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THE ASSESSMENT OF SKIN-RELATED QOL IN INDIVIDUALS DISSATISFIED WITH THEIR SKIN: FACTOR STRUCTURE AND RESPONSIVENESS OF THE PADUA SKIN-RELATED QOL QUESTIONNAIRE

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Abstract

The current studies aimed at providing preliminary evidence about the factor structure, reliability, and responsiveness of the Padua Skin-Related QoL (PSRQ) questionnaire, an Italian self-report measure assessing skin-related Quality of Life (QoL) in people dissatisfied with their skin. The PSRQ was administered to 150 dermatological cosmetics consumers to test its factor structure and internal consistency. A further sample made up of 84 dermatological cosmetics consumers was then enrolled to evaluate the responsiveness of the PSRQ.

Findings revealed the existence of 4 factors explaining the 54.8% of variance.

Thirteen items of the original version were removed because they loaded on more than one factor or they had insufficient loadings; the final version of the PSRQ comprised 50 items, and internal consistency was excellent ($.81 < \alpha s < .95$). As regards responsiveness, only the "Positive feelings and emotions" scale resulted to be sensitive to change: individuals in the Experimental group reported significantly higher scores, after using a basic cream, compared to individuals in the Waiting list condition.

Current findings suggest that the PSRQ is a reliable measure capable of assessing multiple aspects of skin-related QoL in the target population. Further studies assessing its psychometric properties in different samples are recommended.

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Introduction

Quality of Life (QoL) is a multidimensional construct comprising a number of components: physical health (e.g., energy and fatigue, pain, sleep); psychological health (e.g., bodily image and appearance, negative/positive feelings, self-esteem, thinking, memory, and concentration); level of independence (e.g., mobility, activities of daily living, work capacity); social relationships (e.g., personal relationships, social support, sexual activity, spirituality/religion/personal beliefs); environment (e.g., financial resources, freedom, physical safety and security) (World Health Organization, 1997). It represents the degree of concordance between a desired situation and the real-life one: psychological maladjustment may occur when a low concordance occurs, and its evaluation in individuals suffering from physical diseases is essential. Thus, the availability of reliable self-report questionnaires capable of measuring it is mandatory (Gabrieli, Vidotto, & Bertolotti, 2011; Novelli, Melandri, Bertolotti, & Vidotto 2011; Vidotto et al., 2006).

Research documents that skin importantly mediates psychological and physical interactions between individuals and that it represents a crucial aspect involved in satisfaction with one's own body image (Cerea, Bottesi, Grisham, & Ghisi, 2017; Gupta & Gupta, 2013; Gupta, Gupta, & Johnson, 2004). The subjective perception of skin imperfections, as well as the meaning individuals attribute to them, may lead to discomfort and emotional distress thus impairing well-being and QoL (Wu et al., 2013). Importantly, findings from a recent a multicenter study, aiming to explore the association between depression, anxiety, and suicidal ideation among dermatological out-patients across thirteen European countries, highlighted that skin diseases are related to important psychological burden (Dalgard et al., 2016). To note, skin also represents one of the most common areas of concern in individuals suffering from a psychiatric condition known as body dysmorphic disorder (BDD; American Psychiatric Association, 2013).

The advantages potentially deriving from the evaluation of QoL in the routine clinical dermatology practice (as, for example, informing clinical decisions and fostering awareness of skin disease burden) are acknowledged (Finlay et al., 2017). Several questionnaires designed to measure skin-related QoL are currently employed in clinical dermatology settings: accordingly, such instruments are mainly adopted in order to estimate degree of distress characterizing individuals suffering from dermatological diseases, and they are also used as outcome measures in clinical trials (e.g., Augustin, Langenbruch, Gutknecht, Radtke, & Blome, 2012). Nonetheless, the assessment of skin-related QoL when dealing with subclinical skin diseases that may still severely impact the psychological well-being of individuals has been barely explored to date. In this regard, people making use of dermatological cosmetics represent a peculiar population, since they usually do not suffer from clinically relevant skin diseases despite they may be dissatisfied with their skin, thus

reporting low levels of self-confidence, low mood, difficulties in relationships, and mild social impairments. To note, a self-report questionnaire aimed at assessing QoL in regards to cosmetics and skin appearance has been recently validated: The BeautyQoL Questionnaire, an instrument developed to demonstrate that cosmetic products and good physical appearance can improve QoL (Beresniak et al., 2012). However, we believe that measuring both comfort and discomfort QoL dimensions in dermatological cosmetics consumers is of crucial importance, given their above-described peculiarities.

To our knowledge, a questionnaire designed to simultaneously assess discomfort and comfort dimensions associated with skin-related QoL in individuals dissatisfied with their skin is not available in the international literature. However, an Italian self-report measure targeting the cognitive, emotional, behavioral, and social factors involved in the perception of skin appearance has been developed: the Padua Skin-Related QoL (PSRQ) questionnaire (Bottesi, Gion, Linder, & Vidotto, 2014a; Bottesi, Gion, Baratto, Semenzato, & Vidotto, 2014b). The PSRQ was created following a three-step procedure: 1) systematic screening of the literature and refinement of selected items, where a pool of experts excluded generic QoL (i.e., instruments assessing QoL across a wide range of populations and interventions, independently of a specific condition) as well as disease-specific questionnaires from the selected material; 2) the conduction of two focus groups to further refine the questionnaire; 3) the conduction of a pilot study preliminary assessing the factor structure of the questionnaire. Preliminary evidence about the PSRQ showed that it is a 63-item measure comprising 4 factors, namely "Interpersonal impairment", "Positive feelings and emotions", "Negative feelings and emotions", "Physical distress and impairments", characterized by excellent internal consistency ($.87 < \alpha s < .96$) (Bottesi et al., 2014a; 2014b).

The current studies were performed in order to expand evidence about the goodness of the PSRQ. In particular, we sought to further explore its factor structure and internal consistency in a sample of dermatological cosmetics consumers (Study 1), as well as to provide information about its sensitivity to change (responsiveness) after the use of a basic cream in two groups (Experimental *Vs* Waiting list) of dermatological cosmetics consumers (Study 2).

Study 1

Materials and Methods

Participants and Procedure

One hundred and seventy Italian dermatological cosmetics consumers were initially recruited. The main inclusion criterion was the presence of a subclinical skin disease (e.g., dry skin, sensitive skin, cellulite, etc.) causing self-referred dissatisfaction with skin. A specific schedule, collecting information regarding skin characteristics, was preliminary administered in order to identify suitable participants. A final sample of 150 individuals entered the research (86.7%

females, N = 129); 60% was aged 18-35, 23.3% was aged 36-50, and 16.7% was aged 51-65. With respect to marital status, it was 58% single/living alone, 30% married, 8% in a domestic relationship, 3.3% separated/divorced. The employment profile was 76% full-time employed and 24% occasionally employed. Table 1 reports the main self-reported skin characteristics of sample.

Table 1. Self-reported skin characteristics of the samples employed in Study 1 and Study 2 (percentages).

Skin characteristics	**Study 1** (N = 150)	**Study 2** (N = 84)
Tone (%"light")	36.7	42.9
Type (%"dry")	32.0	19.2
Sensitiveness (%"rather")	23.3	26.2
Acne (%"rather")	12.0	19.0
Hyperpigmentation (%"a bit")	33.3	45.2
Cellulite (%"rather")	20.7	28.6
Itch (%"sometimes")	39.3	52.4

The study was conducted in accordance with the Declaration of Helsinki. Participants were recruited through advertisements in cosmetics shops, pharmacies, and university buildings, requesting potential volunteers for a study aiming to "evaluate the psychological factors involved in the perception of skin appearance in dermatological cosmetics consumers". They all participated on a voluntary basis and provided their written, informed consent for potential research analysis and anonymous reporting of findings in aggregate form, in accordance with Italian legal and ethical requirements. In light of the non-invasive nature of the study, an ethics review process was not required. All participants were informed in detail about the aims of the study, inclusion criteria (i.e., presenting a subclinical skin disease causing self-referred dissatisfaction with skin), the voluntary nature of their participation, and their right to withdraw from the study at any time and without being penalized in any way.

Measure: The Padua Skin-Related QoL questionnaire

The PSRQ is a 63-item questionnaire developed as previously described (Bottesi et al., 2014a; 2014b). Respondents are required to answer to each statement with specific reference to their skin condition on a 5-point Likert scale (1= "I disagree at all", 5 = "I agree at all"). The PSRQ assessed the following skin-related QoL dimensions:

"Interpersonal impairment", which refers to mild social problems and difficulties in interpersonal relationships due to one's own skin dissatisfaction (e.g., "*Because of my skin condition I prefer staying at home"*); "Positive feelings and emotions", describing positive sensory feelings and emotional states in relation to one's own skin (e.g., "*When I look at my skin, I like myself"*); "Negative feelings and emotions", which explores negative affective states and low levels of self-confidence

due to skin appearance (e.g., "*I feel embarrassed due to my skin condition*"); "Physical distress and impairments", describing physical impairments due to a subclinical skin disease (e.g., "*Because of my skin condition sweating bothers me*").

Statistical analyses

Statistical analyses were performed using the software Statistical Package for the Social Sciences (SPSS) version 20.

Frequencies and percentages were computed for all categorical variables (gender, age, marital status, occupation, and skin characteristics). In order to explore the factor structure of the PSRQ and, eventually, reducing the original subset of items, a principal components analysis (PCA) with Varimax rotation was performed (Jolliffe, 2002). The number of factors identified was based on an examination of eigenvalues greater than one and on the scree plot. Items with a factor loading (λ) less than .35 and items that loaded higher than .35 on more than one factor were dropped (Floyd & Widaman, 1995). Internal consistency for the emerged dimensions was then assessed by computing Cronbach alphas (α) coefficients; according to Cronbach (1951), $\alpha \geq .90$ = excellent; $.80 \leq \alpha < .90$ = good; $70 \leq \alpha < .80$ = acceptable; $.60 \leq \alpha < .70$ = questionable; $.50 \leq \alpha < .60$ = poor; $\alpha < .50$ = unacceptable.

Results

Factor structure of the PSRQ

Results from the PCA confirmed that the PSRQ comprises four factors, explaining the 54.8% of variance. Findings also suggested that 13 items could be removed because they had insufficient loadings or they loaded on more than one factor. Therefore, the final version of the PSRQ was made up of 50 items, loading on the following factors: "Interpersonal impairment" (12 items), "Positive feelings and emotions" (17 items), "Negative feelings and emotions" (13 items), and "Physical distress and impairments" (8 items). The factor composition of the final version of the PSRQ is displayed in Table 2.

Table 2. Factor composition of the final version of the PSRQ.

Factor	Item
Interpersonal impairment	5. Because of my skin condition, I have difficulties with my partner, my close friends or my relatives.
	6. My skin condition causes problems in my sexual life.
	10. Because of my skin, I feel embarrassed if other people (for example, my partner) sees me without clothes.
	14. I think my relationships with other people are difficult because of my skin condition.
	17. Because of my skin condition I prefer staying at home.
	18. Because of my skin condition I feel impaired in being close to the people I love.
	21. Because of my skin condition I find it difficult being affectionate with other people.

Factor	Item
	25. Because of my skin condition I feel humiliated.
	26. I have difficulties in my sexual life because of my skin condition.
	31. Because of my skin condition I think I'm a worthless person.
	32. I think that my skin condition could be a problem for other people.
	42. I think my skin condition could be a problem for the people I love.
Positive feelings and emotions	4. My skin makes me have a good opinion of myself.
	7. I find my skin pleasing to the touch.
	8. In regard to my skin condition, I look myself at the mirror and I like what I see.
	9. When I look at my skin, I like myself.
	11. My skin condition positively impacts on my self-confidence.
	12. When I think about my skin, I feel quite happy.
	15. When I think about my skin, I feel good.
	22. When I think about my skin condition, I feel in a good mood.
	23. My skin makes me feel attractive.
	35. My skin makes me feel sexy.
	40. My skin makes me feel a valuable person.
	41. My skin makes me feel a secure person.
	43. My skin makes me feel a successful person.
	45. When I think about my skin I feel healthy.
	46. I'm satisfied with my skin.
	47. When I think about my skin I feel happy.
	50. I feel that people like me also because of my skin.
Negative feelings and emotions	1. I feel sensations of itching, hurting, burning on my skin.
	13. Because of my skin condition, I have restless and disturbed nights.
	16. Because of my skin condition I worry it could be a serious problem.
	19. I worry because I think my skin condition could get worse.
	20. Because of my skin condition I feel angry.
	24. Because of my skin condition I feel frustrated.
	27. Because of my skin condition I am upset to the point I feel I can't do anything.
	29. Because of my skin condition I'm afraid I won't be the same person I was before.
	33. Because of my skin condition I worry a lot.
	34. Because of my skin condition I feel sad.
	36. Because of my skin condition I feel uncomfortable and agitated.
	37. Because of my skin condition I feel in a bad mood.
	48. When I think about my skin I feel distressed.
Physical distress and impairments	2. My skin condition affects the choice of clothes to wear.
	3. Because of my skin condition, I find it difficult practicing sport.
	28. Because of my skin condition sweating bothers me.
	30. Because of my skin condition I feel restricted in daily activities.
	38. Because of my skin condition I find it difficult staying outdoor during hot days.
	39. Because of my skin condition I think my life is restricted.
	44. Because of my skin condition I have difficulties studying or working.
	49. Because of my skin condition I find it difficult staying outdoor during cold days.

Note: In order to verify the maintenance of the original meaning of each item (which was confirmed), a degreed psychologist with an excellent knowledge of both languages translated back the items of the PSRQ from Italian to English.

Internal consistency of the PSRQ

Internal consistency was excellent for the "Interpersonal impairment" (α = .93), "Positive feelings and emotions" (α = .95), and "Negative feelings and emotions" (α = .93) scales. Good internal consistency for the "Physical distress and impairments" scale emerged (α = .81). No item diminished the scales reliability.

Study 2

Materials and Methods

Participants

A sample made up of 84 dermatological cosmetics consumers (90.5% females, N = 76) reporting the presence of a subclinical skin disease causing dissatisfaction with their skin was enrolled (main self-reported skin characteristics are included in Table 1). Among them, 56% was aged between 18 and 35 years, 25% was aged between 36 and 50 years, and 19% was aged between 51 and 65 years. As regards marital status, it was 53.6% single/living alone, 33.3% married, 10.7% in a domestic relationship, and 2.4% separated/divorced. The employment profile was 82.1% full-time employed and 17.9% occasionally employed.

Participants were randomly assigned to one out of the two following conditions: Experimental group (N = 46) and Waiting list group (N = 38). Those included in the former group had to fill-in the PSRQ (baseline/t_0) and then they were asked to make use of a basic emollient moisturizing dermatologic cream for 21 days; after that period, they had to complete again the PSRQ (t_1 administration). On the other hand, individuals in the Waiting list group had to fill-in the PSRQ (baseline/t_0) and, 21 days after, they had to complete again it (t_1 administration); then they were acknowledged for their collaboration and they were given the same product.

As far as recruitment procedure, ethical considerations, and measures are concerned, please refer to Study 1.

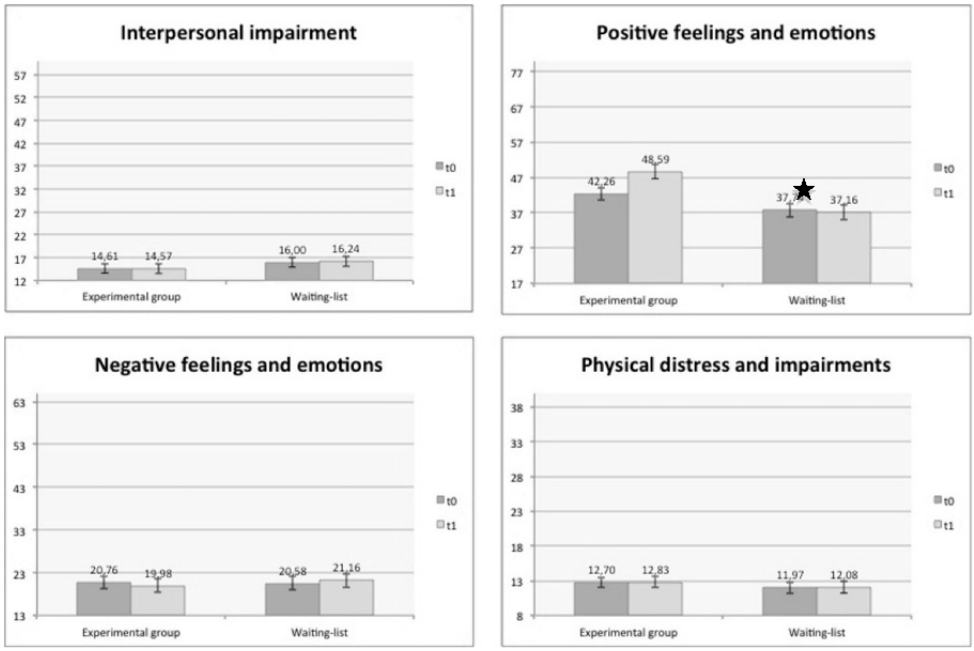
Statistical analyses

Also in Study 2, statistical analyses were performed by means of SPSS, version 20. Frequencies and percentages were computed for all categorical variables (gender, age, marital status, occupation, skin characteristics) of the sample. In order to assess responsiveness, a repeated-measure Analysis of Variance (ANOVA) 2 (Group) × 2 (Time) was performed to compare scores obtained on the four dimensions of the PSRQ by the two previously mentioned groups across time (Experimental group and Waiting list group; see "Participants and Procedure").

Results

As displayed in Figure 1, scores on the "Interpersonal impairment", "Negative feelings and emotions", and "Physical distress and impairments" scales remained stable across time in both groups; notably, observed scores were overall quite low (and very close to the minimum score obtainable on each scale). In all these cases, main effects and Group × Time interactions were not significant (all *p*s > .05).

Figure 1. Responsiveness: scores obtained by the Experimental group and the Waiting list one on the 4 dimensions across time (mean values and standard error bars are reported).



On the contrary, as regards the "Positive feelings and emotions" scale, significant Group ($F_{(1,82)} = 9.62$, $p = .003$) and Time ($F_{(1,82)} = 7.49$, $p = .008$) main effects, as well as Group × Time interaction ($F_{(1,82)} = 10.81$, $p = .001$), emerged. Specifically, individuals included in the Experimental group referred both increased perceived well-being (in terms of sensory feelings) and positive emotions after using the basic cream compared to individuals in the Waiting list group.

Discussion

The assessment of skin-related QoL is an established practice when dealing with individuals with full-blown dermatological diseases (e.g., Augustin et al., 2012; Finlay et al., 2017). Nonetheless, also people referring subclinical skin

diseases – which cause dissatisfaction with skin - might refer problems with their self-esteem, low mood, as well as mild social impairment (Bottesi et al., 2014a; 2014b). These individuals are likely to make use of dermatological cosmetics in order to improve their skin appearance; consequently, some studies have sought to measure the effectiveness of these products, as well as the factors influencing their purchase, in samples of dermatological cosmetics consumers (e.g., Beresniak et al., 2012; Shah, Sarheed, & Ramesh, 2017). However, it is noteworthy that the joint measurement of both discomfort (i.e., physical distress, negative feelings and emotions, interpersonal impairment) and comfort (positive feelings and emotions) dimensions of skin-related QoL in this specific population is a clearly relevant but still unexplored issue; the PSRQ was specifically developed to fill this gap in the assessment of skin-related QoL in dermatological cosmetics consumers and, more in general, in individuals dissatisfied with their skin.

Overall, preliminary findings from Study 1 suggest that the PSRQ is a reliable measure which might be usefully employed in order to assess several dimensions of skin-related QoL in people who do not suffer from dermatological diseases but are not completely satisfied with their skin. Indeed, the test of the factor structure of the PSRQ supported the existence of the following four factors, explaining the 54.8% of variance: "Interpersonal impairment", "Positive feelings and emotions", "Negative feelings and emotions", "Physical distress and impairments"; each of them demonstrated good to excellent internal consistency values. Therefore, the 50-item PSRQ appears to furnish multiple and differential information beyond those generally retrievable from the administration of both generic QoL and skin disease-specific questionnaires, which mainly focus on discomfort and emotional distress (Augustin et al., 2012). Furthermore, the PSRQ supplies more exhaustive information (i.e., pertaining to both negative and positive dimensions) than those provided by measures specifically assessing the satisfaction about skin appearance, as for example the Beauty QoL Questionnaire (Beresniak et al., 2012).

Despite thirteen items were removed (due insufficient loadings or because they cross- loaded on more than one factor) and internal consistency of each scale was more than adequate, the PSRQ would benefit from a further refinement. Indeed, in our opinion the inclusion of some items in a scale rather in another is rather controversial in some cases. For example, item 25 ("Because of my skin condition I feel humiliated") emerged to strongly load on the "Interpersonal impairment" factor but its actual content might refer to a negative emotion rather than to difficulties in social relationships. Similarly, item 1 ("I feel sensations of itching, hurting, burning on my skin") was included, following PCA, in the "Negative feelings and emotions" factor even though it describes distressing physical sensations. As a whole, it might be concluded that additional research further exploring the adequateness of the discomfort dimensions is necessary. On the contrary, the "Positive feelings and emotions" factor appears to be the strongest and most valid among the above-mentioned ones.

The goodness of the "Positive feelings and emotions" factor is supported also by findings from Study 2. Indeed, in the case at hand the questionnaire demonstrated adequate responsiveness as far as this scale is concerned. As a matter of fact, the PSRQ was capable of detecting changes across time in terms of satisfaction about physical appearance and feelings of being more attractive after using a dermatological cosmetic product, which possibly represent the aspects more relevant for the target sample. This result is in line with the study by Beresniak et al. (2012), who highlighted that measuring constructs such as self-confidence and attractiveness in dermatological cosmetics consumers is a promising line of research. Nonetheless, they did not report detailed data showing whether and how positive self-image does vary after using a cosmetic product; therefore, we believe that the current findings nicely expand previous evidence in this regard. Notably, enrolled individuals originally complained generic dissatisfaction with their own skin, and therefore they neither showed significant interpersonal or physical problems, nor were severely distressed/psychologically impaired (differently from patients suffering from clinically relevant psoriasis or atopic dermatitis, for example; Halvarsson & Lodén, 2007). Consequently, the PSRQ appears to provide specific information regarding the psychological factors mainly involved in the perception of the benefits deriving from the use of dermatological cosmetics characterizing dermatological cosmetics consumers. In our opinion, current findings are promising and they encourage future research further exploring the discriminant validity of the questionnaire: this would also allow establishing whether the selected items are universal and applicable to different populations (for example, also to individuals endorsing concerns regarding one or more perceived defects in skin appearance as might happen in BDD; APA, 2013; Cerea et al., 2017) .

The present study is characterized by some limitations. First of all, the small sample size does allow considering results from PCAs only preliminary; indeed, a rigorous rule of thumb requires that a sample size is 10 participants per item. Second, the high prevalence of females entering the studies implies an unsatisfactory representativeness of both genders: current findings are scarcely generalizable to the whole dermatological cosmetics consumers' population. Furthermore, skin characteristics were evaluated only through a self-report measure, the main interest of the study being the assessment of subjective skin perception; the employment of more objective measures would have certainly led to a more precise sample selection and would also have allowed availing of more precise information about self-referred skin characteristics. Participants self-identified themselves as endorsing the main inclusion criterion of the current research (i.e., presenting a subclinical skin disease causing self-referred dissatisfaction), but actually we did not measure their degree of dissatisfaction with their skin. Lastly, we did not employ a specific procedure aiming to control that the participants from the Experimental group (Study 2) used the basic emollient moisturizing dermatologic cream for 21 days. Future studies overcoming the

above-mentioned limits and addressing further relevant issues are highly recommended. For example, the conduction of a confirmatory factor analysis (CFA) to test the theoretical factor structure of the scale is warranted. Furthermore, the evaluation of some psychometric properties such as convergent and divergent validity (by administering also self-report measures assessing, for example, general QoL, anxiety, depression, and self-esteem) would allow gaining more information with respect to the validity of the PSRQ.

Notwithstanding these shortcomings, we believe that the current studies represent a necessary step to set the frame for more informative research on this topic. The evaluation of both discomfort and comfort skin-related QoL dimensions in individuals referring being uncomfortable with their skin, as well as the detection of how these factors can change over time (for example, by using cosmetics), might represent a viable way to identify the psychological factors involved in specific populations of people dissatisfied with their skin. This might inform the development and implementation of psychological interventions targeting these factors, with the final aim of both preventing the onset of psychological disorders (e.g., depression, social anxiety, BDD) in at-risk individuals and promoting a positive attitude towards skin and, more generally, physical appearance.

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Conflicts of interest

No conflict of interest is declared. The main product of the study is the development of a questionnaire assessing skin-related QoL in dermatological cosmetics consumers. In order to test the responsiveness of the measure, a basic emollient moisturizing dermatologic cream (provided by Unifarco SpA) was administered, but the aim was not to test the effectiveness of the cosmetic cream. Unifarco SpA had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

References

American Psychiatric Association (APA). (2013). *Diagnostic and statistical manual of mental disorders. 5th ed. (DSM-5)*. Washington, DC: American Psychiatric Association.

Augustin, M., Langenbruch, A. K., Gutknecht, M., Radtke, M. A., & Blome, C. (2012). Quality of Life Measures for Dermatology: Definition, Evaluation, and Interpretation. *Current Dermatology Reports, 1(3)*, 148-159.

Beresniak, A., De Linares, Y., Krueger, G. G., Talarico, S., Tsutani, K., Duru, G., & Berger, G. (2012). Validation of a new international quality-of-life instrument specific to cosmetics and physical appearance: BeautyQoL questionnaire. *Archives of Dermatology, 48(11)*, 1275-82.

Bottesi, G., Gion, A., Linder, M. D., & Vidotto, G. (2014a). *Sviluppo di uno strumento per la valutazione del benessere e della qualità della vita nell'uso di prodotti cosmeceutici.* Poster presented at the XV Congresso Nazionale della Società Italiana di Psicodermatologia (SIDEP). Genova, Italy, 7-8 February.

Bottesi, G., Gion, A., Baratto, G., Semenzato, A., & Vidotto, G. (2014b). *Development of an instrument assessing skin-related QoL and psychological distress in cosmeceutical consumers*. Poster presented at the 28th IFSCC Congress - Cosmetic, innovation and performance for beauty and well being. Paris, France, 27-30 October.

Cerea, S., Bottesi, G., Grisham, J., & Ghisi, M. (2017). Prevalence of Body Dysmorphic Disorder and its associated psychological features in an Italian community sample. *International Journal of Psychiatry in Clinical Practice.* DOI: 10.1080/13651501. 2017.1393545.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16(3)*, 297–334.

Dalgard, F. J., Gieler, U., Tomas-Aragones, L., Lien, L., Poot, F., Jemec, G. B., Misery, L., Szabo, C., Linder, D., Sampogna, F., Evers, A. W. M., Halvorsen, J. A., Balieva, F., Szepietowski, J., Romanov, D., Marron, S. E., Altunay, I. K., Finlay, A. Y., & Kupfer, J. (2015). The psychological burden of skin diseases: a cross-sectional multicenter study among dermatological out-patients in 13 European countries. *Journal of Investigative Dermatology, 135(4)*, 984-991.

Finlay, A. Y., Salek, M. S., Abeni, D., Aragonés, L.T., Cranenburgh, O. D., Evers, A. W. M., Jemec, G. B. E., Linder, D., Manolache, L., Marrón, S. E., Prinsen, C. A. C., Susitaival, P., Chernyshov, P. V. on behalf of the EADV Task Force on Quality of Life (2017). Why quality of life measurement is important in dermatology clinical practice. An expert based Opinion Statement by the EADV Task Force on Quality of Life. *Journal of the European Academy of Dermatology and Venereology, 31(3)*, 424–431.

Floyd, F., & Widaman, K. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment, 7(3)*, 286 –299.

Gabrieli, E., Vidotto, G., & Bertolotti, G. (2011). Una comparazione di tre misure di Qualità di Vita legate allo stato di salute in pazienti BPCO [A comparison of three health-related quality of life measures in COPD patients]. *Giornale Italiano di Medicina del Lavoro ed Ergonomia, 33(3)*, B47-B54.

Gupta, M. A., & Gupta, A. K. (2013). Evaluation of cutaneous body image dissatisfaction in the dermatology patient. *Clinics in dermatology, 31(1)*, 72-79.

Gupta, M. A., Gupta, A. K., & Johnson, A. M. (2004). Cutaneous body image: empirical validation of a dermatologic construct. *Journal of Investigative Dermatology, 123*, 405-406.

Halvarsson, K., & Lodén, M. (2007). Increasing quality of life by improving the quality of skin in patients with atopic dermatitis. *International Journal of Cosmetic Science, 29(2)*, 69–83.

Jolliffe, I. T. (2002). Pri*ncipal Component Analysis*. New York: Springer.

Novelli, B., Melandri, D., Bertolotti, G., & Vidotto, G. (2011). Quality of life impact as outcome in burns patients. *Giornale Italiano di Medicina del Lavoro ed Ergonomia*, *31(1)*, A58-A63.

Shah, F., Sarheed, O., & Ramesh, K. V. R. (2017). A Prospective Study of Knowledge and Perception towards the Efficacy of Anti-Aging Cosmetics among Female Population of Ras Al Khaimah, UAE. *Journal of Cosmetics, Dermatological Sciences and Applications*, *7(3)*, 275-289.

Vidotto, G., Bertolotti, G., Carone, M., Arpinelli, F., Bellia, V., Jones, P. W., & Donner, C. F. (2006). A new questionnaire specifically designed for patients affected by chronic obstructive pulmonary disease: The Italian Health Status Questionnaire. *Respiratory Medicine, 100(5)*, 862–870.

World Health Organization. (1997). *WHOQOL: measuring quality of life.*

Wu, Y., Niu, Y., Zhong, S., Liu, H., Zhen, Y., Saint-Leger, D., & Verschoore, M. (2013). A preliminary investigation of the impact of oily skin on quality of life and concordance of self-perceived skin oiliness and skin surface lipids (sebum). *International Journal of Cosmetic Science, 35(5)*, 442–447.