes and failure (e.g., “People will probably think less of me if I make a mistake”); Doubts about Actions, which reflect the individual doubts about one’s abilities (e.g., “It takes me a long time to do something right”); Parental Expectations and Parental Criticism scales, which express the belief that one’s parents set high goals and parental criticism (e.g., “My parents set very high standards for me”); and Organization, which refers to the excessive importance given to precision, order, and organization (e.g., “I am an organized person”). Higher scores for the total scale indicate higher levels of perfectionism. The original total scale showed a Cronbach alpha of 0.90, while the Portuguese version presents a Cronbach alpha of 0.86. In this study, the full scale was used, with a Cronbach alpha of 0.92.

Brief Aging Perceptions Questionnaire (B-APQ) [40,47]. The B-APQ determines aging perceptions according to Leventhal’s Self-Regulation Model through five domains. It is composed of 17 items assessed on a Likert scale that ranges from 1 (“I strongly disagree”) to 5 (“I strongly agree”). Higher scores are indicative of higher levels of negative aging perceptions. This 17-item version preserved the internal consistency and construct validity of the original version, with a Cronbach alpha higher than 0.70. Regarding subscales, the original version presents a Cronbach alpha of 0.76 for the Timeline-Chronic (TLC) subscale, which evaluates the perceptions of the course of the aging process as chronic (e.g., “I feel my age in everything that I do”); 0.78 for the Positive Consequences (PCONS) subscale, which evaluates the beliefs about the positive impact of aging (“As I get older, I appreciate things more”); 0.81 for the Consequences and Negative Control of Aging (NCC) subscale (e.g., “I have no control over the effects that getting older has on my social life”), assessing negative beliefs and control a person has over aging; 0.81 for

the positive control subscale (PCONTR), which evaluates the positive control about the aging process (e.g., “The quality of my social life in later years depends on me”); and 0.75 for the Emotional Representations (ER) subscale, which evaluates the negative emotional responses to aging (e.g., “I feel angry when I think about getting older”), including anxiety, depression, and worry. In this study, Cronbach alpha for the TLC subscale was 0.70, for the PCONS subscale was 0.81, for the NCC subscale was 0.86, for the PCONTR subscale was 0.74, and for the ER subscale was 0.67 (this later result was considered acceptable since this subscale contains only three items) [48].

Rosenberg Self-Esteem Scale (RSES) [49,50]. This instrument evaluates the overall self-esteem through 10 items, 5 positive (e.g., “I have a positive attitude toward myself”) and 5 negative (e.g., “In general, I feel like a failure”) feelings about myself. Items are evaluated on a 4-point Likert scale, varying from “totally disagreeing” to “totally agreeing,” and higher scores indicate higher self-esteem. The original scale showed a Cronbach alpha of 0.92, and the Portuguese version revealed a Cronbach alpha of 0.79. In this study, Cronbach alpha was 0.88.

2.3. Procedure

This research followed a transversal quantitative design and was approved by the Ethics Committee of the Social and Human Sciences of the University of Minho (Protocol CE.CSH 087/2018). Data were collected through online social networks (e.g., Facebook, Instagram). The first page of the evaluation protocol informed participants about the study goals, confidentiality of data, and voluntary participation and included the informed consent form; only after agreement, participants were allowed to proceed to the questionnaires. Participants who did not meet all the described inclusion criteria were excluded. In total, 55 participants were excluded since they did not meet the inclusion criteria (e.g., participants under 25 years of age or living in another country or using a cosmetic product for medical reasons).

2.4. Data Analysis

The data were analyzed using IBM Statistical Package for the Social Sciences (SPSS®), version 25.0. To characterize the sample, frequencies, means, and standard deviations were calculated. The variables regarding the use of cosmetic products and aesthetic treatment were categorized into occasional use (0) and frequent use (1). Professional status was categorized as not active (0) and employed (1), and marital status was categorized into single/divorced/widow (0) versus married/living together (1). Finally, household income was categorized into 1–3 minimum wages (0) and more than 4 minimum wages (1).

Pearson and chi-square tests were used to analyze the relationship between the variables under study (H1). A hierarchical multiple regression (Enter method) was conducted to determine which variables contributed to self-esteem. Only variables that correlated significantly with self-esteem ($p < 0.05$) were introduced in the regression analysis. After confirming the non-multicollinearity ($VIF < 2$ and tolerance > 0.1) and normality assumptions, age, marital status, professional status, and household income were entered in the first block. Anti-aging cosmetic products related to self-esteem were entered in the second block. Finally, appearance schemes, psychological morbidity, perfectionism, and aging perceptions were entered in the third block (H2).

3. Results

3.1. Sample Characteristics

The sample included 260 women, on average, aged 35.70 (SD = 8.27) years, with 16.7 (SD = 3.26) years of education, 62.6 kg (SD = 11.48) weight, and 164.3 cm (SD = 8.84) height.

Most participants lived in an urban environment (82.3%). Regarding household composition, most women lived with two or less family members (57.7%), followed by three (24.2%), four (14.2%), and five or more family members (3.9%). Most women were

professionally active (85.0%), with a monthly household income between two or three Portuguese minimum wages (64.6%), while 35.4% had a household income above four or more minimum wages. From the total sample, 44.6% of the participants were single, 31.5% were married, 19.2% were living in a consensual union, and 4.6% were divorced. Most women were not menopausal (93.8%), and more than half of them reported having no disease (53.1%).

3.2. Usage Patterns of Cosmetic Products

The cosmetic products more frequently used were face, body, and lip moisturizers; sunscreens; exfoliants; and firming and anti-wrinkle products for the face and eye contour (Table 1). Moisturizing products are undoubtedly the most daily used cosmetic products (88.9%) and are the basis of skincare, being important to maintain a healthy skin [19,51]. In addition, the daily use of specific anti-aging products (firming and anti-wrinkle) is considerably high (45.4% for face firming, 56.2% and 58.8% for eye and face anti-wrinkle, respectively). The use of face-firming and eye anti-wrinkle products was not homogenous among the sample population, revealing a large percentage of individuals who have never use them (28.8% and 26.5%, respectively). In this sample, most individuals used sunscreens daily throughout the year (70.0%), not just in the summer. Regarding exfoliants, the findings showed a wide use of these products, mostly once a week (40.4%).

Table 1. Usage patterns of cosmetic products.

Cosmetic Products	Occasional Use (%)	Frequent Use (%)
Face firming	41.9	58.1
Body firming	70.4	29.6
Hair color	96.9	3.1
Sunscreen	23.5	76.5
Face anti-wrinkle	30.0	70.0
Eye anti-wrinkle	33.5	66.5
Depigmenting	76.2	23.8
Anti-hair loss	78.5	21.5
Exfoliant	34.6	65.4
Face moisturizing	6.2	93.8
Body moisturizing	13.1	86.9
Thermal water	60.0	40.0
Lip balm	9.2	90.8

The cosmetic products with occasional use were hair-coloring products, anti-hair loss products, depigmenting products, thermal water, and body-firming products. Regarding hair care, the usage patterns in this sample were as expected, the products being used mostly once a month (hair coloring and anti-hair loss). It was also found that anti-hair loss products were occasionally used by the study sample (81.8%). Depigmenting products were also occasionally used (76.2%). The majority of the sample never used this type of product, while part of the sample used them daily (15.0%). Thermal water was occasionally used by most of the study sample (60.0%), although a considerable percentage of the sample used it daily (26.5%). Finally, in contrast to face-firming products, body-firming products were occasionally used (from once a month to once a year).

3.3. Usage Patterns of Aesthetic Treatments

The majority of the sample never performed aesthetic treatments. The aesthetic treatment more reported was skin cleansing by only 27.7% of the sample (Table 2). The relationship between aesthetic treatments and self-esteem was not statistically significant.

Table 2. Usage patterns of aesthetic treatments.

Aesthetic Treatments	Occasional Use (%)	Frequent Use (%)
Skin cleansing	72.3	27.7
Peeling	87.7	12.3
Hair strengthening	84.6	15.4
Hyaluronic acid filler	98.8	1.2
Botox	97.7	2.3
Treatment for localized fat	91.2	8.8
Anti-cellulite treatment	87.3	12.7
Treatment for facial sagging	90.0	10.0
Breast toning	98.1	1.9
Slimming treatment	93.5	6.5

3.4. Relationship between Sociodemographic Variables, Psychological Variables, Use of Cosmetic Products, and Self-Esteem

The results showed a positive association between age ($r = 0.141$, $p = 0.007$), household income ($r = 0.288$, $p < 0.001$), professional status ($r = 0.322$, $p < 0.001$), marital status ($r = 0.248$, $p < 0.001$), and self-esteem. Thus, being older, being in a relationship, having a job, and receiving a higher household income was associated with more self-esteem. The use of facial firming ($r = 0.196$, $p < 0.001$) was positively related to self-esteem, while the use of hair coloring ($r = -0.139$, $p = 0.025$) was negative related (Table 3). None of the aesthetic treatments were significantly correlated with self-esteem.

Table 3. Correlation between sociodemographic variables, anti-aging product consumption, and self-esteem.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Self-esteem (RSES)	1																	
2. Age	0.141 **	1																
3. Household income	0.288 **	0.253 **	1															
4. Professional status	0.322 **	0.111	7.23 *	1														
5. Marital status	0.248 **	0.328 **	0.364 **	4.06	1													
6. Face firming	0.196 **	0.304 **	1.61	5.48 *	15.42 **	1												
7. Body firming	0.021	0.296 **	0.677	0.044	7.19	41.07 **	1											
8. Hair color	-0.139 *	0.106	0.960	1.46	3.59	0.971	0.246	1										
9. Sunscreen	0.047	0.019	1.50	0.121	1.27	1.84	0.966	0.011	1									
10. Eye anti-wrinkle	0.081	0.206 **	2.53	1.18	4.44	32.9 **	7.90 **	1.63	10.8 **	1								
11. Face anti-wrinkle	0.038	0.354 **	2.51	2.66	6.77	28.0 **	7.28 **	0.098	3.31	59.5 **	1							
12. Depigmenting	-0.081	0.091	2.50	0.015	2.88	0.779	1.35	0.006	5.05 *	7.28 **	7.46 **	1						
13. Anti-hair loss	-0.030	-0.011	8.08 *	1.21	4.72	0.573	0.637	1.24	0.002	0.007	2.93	0.230	1					
14. Scrub	-0.004	-0.057	1.28	2.70	2.03	0.746	4.78 *	0.030	4.49	2.64	2.91	8.38 **	0.038	1				
15. Body moisturizing	0.059	-0.089	1.46	0.089	0.695	0.457	0.508	0.541	0.211	0.811	0.013	1.21	0.824	12.3 **	1			
16. Body moisturizing	0.075	0.006	2.94	0.958	0.848	0.424	5.98 *	0.002	0.000	0.288	0.232	0.828	0.350	10.1 **	36.6 **	1		
17. Thermal water	0.071	0.016	0.013	3.94	5.43	2.06	3.99 *	0.774	1.73	3.33	0.781	0.904	0.034	7.08 **	3.21	8.14 **	1	
18. Lip balm	0.045	0.017	0.141	0.922	1.60	0.166	0.978	0.105	7.37 *	3.25	0.708	3.50	0.008	2.77	16.3 **	13.9 **	8.33 **	1

N = 260; * $p < 0.05$; ** $p < 0.01$.

Regarding psychological variables, results showed a negative association between self-esteem and appearance schemas ($r = -0.146$, $p = 0.018$), psychological morbidity ($r = -0.595$, $p < 0.001$), perfectionism ($r = -0.495$, $p < 0.001$), the TLC subscale ($r = -0.370$, $p < 0.001$), and the ER subscale ($r = -0.325$, $p < 0.001$). Thus, higher levels of psychological morbidity, more perfectionism, more perceptions of aging as chronic, and more negative emotional responses to aging were associated with less self-esteem. There were positive associations between self-esteem and the PCONS subscale ($r = 0.243$, $p < 0.001$) and the NCC subscale ($r = 0.312$, $p < 0.001$), indicating that more positive beliefs about the impact of aging and more beliefs of control over the negative impact of aging are associated with better self-esteem. The PCONTR subscale did not significantly correlate with self-esteem (Table 4).

Table 4. Correlations between psychological variables and self-esteem.

Variables	1	2	3	4	5	6	7	8	9
1. Self-esteem (RSES)	1								
2. Appearance schemas (ASI-R)	-0.146 *	1							
3. Psychological morbidity (HADS)	-0.595 **	0.169 **	1						
4. Perfectionism (FMPS)	-0.495 **	0.272 **	0.456 **	1					
5. BAPQ-TLC ^a	-0.370 **	0.218 **	0.390 **	0.322 **	1				
6. BAPQ-PCONS ^a	0.243 **	0.012	-0.180 **	0.046	-0.142 *	1			
7. BAPQ-PCONTR ^a	0.026	0.222 **	0.068	0.174 **	0.024	0.349 **	1		
8. BAPQ-NCC ^a	0.312 **	-0.015	-0.336 **	-0.316 **	-0.316 **	0.097	0.069	1	
9. BAPQ-ER ^a	-0.325 **	0.331 **	0.389 **	0.339 **	0.450 **	-0.152 *	-0.009	-0.522 **	1
Mean	21.67	3.25	12.26	98.23	6.92	12.23	12.03	17.21	7.77
Standard deviation (SD)	5.50	0.56	7.00	18.69	2.48	2.25	2.42	3.66	2.83

N = 260; * $p < 0.05$; ** $p < 0.01$; ^a Aging Perceptions; TLC: Timeline-Chronic; PCONS: Positive Consequences; PControl: positive control; NCC: Consequences and Negative Control of Aging; ER: Emotional Representations.

3.5. Variables That Contributed to Self-Esteem

Marital status ($\beta = 2.188$, $t = 3.265$, $p = 0.001$) and professional situation ($\beta = 4.521$, $t = 5.086$, $p < 0.001$) significantly contributed to self-esteem, with the model including the two variables (Model 1) predicting almost 15.4% of the total variance ($F(4, 255) = 12.766$, $p < 0.001$). After adding the use of facial-firming products and hair-coloring products (Model 2), professional situation, marital status, and the consumer of anti-aging (hair-coloring) products contributed to self-esteem. The total variance explained increased 18.6% ($F(6, 253) = 10.868$, $p < 0.001$). After including psychological morbidity, perfectionism, and the TLC, PCONS, NCC, and ER subscales (Model 3), the professional situation remained significant ($\beta = 3.055$, $t = 4.287$, $p < 0.001$), and marital status ($\beta = 0.223$, $t = 2.383$, $p = 0.018$), psychological morbidity ($\beta = -0.273$, $t = -6.300$, $p < 0.001$), perfectionism ($\beta = -0.077$, $t = -4.823$, $p < 0.001$), and the PCONS subscale of aging perceptions ($\beta = 0.382$, $t = 3.372$, $p < 0.001$) contributed to greater self-esteem (Table 5). The model explained 51.8% of the total variance ($F(13, 246) = 20.333$, $p < 0.001$).

Table 5. Variables that contribute to self-esteem.

Variables	Model 1		Model 2		Model 3	
	B	t	B	t	B	t
Age	0.036	0.924	0.030	0.740	0.013	0.378
Household income	1.824	1.049	1.777	1.727**	−0.015	−0.018
Professional status	4.521	5.086 **	4.513	5.133 **	3.055	4.287 **
Marital status	2.188	3.265 *	1.915	2.949 *	0.223	2.383
Face firming			1.218	1.826	0.350	0.652
Hair color			−5.419	−3.013 **	−2.753	−1.911
Appearance schemes					0.005	−0.218
Psychological morbidity					−0.273	−6.300 **
Perfectionism					−0.077	−4.823 **
Aging perceptions-TLC ^a					−0.170	−1.454
Aging perceptions-PCONS ^b					0.382	3.372 **
Aging perceptions-NCC ^c					0.045	0.527
Aging perceptions-ER ^d					0.029	0.245
R ² (Δ R ²)		0.167 (0.154)		0.205 (0.186)		0.518 (0.493)
F		12.766 **		10.868 **		20.338 **

* $p < 0.05$; ** $p < 0.01$; ^a Aging Perceptions; TLC: Timeline-Chronic; ^b PCONS: Positive Consequences; ^c NCC: Consequences and Negative Control of Aging; ^d ER: Emotional Representations.

4. Discussion

The relationship of the use of anti-aging products and self-esteem is complex and not fully understood. In this study, age was positively correlated with the use of specific anti-aging cosmetics, which is expected due to the increase in clinical signs of skin aging with age. The usage of face-firming products was positively correlated with self-esteem, but for anti-wrinkle products, no significant correlation was found. One possible explanation might be the higher perceived efficacy of facial-firming cosmetics, thus promoting an improved look and consequently a boost in self-esteem. For other specific anti-aging products, such as anti-wrinkle products, the results may not meet consumers' expectations.

Sunscreen use is gaining popularity, and people are increasingly informed about the importance of the daily use of sunscreen in anti-aging prevention [52,53]. In this sample, the usage of exfoliants was consistent with the recommended usage frequency [54], indicating that the study population is well informed about exfoliants' use.

Noteworthy, the usage of hair-coloring products was negatively correlated with women's self-esteem (Table 1). This is consistent with the hypothesis that people who dye their hair both to disguise gray hair or for an aesthetic effect are more concerned about their appearance and thus have low self-esteem. The residual use of anti-hair loss products may reveal that participants did not have severe hair loss problems. Regarding the usage of depigmenting products, multifunctional anti-aging cosmetic products often contain depigmenting ingredients, which may have influenced the results [55]. Depigmenting

products are usually used to eliminate skin spots, so it is not expected that everyone will use this type of product in their skincare routine. Thermal water is often used to soothe skin irritations or in the case of sensitive skin [56,57], which may indicate that individuals who use this product every day may suffer from a skin condition or that they just enjoy the comfort and freshness feeling it gives to the skin [58]. Overall, most of the population did not feel the need to use thermal water in their routine. Finally, the usage pattern of body-firming products may be due to a greater concern with the physical appearance of the face than of the rest of the body [24,25]. In addition, people might have a perception of low effectiveness of body-firming products and might prefer aesthetic procedures.

The results showed a positive relationship between self-esteem and age, marital status, professional status, and household income, and professional status, in regression analysis, also contributed to more self-esteem. These findings are consistent with previous longitudinal studies that suggested that self-esteem increases from adolescence to middle adulthood, peaks at about age 50 to 60 years, and then could decrease [59,60]. Given that the average age of our study sample was 30 years, it was expected that self-esteem would have an increasing tendency to peak at older ages. Empirical research has shown that being married or having a partner is correlated with higher levels of self-esteem [61], and the same holds true for professional status and a high income, since being professionally active and having a higher income are highly valued in Western society. A meta-analysis provided empirical, small but significant associations between socioeconomic status and individual differences in self-esteem [62].

In this study, a negative relationship between self-esteem and appearance schemes was found, which is consistent with previous studies [33] that showed that people who are dissatisfied with their appearance report low self-esteem and feeling bad about themselves. In fact, the ASI-R assesses the beliefs that individuals have about how physical appearance influences their personal or social worth and the efforts implemented by the individual to maintain or increase his/her physical attractiveness [42]. Self-esteem is closely related to the subjective evaluation we individuals make about themselves [48], and it is expected that these two constructs relate negatively to each other. According to the Dove Global Beauty Research Commission 2016, 89% of Australian women reported they cancelled their meetings with friends, special events, and job interviews on the days they felt they were not looking good [41]. These results evidence the importance that investment on physical appearance has in one's life, including self-esteem and the ability to perform tasks [33].

Appearance schemes include body shape, body size, weight, clothing, concern about hairs, looks, and self-perception about body image [63], and this standard of beauty set by our society is influenced by our personal characteristics, such as perfectionism. In this study, perfectionism was correlated with and also contributed negatively to self-esteem, which is consistent with previous studies [36]. An explanation for this result may have to do with perfectionist individuals having high beauty standards and believing that others have also high expectations of them and, therefore, being more concerned that their performance will be negatively evaluated, impacting, as a result, their self-esteem [33].

Additionally, anxiety and depression were associated with and also contributed to low self-esteem. Nguyen et al., (2019) found that self-esteem is negatively associated with anxiety and depression [38]. Low self-esteem has been related to the incapacity of facing challenges [48], and getting old requires efforts to adapt to the new challenges in life and in physical appearance. A possible explanation for these results revealed that women with high self-esteem engage in beauty care to maintain or improve their physical appearance, while others may deny the process and not take care of themselves, isolate themselves from the social environment, and show disappointment with their physical appearance, which may relate to low self-esteem, which increases depressive and anxiety symptoms.

Aging perceptions, namely TLC and ER, were negatively correlated with self-esteem. Considering that TLC involves chronic aging perceptions, i.e., persistent awareness of aging (e.g., "I am always aware of my age") and ER refers to negative emotional responses

to aging (e.g., “I feel angry when I think about getting older”), both dimensions reflect negative experiences of aging, which is naturally related to lower self-esteem. Indeed, in previous studies, constant awareness of aging (TLC) was associated with health problems [64], which in a recent study were related to considerable decreases in self-esteem [61], as health problems can impair physical expectations, and in situations in which health is an asset for successful performance, social engagement and relationships can be compromised, leading to lower levels of self-esteem [59]. Similarly, negative emotional representations of aging (ER) were related to stereotypes regarding old age, and when individuals do not accept changes in appearance and the physical limitations resulting from the aging process, they are unwilling to face new challenges and participate in social life [32], which results in decreased self-esteem.

The PCONS and NCC subscales correlated positively with self-esteem, and PCONS also contributed to higher self-esteem. The results regarding the PCONS subscale, which assesses beliefs about the positive impact age can have on multiple life domains (e.g., “As I get older, I get wiser”), are in line with Ingrand et al., (2018), who also found a positive association between perceived aging and subjective well-being, and it is important to mention that self-confident seniors with life satisfaction have higher self-esteem and are able to cope better with psychosocial issues [32,65]. Since NCC encompasses beliefs of greater control over the negative impact of aging (e.g., “Getting older restricts the things I can do”) and negative aspects of aging (e.g., “How mobile I am in later life does not depend on me”), a positive relationship with self-esteem was expected. Thus, the positive association between controlling negative aging features and self-esteem may represent a greater knowledge of the aging process and an acceptance of functional limitations, which may be reflected in a more positive perception of the aging process and coping strategies (such as using anti-aging products and treatments), which may lead to better adaptation to aging and more self-esteem [64,66].

5. Conclusions

Some considerations can be drawn from usage patterns. Body-firming products were among the least used products, although the reasons behind this finding are not clear. Product reformulation to improve efficacy and sensorial attributes (such as low skin residue) and better marketing communication might be helpful to increase the consumers’ usage. The daily use of sunscreens is an important preventive measure for skin cancer, photodermatoses, and photoaging, which was not followed by around 30% of the sample. This might be addressed by the cosmetics industry by the improvement of sensory attributes, such as the ease of application and skin feel, and by promoting health education campaigns.

This study also addressed the relationships between the aging process and self-esteem, filling a gap in the literature. The results revealed, when all variables were considered, that being professionally active, being married or having a partner, having less psychological morbidity, having less perfectionism and more positive consequences regarding aging perceptions, contributed to higher self-esteem in women. However, this study has several limitations, such as the transversal design and the inclusion of only self-report instruments.

The relationship between the use of anti-aging cosmetic products and self-esteem is complex. One may hypothesize that the use of anti-aging cosmetic products may represent an adaptive behavior to minimize the visible signs of aging and may moderate the relationship between aging perceptions and self-esteem. In this study, a higher usage frequency of products that reduce skin laxity was positively correlated with self-esteem. Further studies are, however, needed to test this hypothesis.

Clearly, more research is needed in this interdisciplinary field, in particular with longitudinal studies exploring the complex relationship between aging perceptions, anti-aging cosmetic use, and self-esteem. Another interesting research point would be to explore these relationships in men, who are increasingly investing in their appearance.

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