



**Consumption Coping with Aging: Individual Factors
underlying the Use of Anti-aging Products**

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For Peer Review

1. Introduction

Since ancient civilizations, human beings have shown a sustained concern for maintaining an apparent youthfulness (Binstock, 2003; Gruman, 2003). In recent decades, though, there has been an increasing importance given by modern consumer societies to physical appearance and the ideals of beauty and youth (Binstock et al., 2006; Girard et al., 2018; Holland and Tiggemann, 2016). This evolution goes hand in hand with the development of various solutions offered by the industry in the physical appearance sector. Some solutions to counter the effect of age on physical appearance consist of cosmetic surgery procedures, whose accessibility has increased significantly in recent years. In addition to surgical procedures, various non-surgical techniques have become widely available such as Botox injections or chemical peeling. In addition to these interventions performed by professional practitioners, consumers can easily implement various simple non-invasive solutions such as make-up, hair colouring, or the application of anti-aging facial products. The latter is of particular interest since skin appearance is an essential indicator of youth, physical attractiveness and health in Western societies (Little et al., 2011; Samson et al., 2010). This interest is in line with the significant development of the market for “scientifically tested” anti-aging products. In the minds of consumers, another advantage of anti-aging products is that they are compatible with the idea of aging “naturally”, unlike surgical or chemical interventions (Clarke et al., 2007). The use of these products thus seems just as acceptable as the simple use of make-up or hair dye (Muisé and Desmarais, 2010). Finally, anti-aging products have the advantage of allowing one to avoid the negative psychological and physical experiences that can result from aesthetic procedures, even non-surgical ones (Berwick and Humble, 2017). In view of the major societal, industrial, and marketing developments related to this product category, anti-aging facial products are therefore of particular interest for consumer science research.

The main objective of the present study was to examine, over three age categories (40 to 69 years) of women using anti-aging products, whether attitude towards the use of anti-aging products (AAA; measured through a set of items) is related to a wide range of individual factors. These individual factors mainly concern the assessment of physical appearance (general appearance and facial appearance), the importance given to physical appearance (general appearance, facial appearance, and facial care), perceived socio-cultural pressures with respect to physical appearance, anxiety related to aging appearance, and finally internal states of self-esteem and well-being. *These factors were considered because previous research suggests they are major factors that have links with the anti-aging issue (see below) and provides, for each of them, a widely accepted measurement tool.*

The focus on women is justified by societal pressures to maintain a youthful appearance being typically greater for women than for men (Halliwell and Dittmar, 2003; Hargreaves and Tiggemann, 2004; Muth and Cash, 1997), and by women demonstrating greater dissatisfaction with their bodies (Esnaola et al., 2010; Barlett et al., 2008; Blond, 2008). Specifically, it is well-documented that many women are dissatisfied with their facial appearance (Frederick et al., 2016), their weight (Frederick et al., 2008; Peplau et al., 2019; Swami et al., 2010) and their overall appearance (Fiske et al., 2014; Frederick et al., 2006, 2007, 2016). This also corresponds to the “double standard of aging” theory (Sontag, 1979), according to which the effect of age is clearly perceived as negative with respect to women’s appearance, but rather neutral or positive with respect to that of men (Halliwell and Dittmar, 2003). Therefore, although the male market has been expanding for a number of years, women continue to represent the major segment for anti-aging products and cosmetics in general, as shown in particular by the wide range of products on offer and advertising communications targeting women.

Finally, focusing on the 40+, 50+ and 60+ age categories is also supported by previous literature. 40+ is considered as a starting age for most transitional life events (e.g. Worsley et al., 2011; Ong et al., 2009). 50+ is the most used age limit when defining demographic groups (e.g. WHO), and a typical limit for marketers to define old age (e.g. Brennan and Ritch, 2010; Jahn et al., 2012; Kohlbacher and Chéron, 2012; Moschis and Ong, 2011). As for 60+, it is also a commonly-used age limit in research (e.g. Teller et al., 2013; Singh et al., 2012; for a review, see Zmiva and Weitzl, 2017).

This study was designed with the purpose of a twofold contribution. On a theoretical level, it aimed at providing insights into major drivers that, in different age categories, may underlie women's use of anti-aging products in order to tackle the aging issue. Stated differently, its aim was to identify, for different age categories, which factors are the most useful to predict AAA. From a more general perspective, such insights may shed light on psychological mechanisms that may be used by individuals to cope with the inevitable and stressful decline related to advancing age (i.e. "coping strategies"). On a managerial level, a better knowledge of these drivers and mechanisms would be highly valuable for marketers when it comes to defining the key elements to be prioritised in order to achieve the greatest impact on their target audience (depending on their age category). These may include explicit elements (e.g. words, claims, slogans) as well as implicit elements (e.g. images, sensory factors, decorative elements), which may all be effectively used in multiple touchpoints with consumers (e.g. product, packaging, advertising, web marketing, sales environment, verbal communication, etc.).

2. Coping strategies

Coping theories may be of particular relevance to address personality dimensions associated with aging. Aging is considered as a widespread source of stress, in particular for women in western societies (e.g. Barrett and Toothman, 2017; Cummings et al., 2000). In addition to other losses associated with aging (e.g. declining health), these women have to face a decline in physical attractiveness which is largely emphasized by cultural norms and media (e.g. Hargreaves and Tiggemann 2004; Frederick et al., 2016; Saucier, 2004; Slevic and Tiggemann, 2010). Yet, it is widely accepted by psychologists and sociologists that, when faced with forces that adversely affect them, people do not remain passive but actively react by employing a variety of *coping strategies* (e.g. Mathur et al., 1999). Coping strategies are behavioural and cognitive attempts to master, reduce, or tolerate stressful situations experienced by the individual as threatening, exhausting or exceeding his or her resources (Lazarus and Folkman, 1984). It aims to strengthen the individual's ability to manage anxiety and to control fears.

The most cited model throughout the psychology and consumer behaviour literature distinguishes between two types of coping strategies, namely problem-focused and emotion-focused coping (Lazarus and Folkman, 1984). *Problem-focused coping* occurs when individuals tend to control the outcomes and to change the stressful factor. More specifically, this coping strategy involves efforts to modify the problem at hand and typically includes elements such as generating options to solve the problem, evaluating the pros and cons of different options, and implementing steps to solve the problem. *Emotion-focused coping* tends to result when individuals feel not in control and do not attempt to change the stressful factor directly. Instead, they engage in thoughts and actions directed at regulating their emotions (e.g. meditating). Previous research has shown a wide variety of emotion-focused strategies, including strategies such as denial, focusing on and venting of emotions, positive reinterpretation of events, and seeking out social support (Baker & Berenbaum, 2007). For instance, in describing how blind and visually-impaired consumers attempt to cope with

stress, Baker and Goodwin (1996) report that the blind group relied on strategies that can be interpreted as problem-focused (e.g. seeking information about the service environment, communicating their consumer needs), whereas the visually-impaired group coped by using emotion-focused consumption-related strategies (relying on others for emotional support, avoiding situations entirely). Likewise, consumers facing a life-threatening event (breast cancer) may use problem-focused and emotion-focused approaches that may involve seeking information about the illness and finding appropriate treatment, or denial of the health threat and engagement in experiences that provide immediate hedonic pleasures (Pavia & Mason, 2004). Problem-focused coping has been viewed as the more adaptive of the two since it tends to eliminate the source of stress (Baker & Berenbaum, 2007 ; Lazarus & Folkman, 1984). Research has also shown that older women have a greater propensity (vs. older men) to use emotion-focused coping behaviours (Mathur et al., 1999).

When it comes to coping with aging, the use of anti-aging products is of particular interest (as may be other solutions such as surgical procedures), especially with regard to the framework of consumption coping (e.g. Yap and Kapitan, 2017). Research has strongly emphasized how some coping strategies, which are large in number, may relate to consumption behaviours (Mathur et al., 1999). For example, it has been shown for a long time that relieving negative emotional states may be an underlying reason for self-gift or compulsive buying behaviours (e.g. Kacen, 1997; O'Guinn and Faber, 1989). This consumption coping framework highlights that individuals can initiate, intensify, or change consumption activities to cope with life changes and stressful events (Lee et al., 2001; Mathur et al., 1999; Moschis, 2007b). It has even been suggested that many changes in individuals' consumption behaviours are efforts to cope with stressful life circumstances (Mathur et al., 1999). This consumption coping framework thus provides an understanding of how consumer motivations build, grow, and alter in various stages of life. It also suggests that marketing researchers have a lot to gain from better understanding consumption behaviours as attempts to cope with negative internal states experienced in life circumstances. Finally, research in this field also provides good arguments for considering older adult consumers, because they are believed to experience the most stressful events and, consequently, changes in consumption motivations in response to these events (see Mathur et al., 1999). The present study was based on the assumption that anti-aging products consumption may be a means of coping with internal states associated with aging, in different ways depending on the age category (see below).

3. Literature on individual factors underlying AAA

The question of consumers' attitude (and the associated underlying mechanisms) towards anti-aging products has been largely neglected by scientific research. Rather, previous studies on anti-aging strategies have focused on factors related to the acceptance and use of surgical procedures¹. In particular, they have identified factors such as dissatisfaction with body image (Delinsky, 2005; Didie and Sarwer, 2003; Vaughan-Turnbull and Lewis, 2015), fears related to decreased physical attractiveness (Henderson-King and Henderson-King, 2005), anxiety related to aging (Slevec and Tiggemann, 2010), desire to increase self-esteem (Clarke et al. 2007), or media exposure (Slevec and Tiggemann, 2010). An exception in the scientific literature is an interesting study by Muike and Desmarais (2010). This study examined the influence of several individual factors on how likely consumers are to buy anti-aging products (measured through a single item "*How likely are you to buy anti-aging skin care products?*"). The results showed the positive influence of the importance given to physical appearance and age-related anxiety, and the absence of significant influence of body satisfaction, self-esteem and socio-cultural pressures. They also indicated a positive

relationship between age and the reported probability of purchasing anti-aging products. However, these results were not distinguished according to different age categories. For example, given the large age range in the sample of participants (19 to 73 years), a positive relationship between age and probability of purchase may reflect very different realities. It may, for example, result from a higher probability in older women but also from a low or even absent probability in younger women who, for the most part, may not feel concerned by anti-aging solutions. Therefore, this study does not reflect significant potential disparities between age groups in terms of the propensity to buy anti-aging products and the underlying individual factors. This reservation is strengthened by two sets of work. Firstly, studies show that women under 40 years of age are less concerned by anti-aging products. For example, a survey conducted on a representative sample of 1000 French women aged 25 to 70 years (Ehlinger-Martin et al., 2015) indicated that age 35 corresponds to a perceived peak in female beauty (the age after which the first signs of facial aging begin to appear), and that concern for this aging increases with age. The survey also pointed out that although it is considered that the use of anti-aging creams should start at the end of the thirties, only 21% of women between 35 and 44, and 40% of women over 45 years of age use these products on a regular basis. Consistently, another recent study reported the use of anti-aging products for less than 12% of a sample of nearly 300 women aged 20 to 35 (1% of women aged 20 to 24, less than 15% of women aged 25 to 29, and less than 25% of women aged 30 to 35; manuscript in preparation). Secondly, not distinguishing between different age categories when analysing underlying individual factors (e.g. importance given to appearance, aging-related anxiety) is also problematic in light of a consistent set of findings emphasizing the evolution of the role of these factors across age (see below).

4. Development of the research hypotheses

With regard to the overall aim of this study, the central research hypotheses focused on how specific factors are major drivers of AAA, in different age categories (i.e. H5 to H8, see below). Besides, the study also aimed at drawing on previous research on individual factors to provide additional insights into general relationships between individual factors and AAA (i.e. H1 to H4).

4.1. Links between individual factors and AAA

4.1.1. Evaluation of appearance

The lack of scientific literature in the field was not conducive to making predictions about the links between perceptions related to physical appearance (evaluation and perceived importance) and AAA. With regard to cosmetic surgery procedures specifically, previous studies (conducted on female undergraduate students) do not consistently suggest a link between physical appearance evaluation and the use of cosmetic surgery. In particular, Vaughan-Turnbull and Lewis (2015) reported that body shame predicted an increased acceptance as well as consideration of cosmetic surgery, while Delinsky (2005) reported that body-image dissatisfaction did not predict approval of cosmetic surgery.

Moreover, it may be considered that anti-aging products are more relevant for people who have greater satisfaction with their physical appearance, based on the premise that compared to cosmetic surgery procedures, anti-aging products can be used more to maintain (rather than to modify) appearance. This premise is supported by several studies. Firstly, in their study on the meanings that women aged 50 to 70 attribute to natural and unnatural aging in relation to the use of beauty work interventions, Clarke & Griffin (2007) reported that the

majority of the women suggested that anti-wrinkle creams were a natural part of *maintaining* physical attractiveness. Secondly, in their study about determinants of purchase intention toward anti-aging skin care products, Muse and Desmarais (2010) highlighted that the most common reason participants reported for purchasing anti-aging products was to preserve the look of their skin and to *maintain* a youthful looking appearance. Finally, this premise is also consistent with the findings of Ehlinger-Martin and colleagues (2015) who reported that using skincare products, like sun protection, corresponds to a strategy for *maintaining* an attractive skin and thus preventing skin aging (which may explain why respondents believed that anti-aging skincare should already start when women reach their mid-thirties).

As a result, it may be assumed that a more positive AAA is shown among women who are more satisfied with their physical appearance, as they may consider these anti-aging products as a means to maintaining this appearance and preventing the detrimental effect of aging. This consideration may therefore lead one to expect a positive relationship between AAA and the evaluation of physical appearance.

H1: AAA is positively correlated with the evaluation of physical appearance (PA-E) and face appearance (FA-E).

4.1.2. *Importance of appearance*

In a recent survey on mid-life women, the importance of appearance was associated with the probability of using “anti-aging” behaviours to manage age-related physical changes (Carrard and colleagues, 2019). These behaviours included dieting, engaging in physical activity and dying one’s hair to prevent age-related physical changes, as well as cosmetic procedures such as breast augmentation, facelift, liposuction, Botox, collagen injection, or chemical peel. This finding may lead one to expect a positive relationship between the importance attached to physical appearance and AAA.

H2: AAA is positively correlated with the importance given to physical appearance (PA-I), facial appearance (FA-I), and facial care (FC-I).

4.1.3. *Socio-cultural pressures regarding appearance (SP)*

Various studies have highlighted a link between perceived socio-cultural pressures in relation to physical appearance and the willingness to act on this appearance, particularly through cosmetic procedures (Esnaola et al., 2010; Harrison, 2003; Stormer and Thompson, 1996). This suggests a positive link between AAA and perceived pressures (from the media and others) regarding physical appearance.

H3 : AAA is positively correlated with perceived socio-cultural pressures in relation to physical appearance (SP).

4.1.4. *Anxiety related to aging appearance (ANX)*

Another factor that may be related to AAA is anxiety about the aging of one’s physical appearance. Aging anxiety is defined as the “combined concern and anticipation of losses centred around the aging process” (Lasher and Faulkender, 1993). Research has shown that anxiety about aging appearance is widespread among middle-aged women in western societies, where cultural norms emphasize the correspondence between increasing age and declining attractiveness (e.g. Barrett and Robbins, 2008; Hargreaves and Tiggemann 2004; Frederick et al., 2016). This is consistent with results showing a **positive** link between anxiety related to aging appearance and the use of cosmetic surgery (Slevec and Tiggemann, 2010) and of behaviours to manage appearance change due to age, such as hair dying and various

cosmetic interventions (e.g. facelift, Botox, collagen injection ; Carrard et al., 2019). In a cultural context, where the media largely shows young and attractive female faces, it can therefore be assumed that women are all the more favourable to the use of anti-aging products as they feel anxiety about the aging of their appearance. This expectation is also consistent with findings by Muise and Desmarais (2010).

H4: AAA is positively correlated with anxiety about aging physical appearance (ANX).

4.1.5. Self-esteem (SE) and Well-being (WB)

Considerations related to physical appearance have significant links with various internal states of the individual. For example, research has linked dissatisfaction with one's body to self-esteem, depression, social anxiety, eating disorders and general well-being (Albertson et al., 2015; Avalos et al., 2005; Cash et al., 2004; Tylka and Subich, 2004). The current study therefore included measures of self-esteem and well-being. Self-esteem can be summarized as a subjective assessment of one's worth as a person, involving feelings of self-acceptance and self-respect (Donnellan et al., 2015; Rosenberg, 1989). As for well-being, it integrates the subjective experience of happiness on the one hand, and psychological functioning and self-realization on the other (Tennant et al., 2007). The importance of this concept is underlined by the World Health Organisation (WHO, 2004) and by a number of scientific studies. In particular, the latter have emphasized the significant consequences of mental well-being on health and social relationships (Huppert, 2005; Steptoe et al., 2015). Previous studies have suggested a relationship between self-esteem and motivation for maintaining appearance (Clarke et al., 2007; Harter, 1999), and between well-being and the use of cosmetics (Battie and Verschoore, 2011). However, they do not provide sufficient support for making hypotheses about the **general** relationship that self-esteem and well-being have with AAA.

4.2. Predictors of AAA in different age groups

As mentioned above, the very nature of the products and phenomena potentially involved highlights the importance of examining whether the respective weights individual factors have on AAA depend on women's age. In this respect, previous studies that have addressed links between some of these factors and age are obviously of specific relevance. In particular, studies have suggested that advanced age may be associated with a shift in the weight exerted by concerns relating to physical appearance. For example, various studies have indicated that older women are less likely to consider that their physical appearance plays an essential role in their personal value and self-concept (Tiggemann and Lacey, 2009; Tiggemann and Stevens, 1999; Webster and Tiggemann, 2003). This is consistent with studies concerning perceived socio-cultural pressures that have indicated that compared to younger adults, older adults (over 55 years of age) tend to give less weight to the physical standards promoted by the media (Esnaola et al., 2010). Other studies have suggested that as women age, placing less value on external appearance is accompanied by placing more value on internal characteristics and by being more appreciative of their health (e.g. Clarke, 2002; Liechty and Yarnal, 2010; Liechty, 2012; Webster and Tiggemann, 2003). For example, based on interviews and focus groups, Liechty (2012) has shown that women aged 60 to 69 reported prioritizing health over appearance, and were able to reject external pressure for appearance by considering their age and various aspects of their lives to develop some level of acceptance of their perceived physical flaws. This shift of focus from physical appearance to health and internal characteristics might thus reflect coping strategies to confront declining attractiveness due to aging. These elements could therefore lead one to assume that for AAA a significant

influence of factors related to physical appearance and socio-cultural pressures (external dimension) for the younger categories (40-59 years), and of well-being (internal dimension) for the older category (60-69 years):

H5: For the 40-49 and 50-59 age categories, major drivers of AAA are the importance given to physical appearance (PA-I), facial appearance (FA-I), and facial care (FC-I).

H6: For the 40-49 and 50-59 age groups, a major driver of AAA is perceived socio-cultural pressures in relation to physical appearance (SP).

H7: For the age category over 60 years, a major driver of AAA is mental well-being (WB).

These assumptions of attractiveness-driven or well-being-driven AAA also make sense with regard to distinguishing problem-focused and emotion-focused coping strategies to tackle aging. Specifically, the importance given to appearance and the related sociocultural pressures may play a key role on using anti-aging products for women who may think that this strategy can (still) address the problem of declining physical attractiveness (i.e. problem-focused coping). Yet for older women, who experience an inevitable decline in physical and facial attractiveness, less weight tends to be given to this issue of attractiveness and the related sociocultural pressures, and thus using anti-aging products may be prominently driven by internal benefits related to well-being (i.e. switch to an emotion-focused coping). This may also be considered consistent with findings that materialism is less prevalent among the over-60s due to increased wisdom and inner reflection (Richins and Dawson, 1992; Richins, 1994).

Finally, it can reasonably be assumed that anxiety related to aging appearance has a particular weight on AAA for the 50-59 age group. Indeed, individuals in the lower age category (40-49 years old) may perceive themselves as being further away from the aesthetic and functional decline of the body. As for those in the upper age category (60-69 years of age), they may be less affected by this anxiety due to strategies that lead to greater acceptance of the effects of aging on appearance (Tiggemann, 2004; Webster and Tiggemann, 2003).

H8: For the 50-59 age group, a major driver of AAA is anxiety related to aging physical appearance (ANX).

5. Method

5.1. Data collection

The study data were collected through an Internet survey (conducted with Qualtrics software). A large number of French women (users of anti-aging facial skin care products) were invited to participate by email and in exchange for a voucher for the purchase of cosmetic products. The survey was designed to determine for each participant an overall score for the different concepts involved. For AAA, this score was determined through a set of items developed specifically for the study. With regard to the various individual factors, the measurements were essentially carried out using tools whose relevance and internal consistency have been largely validated in the literature (for each factor, the level of internal consistency obtained was comparable with that observed in previous studies). All factors involved in the study are summarized in Table 1.

*** insert table 1 here ***

5.1.1. Attitude regarding the use of anti-aging products (AAA)

Rather than being based on a single item, AAA was measured based on a set of 9 items developed specifically and presented in random order (e.g. "Using anti-aging products is important to limit the visible effects of age"; "Using anti-aging products makes me feel good"; all items are listed in Appendix 1). For each item, participants were asked to express their

level of agreement on a 7-point response scale ranging from “*Definitely Disagree*” to “*Definitely Agree*”. A Principal Component Analysis (PCA, using SPSS 26.0) was performed on the relationships among the 9 AAA items, and this structure was used as a baseline model, which was then analysed with a Confirmatory Factor Analysis (CFA, using STATA 16). Bartlett’s test of sphericity was significant ($< .001$), showing inter-correlations among items. The KMO (Kaiser-Meyer-Olkin) value of .927 showed a reliable sample size for factor analysis. The PCA supported grouping the items into one single dimension as it revealed that 58.8% of the total variance was explained by one component (*Eigen value* = 5.29) and only 7.9% by a second component (*Eigen value* = 0.71). The loadings of the 9 items were comprised between .68 and .82, and the scale had high internal consistency ($\alpha = 0.91$). Given that AAA is the central construct in this study, a CFA was conducted to confirm the PCA model. Some items showed non-normality indicators (Skewness > 1 and Kurtosis > 5), which led us to adopt the Satorra-Bentler (SB) adjustment (Satorra and Bentler, 2001). The CFA likelihood ratio showed that Chi-squared reached significance (Chi-square -SB(27) = 63.195; $p < .001$). The loadings of the 9 items were comprised between .62 and .81, with only two loadings lower than .70 (i.e. .62 and .63). Different indicators confirmed that the model fitted quite well to the observations. Attention was also paid to the Comparative Fit Index (CFI), which represents an index of comparison between the observed model and an independent model. This CFI was .968 in the present model (with a CFI above .90 being acceptable according to Bentler, 1990). Also, the Root Mean Square Error of Approximation (RMSEA), which measures the approximate error of the model by degree of freedom, was to .061 (this index being considered “good” when falling between .05 and .08, and “very good” when lower than .05). Finally, the Standardized Root Mean Squared residual (SRMR) was .036, thus confirming that the model was adapted to the observed data (as a SRMR should be below the threshold of .05). The 9 attitude-related items were therefore aggregated to produce an overall AAA score for each participant (consisting of the average of the responses to the 9 individual items). The AAA scores followed a normal distribution (Skewness = -.480; Kurtosis = .196).

5.1.2. Physical appearance evaluation and importance (PA-E, FA-E, PA-I, FA-I, FC-I)

Participants evaluated their physical appearance (PA-E) using the *Appearance Evaluation* subscale of the MBSRQ questionnaire (*Multidimensional Body Self-Relations Questionnaire*; Brown, Cash, and Mikulka, 1990). This tool consists of 7 items, associated with a 5-point response scale ranging from “*Definitely disagree*” to “*Definitely agree*” (e.g. “*My body is sexually appealing*”; “*I like the way I look without my clothes*”; degree of internal consistency for the sample: $\alpha = 0.88$).

The facial appearance evaluation (FA-E) was conducted by inviting participants to judge 5 areas of their face (eyes, eyebrows, lips, cheeks, skin tone) and their entire face, using a 5-point response scale ranging from “*Very dissatisfied*” to “*Very satisfied*”. This group of 6 items is based on the BASS scale (*Body Areas Satisfaction Scale*) included in the MBSRQ questionnaire (Brown et al., 1990). Previous studies have also used this group of items to examine the assessment of facial appearance (Guthrie, Kim, and Jung, 2008). It showed a satisfactory degree of internal consistency for the sample ($\alpha = 0.76$).

The importance given by participants to their physical appearance (PA-I) was examined using the *Appearance Orientation* subscale of the MBSRQ questionnaire (Brown et al., 1990). This subscale consists of 12 items, with a 5 point response scale ranging from “*Definitely disagree*” to “*Definitely agree*” (e.g. “*I check my appearance in a mirror whenever I can*”; “*Before going out, I always spend a lot of time preparing myself*”) The internal consistency for the sample was $\alpha = 0.72$.

The importance given to facial appearance (FA-I) was measured using the same items as for the assessment of facial appearance (facial areas and face in general), this time with an associated response scale ranging from “Not important” to “Important”. The internal consistency of the 6 items for the sample was $\alpha = 0.73$.

These items related to the importance given to facial appearance were supplemented by two items that were developed to specifically address the importance given to facial care (FC-I; “I attach great importance to facial care”; “I spend a lot of time on facial care”), using a response scale ranging from “Definitely disagree” to “Definitely agree” (degree of internal consistency of the 2 items for the sample: $\alpha = 0.72$).

5.1.3. Perceived socio-cultural pressures in relation to physical appearance (SP)

Perceived socio-cultural pressures in relation to physical appearance (SP) were examined through the 12 items of the *Sociocultural Attitudes Towards Appearance Questionnaire* (Heinberg et al., 1995). This measure reflects awareness of societal attitudes about thinness/attractiveness and internalization/acceptance of these societal beliefs (Heinberg et al., 1995). Participants were asked to express their response on a 5-point response scale (from “Definitely disagree” to “Definitely agree”) to this set of items (e.g. “I feel pressure from family members to look thinner”; “I feel pressure from family members to improve my appearance”; similar items being used for “peers” and “media”). This set of items showed satisfactory internal consistency in the sample ($\alpha = 0.92$).

5.1.4. Anxiety related to aging appearance (ANX)

Anxiety related to aging physical appearance (ANX) was measured using the *Physical Appearance* subscale of the *Anxiety About Aging Scale* (Lasher and Faulkender, 1993). This tool consists of 5 items, with a 5 point response scale ranging from “Definitely disagree” to “Definitely agree” (e.g. “When I look in the mirror, it bothers me to see how my looks have changed with age”; “I have never dreaded looking old”; degree of internal consistency for the sample: $\alpha = 0.74$).

5.1.5. Self-esteem (SE) and well-being (WB)

Self-esteem measurement (SE) was performed using the *Rosenberg Self-Esteem Scale* (Rosenberg, 1989). This questionnaire consists of 10 items, associated with a 4-point response scale ranging from “Strongly Disagree” to “Strongly Agree” (e.g. “I think I am a person of value, at least equal to anyone else”; “I have a positive attitude towards myself”; degree of internal consistency for the sample: $\alpha = 0.81$).

Mental well-being (WB) was examined using the *Warwick-Edinburgh Mental Wellbeing Scale* (short version; Stewart-Brown et al., 2009). Compared to other measures of psychological well-being (e.g. *Psychological Well-Being scale*; Ryff, 1989), this scale specifically refers to well-being rather than general satisfaction with life. It consists of 7 items associated with a 5-point response scale ranging from “None of the time” to “All of the time” (e.g. “Usually, I feel relaxed”, “Usually, I feel useful”, “Usually, my thinking is clear”; degree of internal consistency for the sample: $\alpha = 0.73$).

5.1.6. Other measures

After addressing the various individual factors mentioned above, the last section of the questionnaire included questions related to the age and weight of the participants. This section

also included participants' habits regarding the use of facial care products in general and anti-aging products in particular (frequency of use and monthly budget; these items are included in Appendix 2).

6. Results

6.1. Data relating to participants' profile

The data were collected and analysed on a total of 366 French women between 40 and 69 years of age (average of 53 years). In terms of the use of facial care products in general, 4% of these participants reported using such products occasionally (*sometimes, but not every day*), 11% a single product daily, and 85% several products daily. Regarding the average monthly budget devoted to facial care products, 10% of participants estimated it at *less than €20*, 49% at *between €20 and €50*, 33% at *between €50 and €100*, and 8% at *more than €100*. In terms of the use of anti-aging facial skin care products specifically, 13% of participants indicated occasional use, 27% the daily use of a single product, and 60% the daily use of several products. Although this question involved only an ordinal scale with a limited number of response alternatives, it can be noted that this behavioural variable for the use of anti-aging products has a strong correlation with AAA ($r = 0.377$; $p = 0.000$). As for the average monthly budget devoted to anti-aging facial care products, 14% of participants estimated it at *less than €20*, 51% at *between €20 and €50*, 29% at *between €50 and €100*, and 6% at *more than €100*. Beyond the relative homogeneity of these individuals relating to country, gender, age, and use of facial care products, the sample of participants included a great variety of sociodemographic profiles (e.g. geographic dispersion, family situation, professional situation, level of income).

6.2. Descriptive statistics

Table 2 shows the means and standard deviations for AAA and the ten individual factors across the three age categories (40-49 years, $N = 135$; 50-59 years, $N = 167$; 60-69 years, $N = 64$).

*** insert table 2 here ***

It can be noted that ANOVAs do not reveal any significant differences between the three age categories regarding the ten individual factors. However, there was a significant difference with regard to AAA ($F(2.365) = 5.19$, $p = 0.006$). A post-hoc test (Bonferroni) revealed that participants over 60 years of age had a significantly higher AAA than participants who were 40 to 49 years of age ($p = 0.005$) and of 50 to 59 ($p = 0.035$) years of age.

6.3. Links between variables

Table 3 presents the correlations between AAA and the ten individual factors (as well as between these individual factors).

*** insert table 3 here ***

These data show many significant correlations between AAA and individual factors. It appears that AAA has a significant positive correlation with physical appearance evaluation (PA-E) and a marginally significant correlation ($p = 0.053$) with face appearance evaluation (FA-E), thus mainly confirming H1. Also, significant positive correlations appear between AAA and the importance given to physical appearance (PA-I), to face appearance (FA-I), and to facial care (FC-I), therefore confirming H2. As for perceived socio-cultural pressures

concerning physical appearance (SP; H3), the correlation with AAA is lower and marginally significant ($p = 0.078$). In addition, a significant positive correlation is observed with anxiety related to aging appearance (ANX; confirming H4). Finally, although not associated with a specific hypothesis, positive correlations are found regarding self-esteem (SE) and mental well-being (WB), and a slight negative correlation between SE.

6.4. Major drivers of AAA in different age groups

For each age category, a stepwise regression analysis was performed to examine the individual factors predicting AAA. These analyses were carried out by considering the ten individual factors as independent variables and AAA as a dependent variable. The results are presented in Table 4, considering for each age category the final step provided by the analysis (integrating all significant predictors). The results for the intermediate steps are given in Appendix 3.

*** insert table 4 here ***

These analyses indicate that AAA is predicted by different factors depending on age categories. For the 40-49 year old category, predictors are the importance given to physical appearance (PA-I) and facial care (FC-I). These results are thus in line with H5, unlike those relating to the importance given to facial appearance (FA-I), which does not appear to be a significant predictor. Perceived socio-cultural pressures in relation to appearance also emerge as a significant predictor (SP; confirming H6). For the 50-59 age group, predictive factors are still the importance of appearance (PA-I) and facial care (FC-I; confirming H5) as well as perceived socio-cultural pressures (SP; confirming H6). However, two additional predictors emerge, namely physical appearance evaluation (PA-E) and anxiety related to aging appearance (ANX; confirming H10). In contrast, only mental well-being (WB) predicts AAA for the age category over 60 (confirming H7).

7. Conclusion

7.1. Discussion of the findings

This research aimed at addressing the lack of knowledge about what may drive consumers to use anti-aging products, which is of substantial interest given the major societal (and marketing) developments associated with the anti-aging issue. More specifically, the purpose of this study was to contribute to a better understanding of individual factors underlying the attitude of women aged 40 to 69 towards the use of anti-aging products (AAA). The results indicate that women's more positive attitude towards the use of these products is associated with a more positive evaluation of their physical appearance, greater importance given to their appearance (general appearance and facial appearance) and facial care, as well as a higher level of anxiety related to aging appearance, of self-esteem, and of mental well-being.

Although this does not correspond to the central objective of this study and makes less of a theoretical contribution, some correlational results are a matter of interest to address general relationships between individual factors and AAA (and to connect with bodies of research on how such factors may relate to each other). For example, a negative correlation is observed between perceived socio-cultural pressures in relation to physical appearance and the evaluation of physical appearance. This correlation is in keeping with findings according to which greater perceived pressure is associated with less dissatisfaction with body image (Esnaola et al., 2010; Harrison 2003; Stormer and Thompson, 1996). Also, positive

correlations are observed between AAA and internal states such as self-esteem and well-being (which previous literature did not reasonably lead us to expect).

Central to the objective of the study, regression analyses revealed that the main drivers of AAA differ according to age categories. In particular, it appears that under the age of 60, the importance given to physical appearance and to facial care are major drivers. In addition to these factors, the secondary role of perceived socio-cultural pressures emerges in the youngest age category (40–49 years). Thus, while Western societies widely convey ideals of beauty and pressures for physical appearance (particularly through the media; e.g. Barrett and Robbins, 2008; Hargreaves and Tiggemann 2004; Frederick et al., 2016), these results indicate that these pressures play a significant role in AAA among women from 40 to 49.

For the upper category of 50–59 years old, such a secondary role no longer seems to be played by these sociocultural pressures. This can be considered consistent with research that has indicated that older adults tend to pay less attention to the physical ideals promoted by the media (Esnaola et al., 2010). Instead, a secondary role seems to be played by anxiety related to aging appearance. Such a significant weight of this anxiety on AAA is in keeping with studies that have highlighted women's concern about the decline in attractiveness as age changes, in Western societies where the media largely promotes very attractive female role models. It is also consistent with Muise and Desmarais' (2010) study in which age-related anxiety was a predictor of the intention to purchase anti-aging products. The results of the present study reveal that the weight of this anxiety on AAA is significant for the middle-aged category from 50 to 59, which can be considered to be more confronted than the younger age category with the aesthetic decline of the body.

Beyond the age of 60, a significant shift occurs in the factors underlying AAA. The results show a collapse of predictive factors such as those related to the importance of appearance, to social pressures and to anxiety in relation to aging, in favour of the sole driver of mental well-being. This may suggest some resistance to the pressure that these factors can exert (and actually exert for younger women) on the use of physical appearance strategies, such as the use of anti-aging products. In other words, although the importance given to appearance, perceived socio-cultural pressures and age-related anxiety are not less present in these 60–69-year-old women (as indicated by descriptive statistics), it can be considered that a form of resilience may lead these women to no longer be induced by these specific factors to favourable anti-aging strategies. Such resilience may seem consistent with research suggesting that older women tend to resist socio-cultural pressures regarding physical attractiveness and to believe that because of their age, they should stop worrying about their physical appearance and accept the effects of aging on that appearance (e.g. Esnaola et al., 2010). These studies also indicated that older women tend to develop a cognitive strategy to give less weight to their physical appearance in order to protect the influence that this appearance and dissatisfaction with their bodies could have on their self-esteem and self-concept (Tiggemann and Lacey, 2009; Tiggemann and Stevens, 1999; Webster and Tiggemann, 2003). While the results of these studies were obtained through correlational analyses (involving women up to 65 years of age; Webster and Tiggemann, 2003), the present study supports this perspective by considering the weight of different individual factors on the 60 to 69 year age category compared to the younger age category. It may thus lead one to suggest that for the 60–69 category, the use of anti-aging products can be explained by the fact that it corresponds to a sensitivity in favour of an internal benefit in terms of mental well-being, related to taking care of oneself (particularly through skin care products). This perspective is consistent with the fact that despite some form of resistance to the influence of appearance-related factors (importance, socio-cultural pressures, anxiety) these 60–69-year-old women do not have a more negative AAA than younger women, but on the contrary, a more positive AAA.

It therefore seems that, depending on the age category, anti-aging products may correspond to different coping strategies. For ages under 60, these products could meet two objectives. On the one hand, a sense of control over physical appearance (i.e. problem-focused coping), which has been a widespread concern since ancient civilizations (Grunman, 2003). On the other hand, the reduction of dissonance in relation to socio-cultural pressures regarding this appearance (and at the same time the reduction of anxiety related to the aging of this appearance for people in the older age category from 50 to 59). For ages over 60, these products related to self-care could correspond to an adjustment to focus on well-being rather than still suffering from the pressures of physical appearance (i.e. emotion-focused coping). This perspective that the use of anti-aging products can meet such an emotion-based coping strategy may also explain why many women continue using these products despite being sceptical about their actual effectiveness in terms of physical appearance (as highlighted by qualitative interviews; Muise and Desmarais, 2010), and despite “scientific” arguments regarding their alleged efficacy (Dodds et al., 2008). While little is known about the interrelationship between later life transitions and consumer behaviour (Yap and Kapitan, 2017), this study may thus suggest a switch in motivation underlying the use of anti-aging products as women age.

Having integrated many individual dimensions and distinguished different age categories, the present study thus provides new knowledge about the individual factors (and potential coping strategies) underlying women’s attitude towards using anti-aging products, whereas previous knowledge on the subject was very limited. With respect to this previous knowledge, the role of the importance given to physical appearance and age-related anxiety on the propensity to use anti-aging products has already been observed previously (Muise and Desmarais, 2010). However, the present study shows that these roles are dependent of age category (the first factor being effective for the 40-49 and 50-59 categories, and the second for the 50-59 category). Likewise, while this previous study showed no predictive role of socio-cultural pressures, the present study indicates that such pressures do have a predictive role on AAA for the 50-59 age category. Regarding the individual factors common to both studies, different reasons may account for the differences in outcomes compared to those observed by Muise and Desmarais (2010). A first reason relates to the sample of participants. Muise and Desmarais (2010) considered a sample of women between the ages of 19 and 73. However, research has shown that women tend to feel little concern about anti-aging products under 40 years of age, and even less so under 30 (e.g. Ehlinger-Martin et al., 2015). On the other hand, the differences in results compared to those of Muise and Desmarais (2010) can also be explained by the measures used. The present study examined how individual factors *may drive consumers’* attitude towards anti-aging products measured through a consistent set of items. In contrast, the results by Muise and Desmarais (2010) were based on a single item related to reported purchase likelihood.

Also, although anti-aging products are a very particular product category, the outcomes of this study may help understand people of different ages in terms of their consumer behaviour regarding other products or services related to physical appearance. For example, utilizing fitness-related products or services (e.g. fitness equipment or centres) may also correspond to different coping strategies depending on the age category, as younger people may primarily aim at tackling weight gain and improving physical appearance (i.e. problem-focused coping), and older people at feeling good in one’s body (i.e. emotion-focused coping).

From the side of aging individuals, this study also points to the importance of any factor that may positively impact their resilience and their ability to effectively use coping strategies to enhance internal states associated with aging. For example, research on age-related changes

in the brain mechanisms involved in coping strategies suggests that a healthy lifestyle has a crucial role to promote a “resilient brain” with aging (Sampedro-Piquero et al., 2018).

7.2. *Practical implications*

A major challenge for practitioners relates to determining, for their products, the elements to be highlighted (in particular through the various means of communication) in order to have the (most) effective impact on their target audience. To this end, a better understanding of the respective weights of different factors on consumer attitudes is valuable in identifying which elements should be given priority. This study suggests that as far as the market for female anti-aging products is concerned, these elements differ according to the age of the consumers and should therefore be adapted accordingly (i.e. segmentation, positioning and communication strategies). Thus, for women aged 40 to 59, elements emphasizing the importance of physical appearance and of facial care are likely to exert a particularly strong influence on their propensity to use such products. As a secondary implication, communication elements highlighting the value of physical appearance in our societies may be relevant in the case of a target audience in its forties, while elements relating to the anxiety associated with aging appearance (and the idea of having a certain control over it) may be relevant in the case of a target audience in their fifties. In the case of a target audience of over 60 years of age (60–69 years of age), this study suggests that increasing feelings of well-being may encourage sales of anti-aging products. In this regard, research suggests various approaches for practitioners, beyond explicit elements (i.e. words, arguments) that can be used in the context of communication tools (advertising, websites, etc.) or of direct interactions. For example, studies in environmental psychology shows how psychological or physiological responses related to well-being may be enhanced by subtle use of sensory factors such as colours, lighting, smells, sounds or music (Applebaum et al., 2010; Coffman, 2002; Dalke et al., 2006; Dijkstra et al., 2008; Ghamari and Amor, 2016; Jacob and Suess, 1975; Lehrner et al., 2000), or by the presence of specific decorative elements (Dalke et al., 2006; Stefan et al., 2015). Likewise, positive impacts on well-being might also be aroused by product’s intrinsic attributes such as smell (which is the subject of particular attention in the personal care products industry) or by specific stimuli included in advertisements (e.g. Salonen et al., 2013). In general, the value of these managerial implications is further strengthened by the prospect of substantial growth in the anti-aging products market due to the aging of the population (Orbis Research, 2018; United Nations, 2017).

Also, the negative relationship between perceived socio-cultural pressures in relation to physical appearance and physical appearance evaluation may cast a critical view at marketing communication practices in many industries which contribute to bombarding consumers with the ideals of youth and beauty, and which might have detrimental impacts on people’s physical appearance evaluation (e.g. Frederick et al., 2017; Karazsia et al., 2017). This points to increasing efforts against socio-cultural pressures and toward the promotion of physical appearance diversity and acceptance, via the reduction of exclusively promoting ideals of youth and beauty in the media (Karazsia et al., 2017; Stice & Presnell, 2007; Sykes, 2017). The significant role of age-related anxiety on AAA (for the 50–59 years old category) further suggests the importance of a critical look marketers could have at potentially reinforcing the anxiety resulting from the decline in physical appearance. These ethical considerations seem to apply particularly in the case of consumers who are strongly affected by not being able to conform to standards of attractiveness, which may result in threats to self-esteem and well-being (as suggested by the significant positive correlation between these two factors and physical appearance evaluation found in this study). They also lead to a positive view on

media campaigns that are out of line with traditional standards of attractiveness (e.g. Unilever, 2015), which may suggest an interesting avenue for future marketing practices.

7.3. Limitations and avenues for future research

This study highlights the importance of research on the factors underlying the use of anti-aging products, particularly because of the variety of dimensions that may be involved (and how they interact with advancing age). It underlines that the “external” dimension of physical appearance is associated with a more “internal” dimension (linked, for example, to anxiety and well-being) as well as important societal influences (e.g. sociocultural pressures towards appearance). An avenue for future research in this field could involve including participants’ subjective age as well. Some studies on aging have emphasized that this variable may be appropriate to predict consumer behaviour (e.g. Moschis and Marthur, 2006). Also, given the potentially important role of socio-cultural norms and pressures regarding physical attractiveness, another research approach could include countries where these pressures are exerted and experienced differently. While this study was limited to women, future research could also extend the study to the field of male anti-aging, which has been a rapidly growing market for several years. It may be assumed that the respective weights of individual factors underlying AAA are significantly different for men. This would rely, in particular, on research that has shown that men face fewer societal pressures than women towards reducing the effects of age on appearance (Halliwell and Dittmar, 2003; Hargreaves and Tiggemann, 2004), that this effect of age on them is perceived less negatively (Halliwell and Dittmar, 2003; Sontag, 1979), and that they show less dissatisfaction with their bodies (Barlett et al., 2008; Blond, 2008). Finally, while the present study focused on factors predicting the AAA, it would be interesting to gain insights into the outcomes anti-aging products actually have on users’ subjective well-being (considering the coping strategy involved). Providing evidence of the positive impact of using such products on well-being would dramatically challenge the predominant view in the stress and coping literature that emotion-focused coping processes are maladaptive (see Baker & Berenbaum, 2007), by highlighting how such a coping strategy may effectively result in positive and meaningful outcomes for consumers.

Footnote

¹ The aim of such interventions are not limited to the effects of age on appearance but may also concern the improvement of physical aspects that are not necessarily related to the effects of age.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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For Peer Review

Table 1. Factors involved in the study.

Factor	Measurement scale	Items number	Items wording (examples)	Scale	Cronbach α
Attitude (AAA)	Developed specifically for the study	9	- Using anti-aging products is important to limit the visible effects of age - Using anti-aging products makes me feel good (All items are listed in Appendix 1)	From “Definitely Disagree” (1) to “Definitely Agree” (7)	0.91
Evaluation of physical appearance (PA-E)	<i>Appearance Evaluation</i> subscale of the <i>Multidimensional Body Self-Relations Questionnaire</i> (Brown, Cash, and Mikulka, 1990)	7	- My body is sexually appealing - I like the way I look without my clothes	From “Definitely Disagree” (1) to “Definitely Agree” (5)	0.88
Evaluation of face appearance (FA-E)	<i>Body Areas Satisfaction Scale</i> of the <i>Multidimensional Body Self-Relations Questionnaire</i> (Brown, Cash, and Mikulka, 1990)	6	Evaluating 5 face areas (eyes, eyebrows, lips, cheeks, skin tone) and the entire face	From “Very dissatisfied” (1) to “Very satisfied” (5)	0.76
Importance given to physical appearance (PA-I)	<i>Appearance Orientation</i> subscale of the <i>Multidimensional Body Self-Relations Questionnaire</i> (Brown, Cash, and Mikulka, 1990)	12	- I check my appearance in a mirror whenever I can - Before going out, I always spend a lot of time preparing myself	From “Definitely Disagree” (1) to “Definitely Agree” (5)	0.72
Importance given to facial appearance (FA-I)	<i>Body Areas Satisfaction Scale</i> of the <i>Multidimensional Body Self-Relations Questionnaire</i> (Brown, Cash, and Mikulka, 1990)	6	Judging the importance of 5 face areas (eyes, eyebrows, lips, cheeks, skin tone) and of the face in general	From “Not important” (1) to “Important” (5)	0.73
Importance given to facial care (FC-I)	Developed specifically for the study	2	- I attach great importance to facial care - I spend a lot of time on facial care	From “Definitely Disagree” (1) to “Definitely Agree” (5)	0.72
Socio-cultural pressures regarding appearance (SP)	<i>Sociocultural Attitudes Towards Appearance Questionnaire</i> (Heinberg et al., 1995)	12	- I feel pressure from family members to look thinner - I feel pressure from family members to improve my appearance” (similar items being used for “peers” and “media”, instead of “family members”)	From “Definitely Disagree” (1) to “Definitely Agree” (5)	0.92

Anxiety related to aging appearance (ANX)	Physical Appearance subscale of the Anxiety About Aging Scale (Lasher and Faulkender, 1993)	5	• When I look in the mirror, it bothers me to see how my looks have changed with age • I have never dreaded looking old	From “Definitely Disagree” (1) to “Definitely Agree” (5)	0.74
Self-esteem (SE)	Rosenberg Self-Esteem Scale (Rosenberg, 1989)	10	• I think I am a person of value, at least equal to anyone else • I have a positive attitude towards myself	from “Strongly Disagree” (0) to “Strongly Agree” (4)	0.81
Well-being (WB)	Warwick-Edinburgh Mental Wellbeing Scale (short version; Stewart-Brown et al., 2009)	7	• Usually, I feel relaxed • Usually, I feel useful • Usually, my thinking is clear	“None of the time” (1) to “All of the time” (5)	0.73

Table 2. Means and standard deviations (SD) for AAA and individual factors.

	Total		40-49 years old		50-59 years old		60-69 years old	
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
AAA	5.44	-0.99	5.3	-1.03	5.41	-0.99	5.78	-0.84
PA-E	25.21	-4.74	25.1	-4.63	25.05	-4.94	25.83	-4.44
FA-E	21.33	-3.74	21.71	-3.31	21.27	-3.77	20.69	-4.43
PA-I	47.62	-5.05	46.97	-5.02	47.84	-5.12	48.41	-4.83
FA-I	25.2	-2.66	25.03	-2.77	25.14	-2.58	25.69	-2.62
FC-I	8.44	-1.38	8.42	-1.42	8.4	-1.38	8.58	-1.27
SP	29.77	-10.9	30.02	-11.14	29.61	-10.44	29.67	-11.72
ANX	15.1	-4.05	15.47	-3.89	14.82	-4.01	15.03	-4.46
SE	32.96	-3.98	32.54	-4.41	33.24	-3.64	33.14	-3.87
WB	27.33	-3.31	26.9	-3.47	27.71	-3.09	27.22	-3.47

Caption: Physical appearance evaluation (PA-E), Face appearance evaluation (FA-E), Importance given to physical appearance (PA-I), Importance given to face appearance (FA-I), Importance given to face care (FC-I), Perceived socio-cultural pressures regarding physical appearance (SP), Anxiety related to aging (ANX), Self-esteem (SE), Mental well-being (WB).

Table 3. Correlations between AAA and individual factors, as well as between these individual factors.

	AAA	PA-E	FA-E	PA-I	FA-I	FC-I	SP	ANX	SE	WB
PA-E	0.223**	—								
FA-E	0.101	0.418**	—							
PA-I	0.457**	0.236**	0.091	—						
FA-I	0.337**	0.200**	0.173**	0.385**	—					
FC-I	0.399**	0.181**	0.198**	0.402**	0.406**	—				
SP	0.092	-0.299**	-0.133*	0.04	-0.011	-0.097	—			
ANX	0.209**	-0.136**	-0.278**	0.140**	0.137**	0.159**	-0.006	—		
SE	0.160**	0.397**	0.382**	0.239**	0.248**	0.111*	-0.150**	-0.177**	—	
WB	0.260**	0.410**	0.359**	0.296**	0.299**	0.186**	-0.042	-0.188**	0.587**	—

*Significant correlation at the 0.05 level (bilateral).

**Significant correlation at the 0.01 level (bilateral).

Caption: Physical appearance evaluation (PA-E), Face appearance evaluation (FA-E), Importance given to physical appearance (PA-I), Importance given to face appearance (FA-I), Importance given to face care (FC-I), Perceived socio-cultural pressures regarding physical appearance (SP), Anxiety related to aging (ANX), Self-esteem (SE), Mental well-being (WB).

Table 4. Linear regressions for AAA predictors, according to the three age categories.

Age categories	Predictors	Adjusted R ²	β	<i>t</i>	<i>p</i>
40-49 years old	PA-I	0.343	0.071	4.352	0.000
	FC-I		0.180	3.250	0.001
	SP		0.026	3.525	0.001
50-59 years old	FC-I	0.370	0.295	4.128	0.000
	PA-I		0.242	3.351	0.001
	PA-E		0.238	3.573	0.000
	ANX		0.210	3.085	0.002
	SP		0.147	2.215	0.028
60-69 years old	WB	0.091	0.326	2.646	0.010

Caption: Physical appearance evaluation (PA-E), Face appearance evaluation (FA-E), Importance given to physical appearance (PA-I), Importance given to face appearance (FA-I), Importance given to face care (FC-I), Perceived socio-cultural pressures regarding physical appearance (SP), Anxiety related to aging (ANX), Self-esteem (SE), Mental well-being (WB).

Appendices

Appendix 1. Items related to Attitude regarding the use of anti-aging products (AAA).

Using anti-aging products...	1	makes me feel good.
	2	makes me happier.
	3	makes me feel good about myself and more confident.
	4	helps to reduce the fear of aging.
	5	makes me feel good in social relationships.
	6	it's important to limit the visible effects of aging.
	7	allows me to be satisfied with the appearance of my face.
	8	is important to be attractive and seductive.
	9	allows me to make a good impression, to give others a good self-image.

Appendix 2. Items related to participants' habits regarding the use of facial care products in general and anti-aging products in particular.

Do you use face care products?
Never
Occasionally, but not every day
Every day, one single product
Every day, several products
What approximate budget do you allocate monthly for face care products?
Less than €20
Between €20 and €50
Between €50 and €100
Above €100
Do you use anti-aging face care products?
Never
Occasionally, but not every day
Every day, one single product
Every day, several products
What approximate budget do you allocate monthly for anti-aging face care products?
Less than €20
Between €20 and €50
Between €50 and €100
Above €100

Appendix 3. Intermediate steps of the regression analysis with regard to the individual factors predicting AAA (for each age category).

Age category	Step	Predictors	Adjusted R ²	β	<i>t</i>	<i>p</i>
40-49	1	PA-I	0.247	0.503	6.629	0,000
	2	PA-I	0.286	0.423	5.349	0,000
		FC-I		0.224	2.833	0.005
	3	PA-I	0.322	0.384	4,910	0,000
		FC-I		0.251	3,230	0.002
		SP		0.207	2,830	0.005
	4	PA-I	0.343	0.344	4.352	0,000
		FC-I		0.248	3,250	0.001
		SP		0.277	3.525	0.001
50-59	1	FC-I	0.218	0.472	6.799	0,000
	2	FC-I	0.299	0.333	4.569	0,000
		PA-I		0.322	4.414	0,000
	3	FC-I	0.323	0.309	4.267	0,000
		PA-I		0.312	4.351	0,000
		PA-E		0,170	2.585	0.011
	4	FC-I	0.355	0.272	3.796	0,000
		PA-I		0.254	3.488	0.001
		PA-E		0,196	3,030	0.003
		ANX		0.205	2.985	0.003
	5	FC-I	0,370	0.295	4.128	0,000
		PA-I		0.242	3.351	0.001
		PA-E		0.238	3.573	0,000
		ANX		0,210	3.085	0.002
		SP		0.147	2.215	0.028
60-69	1	WB	0.091	0.326	2.646	0,010