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Psychological differences between early- and late-onset psoriasis: a study of personality traits, anxiety and depression in psoriasis

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Summary

Background Onset of psoriasis may occur at any age. Early negative experiences often influence personality development, and may lead to physical disease, anxiety and depression in adulthood. Knowledge about onset of psoriasis and psychopathology is limited.

Objectives To examine whether patients with early-onset psoriasis differ psychologically from patients with late-onset psoriasis, regarding personality traits, anxiety and depression.

Methods A descriptive cross-sectional study was conducted among 101 consecutively recruited outpatients with psoriasis. A psychosocial interview was performed followed by self-assessment of validated questionnaires: Swedish Universities Scales of Personality (SSP), Spielberger State-Trait Anxiety Inventory and Beck Depression Inventory. Psoriasis severity was assessed by the Psoriasis Area and Severity Index.

Results Patients with early-onset psoriasis (age < 20 years) were significantly more anxious and depressed than patients with late-onset psoriasis. In multiple linear regression models, younger age at onset of psoriasis was a significant determinant of higher scores of four personality traits: SSP-embitterment, -trait irritability, -mistrust and -verbal trait aggression.

Conclusions Our results indicate that early detection of psychological vulnerability when treating children and adolescents with psoriasis seems to be of great importance. Traits of psychological vulnerability and pessimistic personality traits were found to be significantly associated with the early onset of psoriasis, but not with disease duration in this study. These traits may be seen as a consequence of psoriasis, and/or as individual traits modulating and impairing clinical course and efforts to cope with psoriasis.

What's already known about this topic?

- Psoriasis is often associated with psychological distress, both as a consequence of the disease and as a triggering and aggravating factor for onset and course.
- Early-onset psoriasis has been associated with greater genetic susceptibility, more severe course and greater psychosocial impact.
- Early negative experiences are known to influence personality development, and may lead to physical disease, anxiety and depression into adulthood.

What does this study add?

- Early detection of psychological vulnerability in younger patients with psoriasis seems to be of great clinical importance.

- Younger age at onset of psoriasis, but not disease duration, was significantly associated with psychological traits of anxiety, embitterment, mistrust, irritability and verbal aggressiveness.
- These traits may be seen as a consequence of psoriasis, and/or as individual traits modulating and impairing clinical course and efforts to cope with psoriasis.

Psoriasis is one of the most common immune-mediated disorders, having an estimated prevalence of 1·5–3% in Scandinavia and Northern Europe, and affecting men and women equally.[1] As a chronic, systemic, currently incurable disease, psoriasis brings not only substantial physical suffering, but also has a profound impact on life quality.[2,3]

Psychological distress is well known to be associated with psoriasis, both as a consequence of the disease,[2,4–6] and as a triggering and aggravating factor for disease onset and course.[7,8] Previous studies show that the psychosocial impact of psoriasis is highly individual, and often not in proportion to the clinical severity of disease.[9–12] Personality aspects are of particular interest when studying stigmatization and coping with disease.[13] The literature concerning the relationship between personality traits and psoriasis is sparse.[14,15] To our knowledge, personality scales measuring psychological vulnerability, i.e. proneness of later psychopathological development, for example, anxiety and depression, have not been previously utilized in studies of psoriasis. The prevalence of anxiety and depression among patients with psoriasis in earlier studies has been high, i.e. up to 62% for depression[16] and up to 43% for anxiety.[12]

Although onset of psoriasis may occur at any age from early infancy to old age,[1] the most common age is around puberty.[17] In up to 30% of patients, the disease begins before age 16 years.[18] Early-onset psoriasis has been associated with greater genetic susceptibility,[17,19] more severe course[18–20] and greater psychological impact.[20,21] As in adults, childhood psoriasis impairs the children's quality of life.[22,23] Children and adolescents are likely to suffer even more from stigmatization and social discomfort because of their illness. Early negative experiences also influence personality development, and may lead to anxiety and depression into adulthood.[24] Current knowledge about the relationship between early-onset psoriasis and psychological vulnerability is limited.

The present study is part of an integrative project between dermatology and psychiatry, aimed at obtaining a broader clinical understanding of patients with psoriasis. The purpose of the study was to examine personality profiles and also information about anxiety and depression among patients with psoriasis. Further, we hypothesized that patients with early-onset psoriasis are more psychologically vulnerable with regard to personality traits, anxiety and depression than patients with late-onset psoriasis.

Materials and methods

Subjects

All subjects were recruited consecutively from planned visits at the outpatient clinic of the Department of Dermatology and Venereology at the Scania University Hospital in Malmö, Sweden. Inclusion criteria were plaque psoriasis diagnosed by a dermatologist, age 18–65 years (men and women), good command of the Swedish language, and no serious mental or cognitive disturbances. A total of 109 patients were approached during early autumn 2008 (52%) and early autumn 2009 (48%). Of these, 102 agreed to participate (94%), and gave their oral and written informed consent. One patient dropped out of the study. All the 101 (93%) remaining participants were unpaid volunteers.

Methods

A psychosocial, semistructured, 24-item interview was conducted in a quiet room at the outpatient clinic. All subjects were interviewed by the same researcher (C.R.). The interview was designed by two of the authors (K.S. and C.R.), with the purpose of assessing (i) sociodemographic variables including a thorough interview about alcohol (g per week) and tobacco consumption (no. per day); (ii) the patients' social situation and support; and (iii) psoriasis-related distress. Regarding (ii) social situation and support, the patients were asked about satisfaction with living conditions, working conditions, private finances and relationships to partner, children, mother, father, friends and colleagues. Answers were rated on a 5-point Likert scale ranging from 1 = very satisfied to 5 = very unsatisfied, and dichotomized as 'satisfied' (1–3) and 'not satisfied' (4, 5). Regarding (iii) psoriasis-related distress, the patients were asked how much their psoriasis affected their life in general. Answers were rated on a 5-point Likert scale ranging from 1 = nothing at all to 5 = very much, and dichotomized as 'low impact' (1–3) and 'high impact' (4, 5). After the interview, each patient was given privacy to complete three psychometric self-rating scales in a quiet room, with the researcher readily available for questions in a room nearby.

Spielberger State-Trait Anxiety Inventory

The Spielberger State-Trait Anxiety Inventory (STAI), Form-Y, is a well-established self-rating scale with high stability and validity, often used in clinical research.[25] The first 20 statements assess the state anxiety, i.e. anxiety at a particular moment or a chosen period of time. (The subjects were asked to rate their state anxiety during the past week.) The subsequent 20 statements assess trait anxiety, i.e. the relatively stable anxiety proneness. Answers are given on a 4-point Likert scale, and scores on the state and trait scales each range from 20 to 80 points. In large normative samples of working adults and college students, the mean values of state and trait anxiety for men range from

35·7 to 36·5 and 34·9 to 38·3, respectively, and for women from 35·2 to 38·8 and 34·8 to 40·4, respectively.[25]

Beck Depression Inventory

The Beck Depression Inventory, second edition (BDI-II), is one of the most widely used self-report measures of depression in both research and clinical practice, with high validity and good psychometric properties.[26] The questionnaire consists of 21 items, and answers are rated on a 4-point scale (0 = low, 3 = high). The total score ranges from 0 to 63. For persons who have been clinically investigated for depression, scores of 0–13 represent minimal depressive symptoms, scores of 14–19 indicates mild, scores of 20–28 indicate moderate, and scores of 29–63 indicate severe depressive symptoms.[27]

Swedish Universities Scales of Personality

The Swedish Universities Scales of Personality (SSP) is a thorough revision of the older Karolinska Scales of Personality. In contrast to many other personality inventories, the SSP does not intend to measure 'the entire personality', but has been developed to identify stable traits of psychological vulnerability and psychopathology.[28] The questionnaire comprises 91 items with a 4-point Likert response scale. The items are sorted into 13 subscales, each designed to measure one personality trait: somatic trait anxiety, psychic trait anxiety, stress susceptibility, lack of assertiveness, impulsiveness, adventure seeking, detachment, social desirability, embitterment, trait irritability, mistrust, verbal trait aggression, and physical trait aggression.[29] The SSP has been standardized in a large representative Swedish national sample, and the internal consistency, in terms of Cronbach's alpha coefficient, ranges from 0·59 to 0·84 in a normative sample.[28] The subscales were transformed into *T* scores according to the SSP computer algorithm. *T* scores (mean 50, SD 10), are standardized with regard to age and sex on the basis of a normal control group. Values of 10 points above or below 50 in each SSP scale indicate a difference from the standard population by 1·0 SD.[29]

Psoriasis Area and Severity Index

The Psoriasis Area and Severity Index (PASI) scoring system is currently the best-evaluated and the most widely used objective method for evaluating clinical severity of psoriasis.[30] The PASI combines the assessment of the area affected and the severity of lesions into a single score ranging from 0 (no disease) to 72 (severe disease). Severity has been categorized as follows: PASI < 7 = mild plaque psoriasis, PASI 7–12 = moderate plaque psoriasis, PASI > 12 = severe plaque psoriasis.[31] Clinical assessment of PASI was conducted on the 48 patients recruited during autumn 2009.

The ethics committee of the Medical Faculty, University of Lund approved the study.

Statistical analysis

Independent samples t-test, the Mann–Whitney U-test and Chi-squared tests were used for group comparisons when appropriate. Pearson's correlation coefficient (r) and Spearman's rank correlation coefficient (*rho*) were used for correlation analyses. A multiple linear regression model was designed and performed with each 13 SSP personality trait as dependent variables. Independent variables used were: age at onset of psoriasis, sex, satisfaction with private finances, psoriasis-related distress, body mass index (BMI) and depression scores. Due to collinearity between age at onset of disease and age at interview, age at interview was excluded from the multiple linear regression analyses, as age at onset of disease showed a higher B-coefficient and significance than age at interview in all analyses performed. Similarly, due to collinearity between trait anxiety and depression, trait anxiety was excluded from the multiple linear regression analyses, as depression showed higher B-coefficient and significance than trait anxiety in all analyses performed.

Alcohol consumption was not included in the multivariate models, as only five patients (5%) indicated high-risk consumption. Similarly, other psychosocial variables were not included in the model, as the vast majority was satisfied with social conditions and relations.

Two-tailed P-values < 0·05 were considered to be statistically significant. Statistical analyses were carried out using the Statistical Package for the Social Sciences, version 19.0 (SPSS, Chicago, IL, U.S.A.).

Results

Sociodemographic and clinical characteristics of the sample are given in Table 1. No significant differences between men and women were found regarding age, duration of illness, psoriasis-related distress and scores of the SSP, STAI, BDI-II and PASI scales. The results are thus presented without respect to sex.

Most patients (89–98%) were satisfied with their social conditions and private relationships (86–100%). Forty-nine patients (48%) reported that their psoriasis had a high impact on their daily life.

Descriptive statistics for PASI scores are shown in Table 1. Thirty-seven (77%) patients had mild, eight (17%) had moderate and three (6%) had severe plaque psoriasis. No significant correlations were found between PASI scores and scores of state and trait anxiety or BDI-II. PASI scores were weakly significantly correlated only with SSP-embitterment (*rho* = 0·32, P = 0·024) and SSP-detachment (*rho* = 0·29, P = 0·043), but not with the remaining 11 personality traits.

Descriptive statistics for STAI, BDI-II and SSP scores are presented in Table 2. Twelve patients (11·9%) were found to be depressive according to BDI-II (scores ≥ 20), and among these, 10 patients (9·9%) had moderate and two (2·0%) had severe depression. None of the SSP traits were above or below 50 ± 1 SD. The most common SSP trait (*T*-scores > 60; > 1

Table 1 Sociodemographic and clinical characteristics (n = 101)

Characteristic	
Age (years), mean (SD), median (range)	43·5 (13·8), 45 (18–65)
Age at onset of disease (years), mean (SD), median (range)	24·7 (14·5), 20 (0–61)
Duration of disease (years), mean (SD), median (range)	18·8 (12·7), 18 (1–56)
BMI, mean (SD), median (range)	26·2 (4·5), 26·3 (17·6–38·5)
PASI (n = 48), mean (SD), median (range)	5·4 (4·3), 4·2 (0–21·7)
Sex, n (%)	
Male	56 (55)
Female	45 (45)
Marital status, n (%)	
Single	18 (18)
Partner/cohabiting	35 (35)
Married	39 (38)
Divorced or widow/widower	9 (9)
Educational level, n (%)	
1–9 years	11 (11)
10–12 years	37 (37)
> 12 years	53 (52)
Employment, n (%)	
Full time	66 (65)
Part time	13 (13)
Unemployed/retired	22 (22)
Tobacco consumption, n (%)	
Smokers	32 (32)
Nonsmokers	69 (68)
Alcohol consumption (g/week), mean (SD), median (range)	45·9 (59·8), 30 (0–360)
Alcohol risk consumption,[a] n (%)	
Men	3 (3)
Women	2 (2)

BMI, body mass index; PASI, Psoriasis Area and Severity Index.
[a]Alcohol risk consumption: men > 14 standard drinks/week; women > 9 standard drinks/week.

SD) was somatic trait anxiety, and the least common was detachment.

Duration of disease was not found to be correlated with scores of state and trait anxiety, BDI-II or any of the SSP scores. Age at onset of disease was significantly negatively correlated with state and trait anxiety, and with seven personality traits on the SSP scale, i.e. somatic trait anxiety, psychic trait anxiety, stress susceptibility, embitterment, trait irritability, mistrust and verbal trait aggression (Table 2). Examination of scatter plots showed that none of the correlations were influenced by outliers.

Forty-eight (48%) patients reported early onset of psoriasis (age < 20 years). Statistically significant differences between early and late onset (age ≥ 20 years) were found regarding mean scores of state and trait anxiety, BDI-II, and seven personality traits of the SSP scale, i.e. somatic trait anxiety, psychic trait anxiety, stress susceptibility, embitterment, trait irritability, mistrust and verbal trait aggression (Table 2).

In the 13 multiple linear regression models, younger age at onset of psoriasis was a significant determining factor for higher scores of SSP-embitterment, -trait irritability, -mistrust and -verbal trait aggression. B-coefficients (95% confidence interval) and P-values are presented in Table 3.

Discussion

In this study, we did not identify any specific personality trait that was significantly associated with psoriasis in the total sample, and patients with psoriasis were not more anxious or depressed than a normative sample. However, we found some psychological traits to be significantly associated with early onset of psoriasis, but not with disease duration.

Patients with early-onset psoriasis (age < 20 years) were more anxious and depressed than patients with late-onset psoriasis. Moreover, patients with early onset were characterized by seven personality traits on the SSP scale: somatic trait anxiety, psychic trait anxiety, stress susceptibility, embitterment, mistrust, trait irritability and verbal trait aggression. This association was substantiated in multivariate models for four of the traits, i.e. SSP- embitterment, -mistrust, -trait irritability and -verbal trait aggression. Younger age at interview was also associated with these traits, although younger age at onset of psoriasis was the strongest explanatory variable (data not shown).

Interestingly, these personality traits may be referred to as an early pessimistic rejective character profile, as previously described by Cesarec and Fridell.[32] In several other psychometric tests this character profile has been shown to be related to conditions with disturbed early attachment, psychological and somatic symptoms and risk for depression and psychosomatic conditions.[32] It may be noted that in a recent psychological study of psoriasis, Mizara *et al.*[33] identified specific early maladaptive psychological patterns in patients with psoriasis, suggesting that unmet emotional and developmental needs early in life in such patients may be associated with vulnerability to psychological distress later in life.

Our findings support the model of Cumulative Life Course Impairment in psoriasis.[4,34] In addition to shame and stigmatization, early disease onset is more likely to affect negatively choice of education, career opportunities, relationships and family life than later onset.[4] The pessimistic personality traits we have identified may be a result of these life course impairments, or may render patients more vulnerable to negative cumulative effects of their disease.

To our knowledge, no previous study has examined the relationship between younger age at onset of psoriasis and personality profile as assessed by a structured personality inventory. However, results from previous studies indicate an association between younger age at onset and psychological vulnerability. In a study of 137 inpatients, Gupta *et al.*[21] found early onset (age < 40 years) of psoriasis to be associated with difficulties in assertiveness and expression of angry feelings, compared with late onset (age > 40 years). Kimball *et al.*[24] recently studied medical records of 7404 paediatric patients

Table 2 Scores of state and trait anxiety Spielberger State-Trait Anxiety Inventory, (STAI), Beck Depression Inventory, second edition (BDI-II) and Swedish Universities Scales of Personality (SSP). Descriptive statistics of the sample, correlations to age at disease onset (n = 101) and group comparison of early (n = 48) vs. late onset (n = 53) of psoriasis

	Mean (SD)	Median (range)	SSP, *T*-score > 60,%	Correlation to age at disease onset, Rho (*P*-value)	Early onset (age < 20 years), mean (SD)	Late onset (age ≥ 20 years), mean (SD)	Early vs. late onset, significance of difference, *P*-value
STAI							
State anxiety	38·0 (12·1)	36 (20–75)		−0·28 (0·004)	41·3 (10·9)	35·0 (12·6)	0·009
Trait anxiety	36·5 (11·9)	34 (20–73)		−0·25 (0·013)	39·9 (11·4)	33·4 (11·8)	0·006
BDI-II depression	8·4 (8·1)	5 (0–32)		n.s.	10·1 (8·2)	6·9 (7·7)	0·028
SSP							
Somatic trait anxiety	51·2 (10·8)	50·6 (34·5–71·4)	22	−0·23 (0·020)	54·2 (10·6)	48·5 (10·3)	0·007
Psychic trait anxiety	47·5 (9·9)	45·7 (32·3–70·4)	12	−0·23 (0·019)	50·6 (10·9)	44·8 (8·2)	0·003
Stress susceptibility	50·7 (10·9)	50·0 (28·3–78·0)	18	−0·21 (0·033)	53·5 (11·6)	48·1 (9·8)	0·013
Lack of assertiveness	47·0 (9·9)	45·1 (30·8–73·3)	11	n.s.	48·9 (11·3)	45·3 (7·9)	n.s.
Impulsiveness	50·8 (9·9)	50·1 (26·7–78·9)	14	n.s.	52·5 (11·29)	49·4 (8·5)	n.s.
Adventure seeking	49·7 (9·3)	49·8 (29·2–74·3)	13	n.s.	50·6 (9·7)	48·8 (9·0)	n.s.
Detachment	47·0 (10·2)	48·3 (25·4–73·4)	9	n.s.	45·8 (10·2)	48·1 (10·2)	n.s
Social desirability	51·2 (9·7)	50·4 (21·9–77·3)	14	n.s.	49·4 (9·8)	52·8 (9·5)	n.s
Embitterment	50·6 (10·1)	48·5 (35·0–83·4)	14	−0·32 (0·001)	54·1 (10·6)	47·4 (8·6)	0·001
Trait irritability	49·3 (10·4)	48·7 (26·1–80·6)	17	−0·34 (0·001)	53·3 (10·4)	45·6 (9·3)	< 0·001
Mistrust	48·9 (11·6)	48·6 (30·4–89·1)	17	−0·21 (0·035)	52·0 (12·8)	45·9 (9·6)	0·007
Verbal trait aggression	49·5 (10·7)	48·2 (26·6–84·6)	17	−0·26 (0·010)	52·2 (12·9)	46·8 (9·3)	0·005
Physical trait aggression	48·0 (10·2)	45·0 (32·6–79·5)	11	n.s.	49·6 (11·4)	46·5 (8·8)	n.s.

n.s., nonsignificant.

with psoriasis (age < 18 years), and found that paediatric patients with psoriasis had an increased risk of developing psychiatric disorders, including depression and anxiety, compared with control subjects without psoriasis. In a comparative study of early-onset (age < 16 years) and late-onset (age > 16 years) psoriasis, Raychaudhuri and Gross[18] found that in times of psychological distress, exacerbations were more often noticed by paediatric-onset patients, compared with adult-onset patients. This might indicate that traits associated with psychological vulnerability render younger patients more sensitive to environmental stress. Although these data support our findings, differences in methods and age groups make it difficult to compare results across studies. We chose the age of 20 years, as personality traits are considered to be relatively stable from late adolescence/young adulthood.[35]

In the total study sample, patients were not more anxious or depressed than the general population.[25,27] Previous researchers have noted a prevalence of depression ranging from 10%[12] to 62%[16] among adult patients with psoriasis, compared with 12% in our study. The reason for this wide range may be explained by methodological differences, e.g. choice of psychometric scales, cut-off scores and study sample. The low mean score and prevalence of depression made it possible to make the assumption that our patients represented a psychiatrically normal sample when analysing the SSP scales, as anxiety and depression may influence personality trait rating.[36]

We found no differences between the total study sample and the standard population, regarding mean values of personality traits on the SSP scale. This is in accordance with previous studies using other scales, which did not identify any particular personality traits among patients with psoriasis.[37,38] No previous study has, to our knowledge, used the SSP scales in a study of patients with psoriasis. We chose this scale because of its well-validated items, and its ability to identify stable traits of psychological vulnerability.[28]

Interestingly, the most common personality trait was somatic trait anxiety (22%), which means an unconscious expression of anxiety by various physical symptoms. Psoriasis has long been suggested to have a psychosomatic component[39] through mechanisms of neurocutaneous inflammation.[40]

Unexpectedly, the least frequent personality trait was SSP-detachment (9%), meaning avoiding involvement and connection with others. One could speculate this trait to be common among patients with psoriasis, as psoriasis is well known to cause feelings of shame and stigmatization.[41,42] Possibly, a selection bias could be contributing to our results, and one might speculate that individuals with strong traits of detachment would be less likely to seek medical care, and might not volunteer for a study like ours. However, the participation rate of our study was very high.

Methodologically, our study differs from others, in that all patients were interviewed by the same researcher, and that the participation rate was high (93%).

Psoriasis Area and Severity Index scores were estimated in the latter half of our study sample (48%), which may be a

Table 3 Results from four multiple linear regression models with SSP-embitterment, SSP-trait irritability, SSP-mistrust and SSP-verbal trait aggression as dependent variables (n = 101)

	B	95% CI	P-value
SSP-embitterment			
(Constant)	54·7	43·7–65·6	< 0·001
Age at debut of psoriasis	−0·1	−0·3–0·03	**0·017**
Sex (male)	0·8	−2·5–4·2	0·628
Not satisfied with private economics	5·1	−0·7–10·8	0·084
Psoriasis-related distress	1·1	−2·3–4·6	0·525
BMI	−0·3	−0·6–0·1	0·169
BDI-II depression	0·6	0·3–0·8	**< 0·001**
SSP-trait irritability			
(Constant)	51·0	38·7–63·3	< 0·001
Age at debut of psoriasis	−0·2	−0·3–0·09	**0·001**
Sex (male)	−1·5	−5·2–2·3	0·446
Not satisfied with private economics	3·3	−3·2–9·7	0·318
Psoriasis-related distress	−1·0	−4·9–2·9	0·608
BMI	0·02	−0·4–0·4	0·918
BDI-II depression	0·5	0·2–0·7	**0·001**
SSP-mistrust			
(Constant)	43·9	30·3–57·5	< 0·001
Age at debut of psoriasis	−0·2	−0·3–−0·01	**0·040**
Sex (male)	−1·3	−5·4–2·9	0·557
Not satisfied with private economy	6·6	−0·5–13·8	0·067
Psoriasis-related distress	0·2	−4·1–4·5	0·931
BMI	0·2	−0·3–0·6	0·523
BDI-II depression	0·6	0·3–0·8	**< 0·001**
SSP-verbal trait aggression			
(Constant)	44·9	31·3–58·5	< 0·001
Age at debut of psoriasis	−0·2	−0·4–−0·08	**0·002**
Sex (male)	0·4	−3·8–4·6	0·862
Not satisfied with private economics	4·9	−2·2–12·0	0·175
Psoriasis-related distress	−0·6	−4·9–3·7	0·786
BMI	0·3	−0·1–0·8	0·169
BDI-II depression	0·2	−0·1–0·4	0·315

CI, confidence interval; SSP, Swedish Universities Scales of Personality; BMI, body mass index; BDI-II, Beck Depression Inventory, second edition. Bold face indicates significant values.

limitation. However, all patients were interviewed during the same time of year, i.e. early autumn, which may imply similar PASI scores for the whole sample. Psoriasis Area and Severity Index scores were only weakly correlated with SSP-embitterment and SSP-detachment, but not with the remaining 11 personality traits, nor with scores of state and trait anxiety or BDI-II. One limitation of the correlations with PASI scores was that the great majority of the 48 patients scored had mild disease, hence this variable was not used in the multivariate regression analyses. Furthermore, psychological morbidity has not previously been associated with objective clinical severity, e.g. PASI, but to subjectively experienced psoriasis-related distress.[3,9,11] Accordingly, subjective psoriasis-related distress was used as an independent variable in each of the multiple regression analyses.

To investigate further the relationships between age at onset of psoriasis and traits of psychological vulnerability, additional larger prospective studies would be desirable.

In conclusion, our results indicate that early detection of psychological vulnerability when treating children and adolescents with psoriasis seems to be of great importance. Our study reveals a significant association between younger age at onset of psoriasis and traits of anxiety, embitterment, mistrust, irritability and verbal aggressiveness. These psychological traits may be seen as a consequence of the disease, and/or as individual traits modulating and impairing both clinical course and efforts to cope with the disease. The relationship between psychological vulnerability and clinical course is most probably circular, which may lead to a vicious cycle of disease exacerbation and increased psychological stress. The role of clinicians is of major importance in this context. Regular psychological inquiries and early adequate treatment may significantly increase not only the young patient's well-being, compliance and ability to cope with the disease, but may also be essential for healthy psychological development.

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