

## **Why women use makeup: Implication of psychological traits in makeup functions**

RODOLPHE KORICHI, DELPHINE PELLE-DE-QUERAL,  
GERMAINE GAZANO, and ARNAUD AUBERT, *LVMH  
Recherche, Parfums et Cosmétiques, Rue d'Enfer, 45800 Saint Jean de  
Braye, (R. K., D. P.-d.-Q., G. G.), and DESCO, Faculté des  
Sciences, 37200 Tours (A. A.), France.*

*Accepted for publication September 27, 2007.*

### **Synopsis**

Makeup acts and stimulates three of our senses: touch (which encompasses all sensations from the body surface), smell (fragrance), and sight (the process of becoming and looking beautiful). The positive stimulation of these senses by makeup can induce sensory as well as psychological pleasure. In order to understand the relationship of women to their makeup, we interviewed different groups of women on their quality of life and makeup habits. Then, through four standard well-validated psychometric self-questionnaires, we examined the possible relation between the need to make up oneself and specific psychological features. Our first results clearly showed that makeup could support two opposite “up” functions, i.e., “camouflage” vs “seduction.” Concerning their psychological profiles, results showed that women of the functional class “camouflage” are more anxious, defensive, and emotionally unstable compared to those of the functional class “seduction,” who appear to be more sociable, assertive, and extroverted. Further analyses revealed a division of the two classes into subclasses of volunteers with opposed personality and psychological profiles. This new classification allowed us to define more precisely the relations existing within the subjective experience of women during the makeup process. In conclusion, our study revealed that beyond the simple application of colorful products on the face, makeup has two major functional implications depending on specific psychological profiles of women.

### **INTRODUCTION**

Variation in the physical appearance of humans is emphasized by anthropologists as an important factor in the development of personality and social relations. In particular physical attractiveness should play a crucial role since it provides easily accessible non-verbal information about a person to others. Physical attractiveness is one of the most important determinants of interpersonal attraction in the early stages of many relationships (1–3). Most of the studies on “physical attractiveness” focus basically on “facial attractiveness” since many studies reveal that facial features are the main factors within

---

Address all correspondence to Rodolphe Korichi.

the whole physical attractiveness. For example, Nielsen and Kernaleguen (4) showed that facial attractiveness, but not body attractiveness, influences subjective evaluation of overall physical attractiveness, as well as social and professional satisfaction and social desirability. One of the most important ways today's women increase their perceived facial attractiveness is through the use of commercial cosmetics. Such products allow women to conform to actual feminine beauty standards by artificially modifying the appearance of a set of facial features, e.g., enhancing the visual impact of eyes and lips, narrowing eyebrows, reddening cheeks, dyeing grey hairs, or masking wrinkles and "age spots." Moreover, a number of studies suggest that displaying youthful or slightly immature facial features (e.g., large eyes, small nose, full lips, small chin, delicate jaw) enhances female attractiveness (5,6). If cosmetics (standard and corrective) are widely portrayed as improving tools for facial attractiveness, little research has been published to objectivize their efficiency in this regard. A review of the literature reveals only a few studies that assumed that cosmetics can efficiently and objectively enhance attractiveness and can be used to manipulate physical attractiveness and the implicit messages cosmetics convey about ourselves (7–9). The "psychology of cosmetics" appears therefore as a new field concerning the characterization of the beneficial effects of cosmetic practices (10). It has been argued that personality traits such as public self-consciousness, public body-consciousness, social anxiety, and facets of body image are systematically related to variations in facial cosmetic use (11). Moreover, Cash and Cash (12) showed that women who felt relatively dissatisfied with various aspects of their own body or with their general physical appearance reported higher or recently expanded patterns of cosmetic use. It could be argued that such patterns could reflect a compensatory effort to correct or balance a flawed self-image. Moreover, in a stimulating article, Levêque (13) revealed a relationship between appearance and health, and emphasized the supporting effects of makeup products on the mental health of women affected by severe illnesses. From the clear demonstration that feeling confident about one's appearance has a beneficial impact on one's mood (14), some positive influences of cosmetics on the well-being and self-esteem that result in positive emotional states have been reported. For example, emotions with a positive valence (e.g., induced by a pleasant odor or colorful cosmetics) induce a decrease in heart rate, whereas negative valence stimuli induce opposite effects (15). Therefore, since cosmetics are used to modify physical appearance and attractiveness, one could predict that such a use could be related to stable psychological factors. Hence, the purpose of the present study was to investigate in women the underlying correspondence between personality and self-experience with makeup. The first stage of our study aimed to evaluate the subjective affective experience of subjects with makeup, using a self-assessment questionnaire built according to the information obtained from interviews of women on the quality of life and makeup. Thereafter, the second stage consisted in establishing psychological profiles of our subjects by using well-validated psychometric self-questionnaires.

## MATERIALS AND METHODS

### SUBJECTS

Seventy female subjects belonging to four different age groups were recruited for this study: group 1: 25–34 yr ( $n = 21$ ); group 2: 35–44 yr ( $n = 14$ ); group 3: 45–54 yr ( $n = 25$ ); and group 4: 55–65 yr ( $n = 10$ ). All subjects were customary cosmetics users.

## EVALUATION OF PERSONAL SUBJECTIVE EXPERIENCE WITH MAKEUP

A self-assessment questionnaire was built during a qualitative survey from the interviews with women about their relationship with makeup. In our study, makeup is the application of facial cosmetics, including foundations, but also eye shadow, lipstick etc. . . The choice of products and mode of application were free for each subject. The instruction given to the subjects was to apply makeup as they usually did, in order to analyze the most stable makeup patterns for each subject, and therefore the more representative. Three different age groups of women, all makeup products users, were recruited for this study and interviewed (the first group: 18–30 yr,  $n = 10$ ; the second group: 30–40 yr,  $n = 10$ ; and the third group  $>40$  yr,  $n = 10$ ). More than 560 sentences were first generated and classified into six different categories: (i) assertiveness level, (ii) protection, idealized naturalness, (iii) women multi-facets, (iv) aesthetic valuation, (v) seduction, (vi) makeup for oneself, and (vii) without makeup and habits. The number of sentences was then reduced to 325 according to their independence, exhaustiveness, and pertinence. In a second step, a questionnaire was used during a consumer study done with 57 women 24- to 58-years-old, in order to select more comprehensive, independent, and relevant sentences. The definitive form of the questionnaire was set up, with the remaining 140 sentences proposed with a five-point Likert response scale ranging from 0 to 4 (0 meaning strongly disagreeing and 4 strongly agreeing).

## PSYCHOMETRIC ANALYSES

Psychological characterization of the subjects was done using four well-established and validated psychometric self-questionnaires: The *State-Trait Anxiety Inventory* (STAI-T) (16) consists of 20 items designed to assess trait anxiety and instructs subjects to report how they “generally” feel by rating themselves on a four-point frequency scale ranging from 1 (almost never) to 4 (almost always). The *Coopersmith Self-Esteem Inventory* (SEI: adult version) (17) is designed to measure and evaluate one’s self-opinion regarding social, academic, family, and personal areas of experience. The inventory contains a total of 58 items answered “like me” or “unlike me.” Scoring yields separate scores for the four subscales: general self (26 items), social self-peers (eight items), academic (eight items), and home (8 items). The scale allows the calculation of a global self-esteem score that can be used as an indicator of self-esteem and valuation of the self. The *Rathus Assertiveness Schedule* (RAS) (18) is used to measure assertiveness level. The scale includes 30 items that are scored on a six-point Likert-type scale, ranging from  $-3$  (least like me) to  $+3$  (most like me). The *Eysenck Personality Inventory* (EPI, B form) (19) was designed to measure two pervasive, independent dimensions of personality, neuroticism-stability (24-items) and extroversion-introversion (24 items). The “extroversion” dimension represents the tendency to be positively and actively engaged with one’s environment (interpersonal interaction and sociability), while the neuroticism dimension characterizes high levels of negative affect such as depression and anxiety. The scale allows the calculation of an “extroversion score” (E) and a “neuroticism score” (N).

## STATISTICS

Sentences from the makeup questionnaire were compared by the chi-square statistical method. The research into the psychological profiles of the volunteers was carried out by

using principal component analysis (PCA) and analysis of variance (ANOVA). Statistical significance was set to a maximum risk,  $\alpha = 0.05$ .

## RESULTS

### CLASSIFICATION OF SUBJECTS FROM SELF-ASSESSMENT QUESTIONNAIRES

In our study, data from Likert scales have been reduced to a nominal level by combining all responses into two categories of "agree" and "disagree." The significant percentage of agreement for specific sentences is described in Table I. The results show two large and distinctive groups of volunteers. The first (class A) regroups 21 female subjects (mean age 47 years  $\pm$  12), while the other (class B) is composed of 49 female subjects (mean age 43 years  $\pm$  10). The responses of the female subjects in class A refer globally to negative self-assessment or withdrawal from others (Table I). For example, these subjects typically fully agree with propositions such as: "Without makeup, I don't like myself" (62%) or "I always make myself up when I am in contact with people" (95%). On the other hand, the responses of class B subjects refer to a positive self-assessment or approach to others (Table I). For example, these subjects typically fully agree with such propositions as: "I make myself up in a more intensive way in the evening" (92%) or "When I'm made-up, I feel sensual" (76%). Overall, the pattern of responses of class A subjects regarding makeup use can be considered as a "camouflage" profile (i.e., aiming

Table I  
Analysis of the Makeup Questionnaire (n = 70)

Sentences	Percentage of agreement for specific sentences		Significance
	Class A (n = 21)	Class B (n = 49)	
When I'm made-up, I feel glamorous	25 <sup>A</sup>	63 <sup>B</sup>	S ( $p < 0.01$ )
With makeup, I want to smile	14 <sup>A</sup>	47 <sup>B</sup>	S ( $p = 0.02$ )
I always make myself up when I am in contact with people	95 <sup>B</sup>	61 <sup>A</sup>	S ( $p < 0.01$ )
When I'm made-up, I feel natural	43 <sup>A</sup>	33 <sup>A</sup>	NS
When I'm made-up naturally, I feel myself	81 <sup>A</sup>	86 <sup>A</sup>	NS
I'm not afraid to change my makeup process to remain faithful to myself	71 <sup>B</sup>	20 <sup>A</sup>	S ( $p < 0.01$ )
I make myself up in a more intensive way in the evening	57 <sup>A</sup>	92 <sup>B</sup>	S ( $p < 0.01$ )
A woman who does not make herself up, it is a pity	76 <sup>B</sup>	47 <sup>A</sup>	S ( $p = 0.05$ )
In the evening, I make myself up to allure	48 <sup>A</sup>	67 <sup>A</sup>	NS
Without makeup, I'm insipid	76 <sup>A</sup>	55 <sup>A</sup>	NS
A woman who does not make herself up is a woman who overrates intellectual dimension to the detriment of appearance	24 <sup>A</sup>	10 <sup>A</sup>	NS
I use makeup to control the image of myself	48 <sup>A</sup>	59 <sup>A</sup>	NS
When I'm made-up, I want to allure	38 <sup>A</sup>	69 <sup>B</sup>	S ( $p = 0.03$ )
I don't like my face without makeup	76 <sup>B</sup>	47 <sup>A</sup>	S ( $p = 0.05$ )
Without makeup, I don't like myself	62 <sup>B</sup>	33 <sup>A</sup>	S ( $p = 0.04$ )
When I'm made-up, I feel sensual	43 <sup>A</sup>	76 <sup>B</sup>	S ( $p = 0.02$ )

When there is a significant difference between classes, we indicate by letters (A, B) the class to which it belongs. If the classes have the same letter, they are comparable; if not, they are significantly different.

at decreasing the load of their negatively perceived attractiveness and/or global self-image), while those of class B subjects refer rather to a "seduction" functional profile (i.e., aiming at supporting and promoting a positive self-image). If we analyze more precisely these two classes, we observe a statistically significant division of the "seduction" class (i.e., class B) into three different subclasses (Table II), depending on the relative valuation of the natural and made-up face of each subject. The same analysis for class A did not reveal sustainable subclasses.

In the first subclass (subclass B1) of class B, the made-up face is considered to be more valuable than the natural face and less variability is introduced in the makeup structure. For example, these subjects claim "Without makeup, I'm insipid" (81%), "I don't like my face without makeup" (69%), or "When I'm made-up naturally, I feel myself" (100%). For the third subclass (subclass B3) and in comparison to subclass B1, the "natural" face is rather perceived as more valuable than the made-up face. For instance, these subjects typically agree with "I use makeup to control the image of myself" (30%) or "In the evening, I make myself up to allure" (100%). Concerning the intermediate subclass (subclass B2), "natural" and "made-up" faces are considered as valuable as each other relative to the subject's personal and professional life. For example, women of this subclass claim "I always make myself up when I am in contact with people" (70%),

**Table II**  
Analysis of the Makeup Questionnaire for Class B (n = 49)

Sentences	Percentage of agreement for specific sentences			Significance
	Subclass B1 (n = 16)	Subclass B2 (n = 23)	Subclass B3 (n = 10)	
When I'm made-up, I feel glamorous	56 <sup>B</sup>	61 <sup>B</sup>	80 <sup>B</sup>	S ( $p = 0.04$ )
With makeup, I want to smile	44 <sup>AB</sup>	44 <sup>AB</sup>	60 <sup>B</sup>	NS
I always make myself up when I am in contact with people	56 <sup>A</sup>	70 <sup>AB</sup>	50 <sup>A</sup>	S ( $p = 0.03$ )
When I'm made-up, I feel natural	6 <sup>A</sup>	48 <sup>B</sup>	40 <sup>AB</sup>	S ( $p = 0.04$ )
When I'm made-up naturally, I feel myself	100 <sup>B</sup>	87 <sup>AB</sup>	60 <sup>A</sup>	S ( $p = 0.05$ )
I'm not afraid to change my makeup process to remain faithful to myself	13 <sup>A</sup>	26 <sup>A</sup>	20 <sup>A</sup>	S ( $p < 0.01$ )
I make myself up in a more intensive way in the evening	88 <sup>AB</sup>	91 <sup>B</sup>	100 <sup>B</sup>	S ( $p < 0.01$ )
A woman who does not make herself up, it is a pity	56 <sup>AB</sup>	35 <sup>A</sup>	60 <sup>AB</sup>	NS
In the evening, I make myself up to allure	44 <sup>A</sup>	70 <sup>AB</sup>	100 <sup>B</sup>	S ( $p = 0.01$ )
Without makeup, I'm insipid	81 <sup>B</sup>	39 <sup>A</sup>	50 <sup>AB</sup>	S ( $p = 0.03$ )
A woman who does not make herself up is a woman who overrates intellectual dimension to the detriment of appearance	0 <sup>A</sup>	4 <sup>A</sup>	40 <sup>AB</sup>	S ( $p = 0.01$ )
I use makeup to control the image of myself	75 <sup>B</sup>	61 <sup>AB</sup>	30 <sup>A</sup>	NS
When I'm made-up, I want to allure	75 <sup>B</sup>	61 <sup>AB</sup>	80 <sup>B</sup>	NS
I don't like my face without makeup	69 <sup>B</sup>	35 <sup>A</sup>	40 <sup>AB</sup>	S ( $p = 0.04$ )
Without makeup, I don't like myself	50 <sup>B</sup>	17 <sup>A</sup>	40 <sup>AB</sup>	S ( $p = 0.04$ )
When I'm made-up, I feel sensual	69 <sup>AB</sup>	74 <sup>AB</sup>	90 <sup>B</sup>	S ( $p = 0.01$ )

When there is a significant difference among classes, we indicate by letters (A, B) the class to which it belongs. If the classes have the same letter, they are comparable; if not, they are significantly different.

but they also enjoy their face without makeup (“Without makeup, I don’t like myself” 17%). Finally, Table III summarizes the classifications detailed above.

#### ORGANIZATION OF PSYCHOMETRIC VARIABLES IN SUBJECTS

As a first result, the ANOVA revealed, interestingly, that psychological variables obtained from psychometric self-questionnaires were not statistically related to aging (Table IV). Thereafter, a principal components analysis (PCA) was carried out in order to further investigate the relations between measured psychometric parameters, and to reduce data dimensionality. The results performed on the nine psychometric variables retained (i.e., the STAI score, the extroversion score, the neuroticism score, the RAS score, the SEI global score, and the four SEI sub-scores) are shown in the correlation circle represented in Figure 1a. The PCA identified three main factors that explain 71.8% of the total variance. The first two factors account for 62.6% of the initial variability of the data, while factor 3 accounts for 9.1% of the total variance. Their projection in the factors’ space shows that the axis corresponding to factor 1 (accounting for 51.6% of the total variance) is essentially related to the SEI general score, the RAS score, and the STAI T-anxiety score, which is inversely correlated to the SEI general score. The axis corresponding to factor 2 represents 11.1% of the remaining variance and is related to the EPI extroversion and neuroticism scores. The projection of the psychometric variables in the other factors’ space, represented in Figure 1b, shows that the axis corresponding to factor 3 is only related to the SEI home-parents score and independent of the others psychometric variables. These results show clearly that five psychometric variables out of the nine are able to describe satisfactorily the differences between the volunteers. Note that the projection of the psychometric variables in the factors’ spaces (F1 vs F2 and F1 vs F3) confirms that the variable “age” is independent of all these variables. Concerning the psychometric classification of our subjects, significant differences between classes (class A and class B) were observed for the five psychometric variables (see Table V for a statistical summary).

For general self-esteem, the mean ( $\pm$  SD) score was 12.4 ( $\pm$ 3.9) for the volunteers of class A ( $n = 21$ ) and 20.6 ( $\pm$ 2.4) for the volunteers of class B ( $n = 49$ ). These results reveal that the female subjects of class B express a better self-esteem than those of class A. Concerning the mean of the STAI T-anxiety scores, data obtained in class A were significantly higher than those of class B, with respective scores of 46.6 ( $\pm$ 8.1) and 35.6 ( $\pm$ 5.5). The volunteers of class A can therefore be labeled as “anxious,” opposite those of class B. Concerning the RAS score, participants of class A ( $-5.2 \pm 16.2$ ) were labeled as

**Table III**  
Classification of Volunteers According to Their Use of the Makeup Process ( $n = 70$ )

	Class A ( $n = 21$ )	Class B ( $n = 49$ )		
		Seduction		
Main background for makeup	Camouflage	Subclass B1 ( $n = 16$ )	Subclass B2 ( $n = 23$ )	Subclass B3 ( $n = 10$ )
Self-perceived value of natural face and make-up face	Natural image < made-up image	Natural image < made-up image	Natural image = made-up image	Natural image > made-up image

Table IV  
Relation Between Psychometric Variables and Age Groups

Variables	Group 1 (n = 21) (30.2 yr ± 4)		Group 2 (n = 14) (40.2 yr ± 3)		Group 3 (n = 25) (50 yr ± 3)		Group 4 (n = 10) (59 yr ± 3)		Significance
	Mean	±SD	Mean	±SD	Mean	±SD	Mean	±SD	
STAI (T-anxiety state)	37.3	6.2	36.8	8.5	40.8	8.7	40.0	9.5	NS
SEI (General self score)	18.6	4.7	18.4	4.3	17.7	4.8	17.7	5.7	NS
SEI (Social self-peers score)	6.6	1.6	6.9	0.8	6.2	1.7	5.8	1.6	NS
SEI (Home-parents score)	6.7	1.5	6.5	1.5	5.9	1.8	5.3	1.9	NS
SEI (Academic score)	6.4	1.2	6.1	1.4	6.3	1.7	5.5	1.9	NS
SEI (Total self-esteem score)	40.3	7.4	40.9	6.3	39.3	9.4	38.2	11.4	NS
RAS score	19.0	20.5	22.9	24.4	14.4	20.8	8.9	27.8	NS
EPI (form B)	14.1	3.7	16.4	3.6	13.8	3.2	12.8	4.3	NS
Extroversion-introversion									
EPI (form B)	8.9	5.4	10.6	3.8	9.6	3.9	8.0	4.7	NS
Neuroticism-stability									

“non-assertive,” while those of class B ( $26.1 \pm 17.8$ ) were labeled as “strongly assertive.” The analysis of “extroversion” and “neuroticism” variables, which are two core dimensions of human personality, revealed some interesting results. Indeed, we observed a clear opposition in the personality traits between our two classes of volunteers. The mean neuroticism score of class A was found to be lower than in class B (respectively,  $11.9 \pm 2.8$  and  $15.3 \pm 3.6$ ), while the mean extraversion score of class A was higher than in class B (respectively,  $13.5 \pm 3.4$  and  $7.6 \pm 3.6$ ). This interaction between extroversion and neuroticism, known to be a strong predictor of satisfaction with life, mood, and subjective well-being (20), tends to show that the volunteers of class A (higher in neuroticism and lower in extroversion than those of class B) report more negative emotional experiences. Overall, our findings reveal a clear two-class division, with subjects of class B appearing as more sociable, optimistic, calm, emotionally stable, non-anxious, and assertive than those of class A, who are more reserved, anxious, of a lower self-esteem, and non-assertive.

Concerning the subclasses of volunteers, we observed opposed personality and psychological profiles (*cf.* Table VI). First of all, no significant differences were observed between subclasses (B1, B2, and B3) for the STAI T-anxiety scale. For the SEI general self-esteem score, volunteers of subclass B1 and subclass B2 expressed a significantly lower mean self-esteem score ( $19.4 \pm 1.9$  and  $20.0 \pm 2.1$ ) than those of subclass B3 ( $23.6 \pm 1$ ). As for the assertiveness level, the RAS mean score of subclass B3 ( $42 \pm 15.4$ ) was significantly higher than those of subclass B2 ( $26.7 \pm 16.5$ ) and subclass B1 ( $15.3 \pm 13.3$ ). Concerning the independent dimensions of personality, the mean neuroticism-stability score of subclass B3 was found to be significantly lower than that of subclasses B2 and B1 (respectively,  $3.1 \pm 1.7$ ,  $9.1 \pm 2.9$ , and  $8.1 \pm 3.2$ ). Moreover, the mean extroversion scores of subclasses B3 and B2 were higher than those of subclass B1, with scores of  $17 \pm 2.3$  and  $11.7 \pm 3$ , respectively.

Overall, these results suggest that female subjects of subclass B3 are more sociable, optimistic, calm, emotionally stable, and assertive, with a higher self-esteem, than those of subclass B1. In the case of the intermediate subclass B2, the volunteers had a

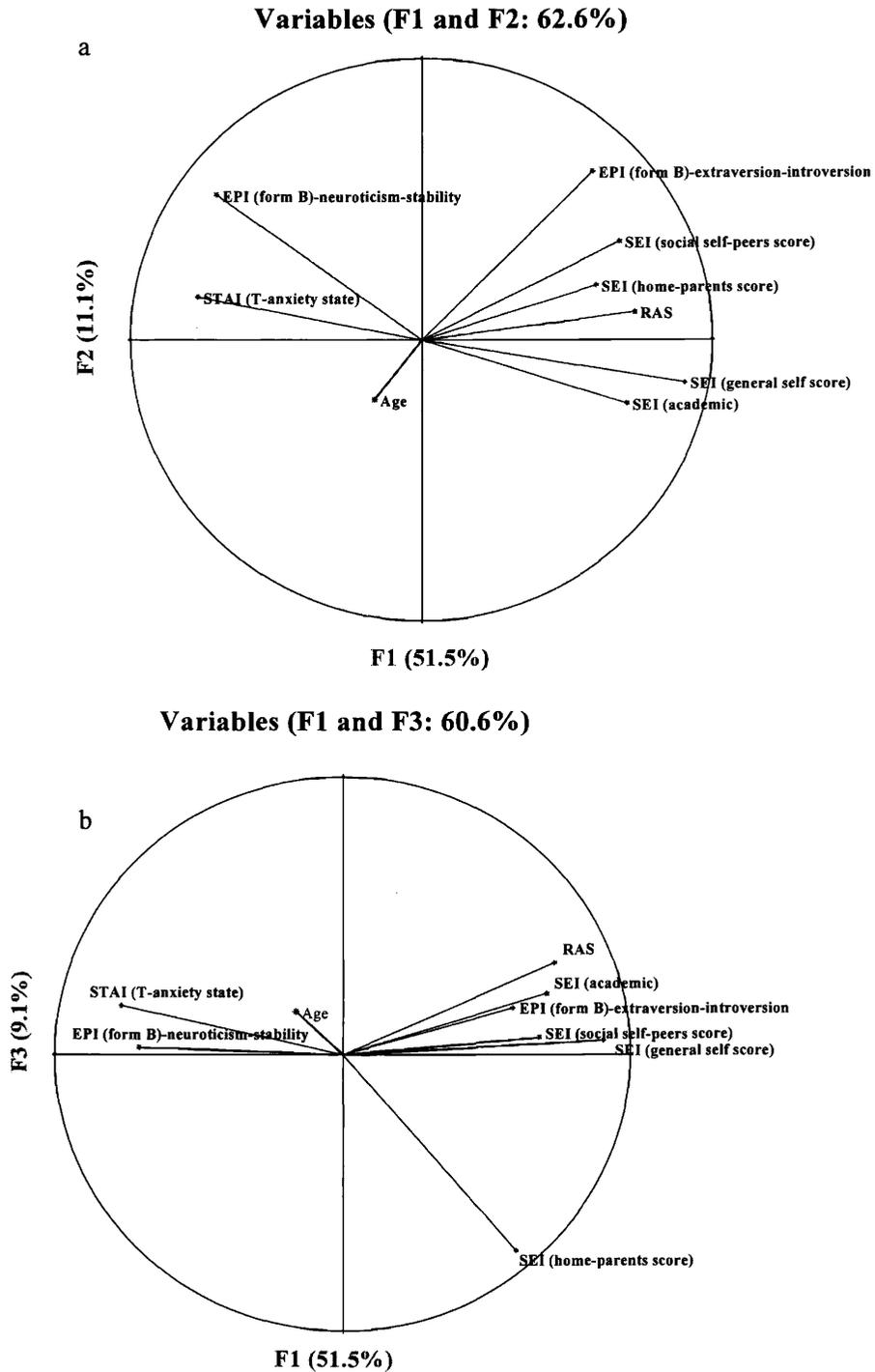


Figure 1. PCA analysis of psychometric variables taking into account (a) two factors, F1 and F2 (62.6% of the total variance), and (b) two factors, F1 and F3 (60.6% of the total variance), based upon nine variables. A correlation circle identifies the parameters responsible for these variances.

**Table V**  
Identification of Two Significance Classes of Volunteers

Variables	Class A (n = 21)		Class B (n = 49)		Significance
	Mean	±SD	Mean	±SD	
STAI (T-anxiety state)	46.6 <sup>B</sup>	8.1	35.6 <sup>A</sup>	5.5	S ( $p < 0.01$ )
SEI (General self score)	12.4 <sup>A</sup>	3.9	20.6 <sup>B</sup>	2.4	S ( $p < 0.01$ )
RAS score	-5.2 <sup>A</sup>	16.2	26.1 <sup>B</sup>	17.8	S ( $p < 0.01$ )
EPI Form B (Extroversion-introversion)	11.9 <sup>A</sup>	2.8	15.3 <sup>B</sup>	3.6	S ( $p < 0.01$ )
EPI Form B (Neuroticism-stability)	13.5 <sup>B</sup>	3.4	7.6 <sup>A</sup>	3.6	S ( $p < 0.01$ )

When there is a significant difference between classes for each psychometric variable, we indicate by letters (A, B) the class to which it belongs. If the classes have the same letter, they are comparable; if not, they are significantly different.

psychological profile relatively close to that of subclass B3, but with a higher level of assertiveness and emotional stability. The same analysis for class A did not reveal sustainable subclasses. Indeed, the statistical subdivisions revealed a main subclass that regroups 90% of the subjects of class A, with a response profile similar to the general class A profile.

## DISCUSSION

The first result of our study has clearly shown that the women of our panel expressed through a self-assessment questionnaire two opposite functions in facial makeup. The first function is rather intended to decrease a negative self-perception, which we labeled as “camouflage.” The second is more oriented to the desire to please, which we labeled as “seduction,” with some variations. For one subclass in which the “natural” face is perceived as more valuable than the made-up face, makeup is rather used in “playful” or “enjoyable” contexts and, hence, variability in its features is allowed. For the other subclass, the made-up face is considered as more valuable than the natural face and tends to support the self-image, thus restricting variability in the makeup structure. In order to go further in the understanding of these functional differences, we tried to relate these

**Table VI**  
Identification of Three Subclasses of Volunteers

Variables	Class B (n = 49)						Significance
	Subclass B1 (n = 16)		Subclass B2 (n = 23)		Subclass B3 (n = 10)		
	Mean	±SD	Mean	±SD	Mean	±SD	
STAI (T-anxiety state)	38.3 <sup>A</sup>	3.9	35.1 <sup>A</sup>	5.5	32.2 <sup>A</sup>	6.3	NS
SEI (General self score)	19.4 <sup>A</sup>	1.9	20.0 <sup>A</sup>	2.1	23.6 <sup>B</sup>	1.0	S ( $p < 0.01$ )
RAS score	15.3 <sup>A</sup>	13.3	26.7 <sup>B</sup>	16.5	42.0 <sup>C</sup>	15.4	S ( $p < 0.01$ )
EPI Form B (Extroversion-introversion)	11.7 <sup>A</sup>	3.0	17.0 <sup>B</sup>	2.3	17.0 <sup>B</sup>	2.3	S ( $p < 0.01$ )
EPI Form B (Neuroticism-stability)	8.1 <sup>B</sup>	3.2	9.1 <sup>B</sup>	2.9	3.1 <sup>A</sup>	1.7	S ( $p < 0.01$ )

When there is a significant difference between subclasses for each psychometric variable, we indicate by letters (A, B, C) the subclass to which it belongs. If the subclasses have the same letter, they are comparable; if not, they are significantly different.

different makeup functions to possible underlying psychological features (i.e., self-esteem, social desirability, anxiety, and fear of negative self-evaluation). Our first result clearly showed that aging was not a discriminating factor in our different makeup functions, and had no influence on the volunteer's psychological characteristics. This interesting result is consistent with those of McCrae and Costa (21), who tested the personalities of individuals between 19 and 80 years for over twelve years and specifically measured their levels of neuroticism, extroversion, openness to experience, agreeableness, and conscientiousness. The authors concluded that these five personality traits remained relatively stable with age. However, they conceded that their studies were not definitive and that variability across the individual personality was still possible.

Concerning the psychological profiles of our subjects, we observed that women using makeup as a camouflage tool (class A) are rather concerned with anxiety and neuroticism, while those using makeup as a "seduction" tool (class B) are rather characterized by higher self-esteem, extroversion, and assertiveness. According to the literature (22,23), female subjects of class A can be classified as having a negative self-perception, worrying more often, and dwelling on frustrations and disappointments. Moreover, subjects with higher neuroticism values were shown to be more distressed on average in comparison with individuals with lower values, and are more susceptible to stressful events (24). On the other hand, female subjects of class B tend to perceive themselves as better than average in communal traits, with more experience of positive emotions, defined as sociability or a tendency to be active and social (25). From these results, it is clear that one's self-image plays a key role in the development of personality. Women with a subjective negative feeling about their image develop defensive mechanisms to cope with low self-esteem and may need to "normalize" or manipulate a perceived impaired appearance.

## CONCLUSIONS

The subjective approach from the self-assessment questionnaire revealed two clearly distinctive classes of subjects according to their functional use of makeup, i.e., "camouflage" vs "seduction." These two classes (and further subclasses) have been associated with specific emotional and psychological profiles. It is clear that our next step will be to further study the impact of related physical parameters such as skin radiance, homogeneity of skin color, and facial symmetry (26), as well as facial expression patterns, along with the makeup process.

Finally, we can conclude that beyond the simple application of colorful products to the face, makeup appears as a holistic technique that modifies not only one's appearance, but also helps one to cope with self-image, emotions, and mood. Therefore, makeup application can be considered as a daily routine to decrease negative affects and/or increase positive affects related to self-image and one's relation to the social environment. Our results provide experimental support to the link between cosmetics and welfare, and further promote initiatives such as the "Look Good . . . Feel Better" program that was developed in 1989 by the Cosmetic, Toiletry, and Fragrance Association (CTFA). Such a program consists in a free, non-medical, brand-neutral, national public service program supported by corporate donors to help women offset appearance-related changes from cancer treatment. This pioneer study, revealing a psycho-behavioral background for differences in the use of makeup, urges further investigation in order to determine underlying determinants.

## ACKNOWLEDGMENTS

We are grateful to all volunteers for their patience during our experiments. The authors thank Dr F. Vial of Spincontrol for productive discussions and active participation in this work.

## REFERENCES

- (1) A. Marwick, *Beauty in History* (Thames & Hudson, Great Britain, 1988).
- (2) N. Etkoff, *Survival of the Prettiest: The Sciences of Beauty* (Little Brown & Co, London, 1999).
- (3) K. A. Nakdimen, The physiognomic basis of sexual stereotyping, *Am. J. Psych.*, 141, 499–503 (1984).
- (4) J. P. Nielsen and A. Kernalguen, Influence of clothing and physical attractiveness in person perception, *Percept. Motor Skills*, 42, 775–780 (1976).
- (5) M. R. Cunningham, Measuring the physical in physical attractiveness: Quasi-experiments on the sociobiology of female facial beauty, *J. Person. Soc. Psychol.*, 50, 925–935 (1986).
- (6) C. F. Keating, Gender and the physiognomy of dominance and attractiveness, *Soc. Psychol. Quart.*, 48, 312–323 (1985).
- (7) R. Mulhern, G. Fieldman, T. Hussey, J. L. Lévéque, and P. Pineau, Do cosmetics enhance Caucasian facial attractiveness, *Int. J. Cosmet. Sci.*, 25, 199–205 (2003).
- (8) J. A. Graham and A. J. Jouhar, Cosmetics considered in the context of physical attractiveness: A review, *Int. J. Cosmet. Sci.*, 2, 77–101 (1980).
- (9) C. L. Cox and W. H. Glick, Resume evaluations and cosmetics use: When more is not better, *Sex Roles*, 14, 51–58 (1986).
- (10) J. A. Graham and A. J. Jouhar, The effects of cosmetics on person perception, *Int. J. Cosmet. Sci.*, 3, 199–210 (1981).
- (11) L. C. Miller and C. L. Cox, For appearances' sake: Public self-consciousness and make-up use, *Person. Soc. Psychol. Bull.*, 8(4), 748–751 (1982).
- (12) T. F. Cash and D. W. Cash, Women's use of cosmetics: Psychosocial correlates and consequences, *Int. J. Cosmet. Sci.*, 4, 1–14 (1982).
- (13) J. L. Lévéque, Apparence et santé: Le rôle des cosmétiques, *Rev. Med. Liège*, 11, 721–725 (1996).
- (14) J. A. Graham, *Psychology of Cosmetic Treatments* (Prager, London, 1986).
- (15) S. Barkat, T. Thomas-Danguin, M. Bensafi, M. Rouby, and G. Sicard, Odor and color of cosmetic products: Correlations between subjective judgments and autonomous nervous system response, *Int. J. Cosmet. Sci.*, 25, 273–283 (2003).
- (16) C. D. Spielberger, *Manual for the State-Trait Anxiety Inventory (STAI)* (Consulting Psychologists Press, Palo Alto, CA, 1983).
- (17) J. Myhill and M. Lorr, The Coopersmith self-esteem inventory: Analysis and partial validation of a modified adult form, *J. Clin. Psychol.*, 34(1), 72–76 (1978).
- (18) S. A. Rathus, A 30-item schedule for assessing assertive behavior. *Behav. Ther.*, 4, 398–406 (1973).
- (19) H. J. Eysenck, "Biological Dimension of Personality," in *Handbook of Personality: Theory and Research*, 2nd ed., L. A. Pervin and O. P. John, Eds. (Guilford Press, New York, 1999), pp. 244–276.
- (20) E. Diener, E. M. Suh, R. E. Lucas, and H. L. Smith, Subjective well-being: Three decades of progress, *Psychol. Bull.*, 125, 276–302 (1999).
- (21) R. R. McCrae and P. Costa, Jr., *Personality in Adulthood* (Guilford Press, New York, 1990).
- (22) W. E. Kelly, Examining the relationship between worry and trait anxiety, *College Student J.* (September 2004).
- (23) D. Watson and L. A. Clark, Negative affectivity: The disposition to experience aversive emotional states, *Psychol. Bull.*, 96, 465–490 (1984).
- (24) N. Bolger and E. A. Schillings, Personality and the problems of everyday life: The role of neuroticism in exposure and reactivity to daily stressors, *J. Person.*, 59, 355–386 (1991).
- (25) P. T. Costa and R. R. McCrae, *NEO PI-R Professional Manual* (Psychological Assessment Resources, Odessa, FL, 1992).
- (26) D. I. Perrett, D. M. Burt, I. S. Penton-Voak, K. J. Lee, D. A. Rowland, and R. Edwards, Symmetry and human facial attractiveness, *Evol. Human Behav.*, 20, 295–307 (1999).