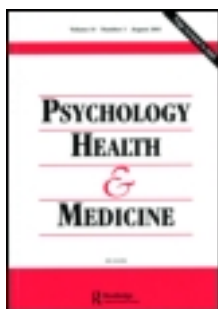


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Sense of coherence, depression, and anger among adults with atopic dermatitis

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The prevalence of atopic disease (AD) in adults has significantly increased in industrialized countries. Psychological traits and lack of skills to cope with stress could be maintaining factors of AD. The first aim of the present study was to compare sense of coherence (SOC), depression, and anger among adult patients with AD, adults with remission from AD, and adults without AD. The second aim was to explore whether depression and anger have significant impacts on SOC. A cross-sectional survey was carried out from May to September of 2007. In total, 43 adult patients with AD, 32 adults with remission from AD, and 63 adults without AD participated. A one-way analysis of variance showed that adult patients with AD have significantly higher levels of depression than adults with remission from AD and adults without AD. Furthermore, structural equation modeling indicated a significant impact of depression on SOC across the three groups, along with a significant impact of anger suppression on depression, particularly in adult patients with AD. The findings of this study suggest that psychological traits have a negative impact on skills for coping with stress, and that this relationship might be a contributory factor for maintenance of AD.

Keywords: atopic dermatitis; sense of coherence; depression; anger

1. Introduction

Atopic dermatitis (AD) is a chronic, pruritic, inflammatory skin disease caused by the intervention of plural nonspecific stimulation or specific allergens accompanied by cutaneous physical dysfunction (Saeki et al., 2009). Symptoms affecting the neck and the flexural surfaces of arms and legs are seen in children, and symptoms affecting the face, neck, anterior chest, and back are seen in adults with AD. The prevalence of AD in adults has significantly increased in Japan and other industrialized countries (Mortz, Lauritsen, Bindselev-Jensen, & Andersen, 2001; Saeki et al., 2009). A cross-sectional survey by the Japanese Dermatological Association found that the age distribution of patients with the disease showed a bimodal pattern, with peak incidences at 0–5 and 21–25 years of age (Furue et al., 2011). Some patients naturally experience remission (a disappearance of symptoms) during childhood; others remain affected continuously or have a relapse in adolescence or adulthood after having been remitted once. Although it is unclear why the clinical course varies, dry skin due to genetic factors, increased exposure to house dust mites and pollution, greater use of irritants such as household

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detergents, and psychosocial stressors may be responsible (Arndt, Smith, & Tausk, 2008; Jowett & Ryan, 1985; Mar & Marks, 1999; Palmer et al., 2006).

Children with AD experience unstable emotional states such as dependency, fearfulness, irritability, fussiness, and increased crying due to AD symptoms (Chamlin, Frieden, Williams, & Chren, 2004; Daud, Garralda, & David, 1993). These unstable emotional states in childhood could have a great impact on psychological traits among adolescent or adult patients with AD. Adults with AD have higher levels of depression and exhibit more difficulty in dealing with anger (Al Ahmar & Kurban, 1976; Fritz, 1979). Unrecognized anger and hostility could exacerbate symptoms and undermine therapeutic endeavors (White, Horne, & Varigos, 1990). Feelings of depression among patients with skin diseases reduce the threshold for pruritus and amplify itch perception (M. A. Gupta, A. K. Gupta, Schork, & Ellis, 1994). These psychological traits could increase psychosocial stress, which in turn would maintain AD.

Sense of coherence (SOC) refers to a stable generalized orientation in responding to environmental stimuli in a meaningful and appropriate manner (Antonovsky, 1987). SOC is one of the central concepts in Antonovsky's (1979) salutogenic model, which posits that it is important for people to focus on their resources and capacities rather than to focus on the cause of disease. Individuals with a strong SOC are more likely to judge a situation as controllable and select adequate coping strategies (Antonovsky, 1993). Patients suffering from allergic skin disorders (e.g. allergic contact dermatitis, atopic dermatitis, or urticaria) have lower SOC scores than patients with nonallergic disorders (e.g. pigmented nevi, irritant contact dermatitis, acne, or psoriasis; Ponarovsky, Amital, Lazarov, Kotler, & Amital, 2011). However, few studies have examined levels of SOC among patients with AD. Ponarovsky et al. (2011) concluded that SOC was associated with depression, based on their finding that patients with allergic disorders and high SOC scores had lower depression scores than patients with allergic disorders and low SOC scores. Julkunen and Ahlström (2006) suggested an association with anger control, reporting that high SOC scores were predicted by low levels of anger suppression. These studies suggest that psychological traits could have a negative impact on SOC, and that this relationship might contribute to maintenance of AD.

Accordingly, the first aim of the present study was to evaluate SOC, depression, and anger among adult patients with AD, adults with remission from AD, and adults without AD. The second aim was to clarify whether depression and anger significantly impact SOC in each group.

2. Methods

2.1. Participants

We recruited 48 university undergraduates and 130 employees at public offices, banks, and pharmacies. Of these, 36 undergraduates and 102 employees returned complete data (response rate: 77.5%; 73.9% women; age range: 20–47 years). We excluded participants with somatic and psychiatric diseases, except for allergic diseases such as AD, asthma, and allergic conjunctivitis. Participants were classified into the AD group, the AD remission group, and the control group. The AD group contained 43 participants (81.4% women; mean age 28.4 [SD = 8.9] years) who had been diagnosed with AD by specialists in dermatology and had visited a hospital or clinic once a month or once in two months for treatment of AD at the time of the investigation. The AD remission group contained 32 participants (65.6% women; mean age 33.0 [SD = 9.1] years) who had suffered from AD in their childhood, had experienced remission of AD symptoms

by age 12, and had never relapsed in adolescence or adulthood. The control group contained 63 participants (73.0% women; mean age 30.0 [SD=7.4] years) who had no signs of AD or other somatic or psychiatric diseases in either childhood or adulthood. There were no group differences of mean age.

2.2. *Setting*

A cross-sectional survey was carried out in Tokyo from May to September of 2007. Potential participants were given an explanation of this study. After they consented to participate, they were asked to complete a self-administered questionnaire and return it by post.

2.3. *Measures*

2.3.1. *Demographic data*

Demographic information included age, gender, and occupation. Additionally, participants were asked whether they had visited a hospital or clinic for treatment of AD, a family history of AD, and been diagnosed with asthma or allergic conjunctivitis.

2.3.2. *SOC*

SOC was measured with the SOC Scale, a 29-item, seven-point scale developed by Antonovsky (1987). Higher total scores reflect higher SOC levels. The reliability and validity of the Japanese version we used has been verified in many different patient groups (Yamazaki, 1999). In this study, the SOC had adequate internal reliability (Cronbach's $\alpha = .90$).

2.3.3. *Depression*

Depression symptoms were assessed using the Center for Epidemiological Studies Depression Scale (CES-D), a 20-question, four-point scale that has been widely used for nonpsychiatric populations (Radloff, 1977). High scores indicate serious depressive symptoms. The reliability and validity of the Japanese version have been verified in many psychological fields (Shima, 1998). Cronbach's alpha for this scale was .86.

2.3.4. *Anger*

Anger was evaluated using the anger expression trait scale (AX), which consists of 24 questions scored on a four-point scale and is part of the state-trait anger expression scale developed by Spielberger (1988). This scale yields separate scores for the frequency of anger expression (AX-out), anger suppression (AX-in), and anger control (AX-ctr). The reliability and validity of its Japanese version has been demonstrated (Suzuki & Haruki, 1994). In this study, the internal consistency of subscale scores was .75 for AX-out, .71 for AX-in, and .76 for AX-ctr.

2.4. *Statistical analysis*

Group comparisons of descriptive data and psychological variables were assessed with chi-square tests and a one-way analysis of variance. Relationships between psychologi-

cal variables within each group were explored with Pearson's correlation coefficient. The consequent relationships among psychological variables were analyzed by structural equation modeling (SEM). The fit-of-the data within each model was examined using chi-square (χ^2), the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), and the root-mean-square error of approximation (RMSEA). A model is generally considered acceptable if the χ^2 value is nonsignificant, GFI is more than .90, AGFI is more than .85, and RMSEA is less than .10. All analyses were conducted using IBM SPSS 19.0 and AMOS 7.0 software.

3. Results

3.1. Family history and prevalence of allergic diseases in each group

The number of participants with a family history of AD was 22 (51.2%) in the AD group, 12 (37.5%) in the AD remission group, and 12 (19.0%) in the control group ($\chi^2=15.2$, $p=.00$). The number of participants with asthma was 13 (30.2%) in the AD group, 3 (9.4%) in the AD remission group, and 7 (11.1%) in the control group ($\chi^2=8.3$, $p=.02$). The number of participants with allergic conjunctivitis was 14 (32.6%) in the AD group, 6 (18.8%) in the AD remission group, and 15 (23.8%) in the control group ($\chi^2=2.0$, $p=.37$). The rates of family history of AD or asthma were significantly higher in the AD group than in the other two groups.

3.2. Comparison of SOC, depression, and anger expression among groups

The mean values for SOC, CES-D, and AX were compared among groups by using a one-way analysis of variance (Table 1). The mean SOC score showed significant differences, $F(2, 135)=8.15$, $p<.001$. Post hoc testing using Tukey's analysis indicated that the mean SOC score in the AD remission group was significantly higher than that in both the AD group ($p<.001$) and the control group ($p=.016$). The mean CES-D score also presented significant differences, $F(2, 135)=6.38$, $p=.002$. Post hoc testing clarified that the mean CES-D score in the AD group was significantly higher than that in

Table 1. Differences in mean values (SD) for psychological variables between groups (one-way analysis of variance).

Variables	1. Atopic dermatitis group ($N=43$)	2. Atopic dermatitis remission group ($N=32$)	3. Control group ($N=63$)	F -value	Post hoc ^a
Sense of coherence	122.1 (15.8)	139.6 (24.0)	128.3 (17.3)	8.15***	$2 > 1^{***}$, $2 > 3^{**}$
Depression	19.2 (5.4)	16.3 (4.3)	16.2 (4.0)	6.38**	$1 > 2^{*}$, $1 > 3^{**}$
Anger expression	19.8 (3.9)	19.8 (3.9)	19.9 (3.7)	.01	
Anger suppression	20.7 (3.9)	19.4 (3.4)	19.8 (3.1)	1.55	
Anger control	18.6 (2.5)	18.3 (3.0)	18.6 (2.8)	.19	

^aTukey's post-hoc test. * $p<.05$, ** $p<.01$, *** $p<.001$.

both the remission group ($p=.003$) and the control group ($p=.020$). There were no differences among the three groups for the mean values of AX-out, AX-in, and AX-ctr.

3.3. Correlations between SOC, depression, and anger expression

Pearson's correlations were calculated between psychological variables in each group (Table 2). In the AD group, SOC scores were negatively associated with CES-D, $r=-.59$, $p<.01$; AX-in, $r=-.43$, $p<.01$; and AX-ctr, $r=-.36$, $p<.01$. CES-D scores were positively associated with AX-in, $r=.50$, $p<.01$ and AX-ctr, $r=.35$, $p<.05$. In the remission group, SOC scores were negatively associated with CES-D, $r=-.77$, $p<.01$. In the healthy control group, SOC scores were negatively associated with CES-D, $r=-.48$, $p<.01$; AX-out, $r=-.33$, $p<.01$; and AX-in, $r=-.40$, $p<.01$. CES-D scores were positively associated with AX-out.

3.4. Evaluation of the proposed models by SEM

The impacts of AX-in, AX-out, and CES-D on SOC were explored by path analyses with SEM. AX-ctr was excluded because of multicollinearity due to a strong correlation with AX-in and a low correlation with SOC across groups. Separate path analyses were performed for each group. The models for the three groups are presented in Figures 1–3, respectively.

The statistical fit indices of the model for the AD group were $\chi^2=.001$ ($p=.98$), GFI=1.00, AGFI=1.00, and RMSEA<.001, indicating adequate fit (see Figure 1). AX-in was positively related to CES-D, $\beta=.50$, $p<.001$; CES-D was negatively associated with SOC, $\beta=-.50$, $p<.001$. The proportion of variance in SOC explained by the other variables was 38% in the AD group.

Table 2. Correlations between psychological variables in each group.

Variable	1	2	3	4
AD group ($N=43$)				
(1) Sense of coherence				
(2) Depression	-.59**			
(3) Anger expression	.01	.04		
(4) Anger suppression	-.43**	.50**	.01	
(5) Anger control	-.36*	.35*	-.14	.55**
AD remission group ($N=32$)				
(1) Sense of coherence				
(2) Depression	-.77**			
(3) Anger expression	-.34	.23		
(4) Anger suppression	.07	.02	-.46**	
(5) Anger control	.06	.08	-.69**	.66**
Control group ($N=63$)				
(1) Sense of coherence				
(2) Depression	-.48**			
(3) Anger expression	-.33**	.33**		
(4) Anger suppression	-.40**	.29*	.17	
(5) Anger control	-.01	-.07	-.25	.47**

* $p<.05$, ** $p<.01$.

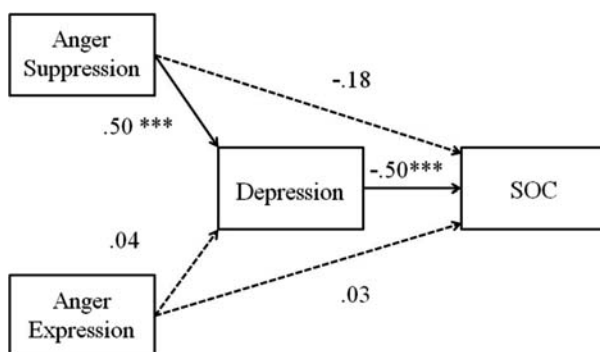


Figure 1. The Path model for the atopic dermatitis group ($N=43$). The abbreviations used are SOC (sense of coherence). Manifest variables are represented with rectangles and the numbers represent standardized path coefficients; significant paths are indicated by solid arrows and non-significant paths are indicated by dotted arrows.

Note: *** $p < .001$.

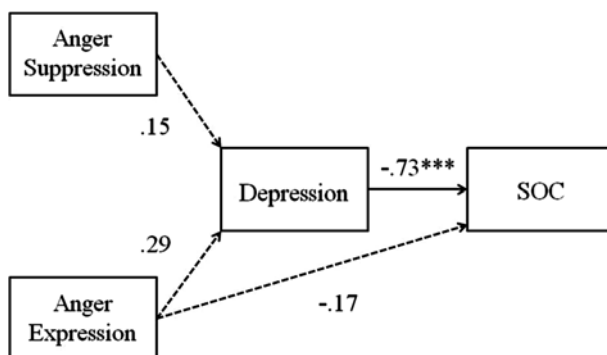


Figure 2. The Path model for the remission group ($N=32$). The abbreviations used are SOC (sense of coherence). Manifest variables are represented with rectangles and the numbers represent standardized path coefficients; significant paths are indicated by solid arrows and non-significant paths are indicated by dotted arrows.

Note: *** $p < .001$.

The statistical fit indices of the model for the remission group, where the path from AX-in to SOC was excluded because of a lack of effect ($\beta = .005$, $p = .996$), were $\chi^2 = 7.35$ ($p = .03$), GFI = .904, AGFI = .52, and RMSEA = .24, showing marginal fit because only the GFI value met fitness criteria (see Figure 2). CES-D was negatively related to SOC, $\beta = -.73$, $p < .001$. The proportion of variance in SOC explained by the other variables was 64% in the remission group.

The statistical fit indices of the model for the control group were $\chi^2 = 1.82$ ($p = .18$), GFI = .99, AGFI = .86, and RMSEA = .12, indicating sufficient fit, although the RMSEA value was higher than .10 (see Figure 3). AX-in was positively related to CES-D, $\beta = .24$, $p = .03$, and negatively related to SOC, $\beta = -.27$, $p = .01$. AX-out was positively associated with CES-D, $\beta = .29$, $p = .01$. CES-D was negatively related to SOC, $\beta = .35$, $p = .002$. The proportion of variance in SOC explained by the other variables was 31% in the control group.

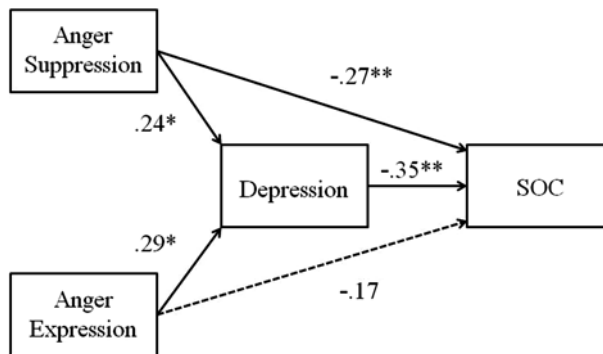


Figure 3. The Path model for the control group ($N=63$). The abbreviations used are SOC (sense of coherence). Manifest variables are represented with rectangles and the numbers represent standardized path coefficients; significant paths are indicated by solid arrows and non-significant paths are indicated by dotted arrows.

Note: * $p < .05$, ** $p < .01$.

5. Discussion

The present study clarified that adult patients with AD have significantly higher depression scores than adults with remission from AD and adults without AD, and that adults with remission from AD have significantly higher SOC than adult patients with AD and adults without AD. Differing levels of anger expression, however, were not seen among the groups. Furthermore, depression had a negative impact on SOC in all three groups, and a significant impact of anger suppression on depression was shown, especially in adult patients with AD.

The observed higher levels of depression among patients with AD are in line with other results showing that patients with AD are more depressive than healthy controls (Arima et al., 2005; Hashiro & Okumura, 1997). Depression among patients with skin diseases reduces the threshold for pruritus and amplifies itch perception (M. A. Gupta, A. K. Gupta, Schork, & Ellis, 1994). Moreover, the impact of skin diseases upon quality of life and body image results in depressive states in patients (M. A. Gupta, 2003). Patients with moderate symptoms are more depressive than patients with mild symptoms (Hashiro & Okumura, 1997). This vicious circle between depressive feelings and skin symptoms could lead to maintenance of AD.

This is the first study to evaluate the SOC scores of patients with AD. Adults with remission from AD showed significantly higher SOC scores compared to adults with and without AD. Disease progress or medical interventions may induce intrapersonal alterations of SOC (Forsberg, Bäckman, & Svensson, 2002; Snekkvik, Anke, Stanghelle, & Fugl-Meyer, 2003). Wolff and Ratner (1999) proposed that repeated exposure to stressful life events and successful management of those events would help an individual to develop generalized resistance resources, and consequently would strengthen that individual's SOC. Generalized resistance resources include, for example, social support, childhood experiences, material resources, intelligence, coping strategies, family socialization, ego identity, and physical characteristics (Antonovsky, 1987; Wolff & Ratner, 1999). This suggests that remission from AD, which is a stressful and successful experience, would help a patient to develop generalized resistance resources,

even if other factors (e.g. pharmacological treatment and spontaneous remission) contribute to overcoming AD.

We had estimated that adult patients with AD have lower SOC scores than adults without AD because they suffer from long-term exacerbation or frequent recurrence of AD, and having AD could not a successful experience. However, against our hypothesis, the difference between the SOC scores of patients with and without AD was not significant. The reason for this result is unclear but may suggest that patients with AD tend to develop SOC through experiences caused by the disease. Further studies are needed to clarify the levels of SOC in patients with AD.

SEM analysis of the relationships among SOC, depression, and anger showed a negative impact of depression on SOC across the three groups. This finding is in line with the results of studies of SOC and depression in patients with allergic skin diseases (Ponarovsky et al., 2011). Furthermore, Skärsäter, Langius, Ågren, Häggström, and Dencker (2005) found that patients experiencing a first episode of major depression tended to have a weak SOC, and SOC scores were increased significantly in those who had recovered from such an episode. Thus, the relationship between SOC and depression may not be unique to AD patients.

Suppressing anger had a strong impact on depressive states, particularly in the AD group. Anger has been shown to be a strong predictor of mental health variables, and anger suppression, in particular, has been shown to be positively correlated with depression (Kopper and Epperson, 1996). Furthermore, individuals who had recovered from major depression significantly exceeded those individuals who had never experienced depression in the degree to which they reported holding anger in and being afraid to express it (Brody, Haaga, Kirk, & Solomon, 1999). Generally, patients with AD feel anger more readily but are less likely to express it and are less likely to be assertive than individuals without AD (Ginsburg, Prystowsky, Kornfeld, & Wolland, 1993). These studies suggest that patients with AD tend to fall into depressive states.

The present study has several limitations. First, these results may not generalize to various types of patients with AD because of the small sample size. The current results should be validated with a larger sample. Second, the gender proportions in the three groups do not match actual gender prevalence rates: women have been reported to suffer more from AD than men because of their disfigured appearance (Holm, Esmann, & Jemec, 2004). This suggests that our results may reflect suffering from AD related to gender. Finally, causal relationships could not be confirmed due to the cross-sectional design. Longitudinal research and objective assessment by a third party are required to obtain established conclusions.

Despite these limitations, the present study provides evidence that psychological traits, which include anger suppression and depression, have a negative impact on SOC. These results suggest that addressing emotional aspects in treatments of AD would contribute not only to enhancing skills to cope with stress but also to preventing exacerbation of symptoms caused by stress. For example, learning to be assertive could help patients to deal with anger, decrease depression, and develop SOC. In turn, a strong SOC could mobilize patients to apply their resistance resources to cope with a range of stressors that usually exacerbate AD. Such approaches could be useful to decrease exacerbation of symptoms, prevent relapse, and improve the skin condition.

Reference

- Al Ahmar, H.F., & Kurban, A.K. (1976). Psychological profile of patients with atopic dermatitis. *British Journal of Dermatology*, 95, 373–377.
- Antonovsky, A. (1979). *A health, stress, and coping: New perspective on mental and physical wellbeing*. San Francisco, CA: Jossey-Bass.
- Antonovsky, A. (1987). *Unraveling the mystery of health. How people manage stress and stay well*. San Francisco, CA: Jossey-Bass.
- Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social Science and Medicine*, 36, 725–733.
- Arima, M., Shimizu, Y., Sowa, J., Narita, T., Nishi, I., Iwata, N., et al. (2005). Psychosomatic analysis of atopic dermatitis using a psychological test. *Journal of Dermatology*, 32, 160–168.
- Arndt, J., Smith, N., & Tausk, F. (2008). Stress and atopic dermatitis. *Current Allergy and Asthma Reports*, 8, 312–317.
- Brody, C.L., Haaga, D.A.F., Kirk, L., & Solomon, A. (1999). Experiences of anger in people who have recovered from depression and never-depressed people. *Journal of Nervous and Mental Disease*, 187, 400–405.
- Chamlin, S.L., Frieden, I.J., Williams, M.L., & Chren, M.-M. (2004). Effects of atopic dermatitis on young American children and their families. *Pediatrics*, 114, 607–611.
- Daud, L.R., Garralda, M.E., & David, T.J. (1993). Psychosocial adjustment in preschool children with atopic eczema. *Archives of Disease in Childhood*, 69, 670–676.
- Forsberg, A., Bäckman, L., & Svensson, E. (2002). Liver transplant recipients' ability to cope during the first 12 months after transplantation – A prospective study. *Scandinavian Journal of Caring Sciences*, 16, 345–352.
- Fritz, G.K. (1979). Psychological aspects of atopic dermatitis. A viewpoint. *Clinical Pediatrics*, 18, 360–364.
- Furue, M., Yamazaki, S., Jimbow, K., Tsuchida, T., Amagai, M., Tanaka, T., et al. (2011). Prevalence of dermatological disorders in Japan: A nationwide, cross-sectional, seasonal, multicenter, hospital-based study. *Journal of Dermatology*, 38, 353–363.
- Ginsburg, I.H., Prystowsky, J.H., Kornfeld, D.S., & Wolland, H. (1993). Role of emotional factors in adults with atopic dermatitis. *International Journal of Dermatology*, 32, 656–660.
- Gupta, M.A. (2003). Incidence of psychiatric disorders in dermatological patients. *Journal of the European Academy of Dermatology and Venereology*, 17, 624–626.
- Gupta, M.A., Gupta, A.K., Schork, N.J., & Ellis, C.N. (1994). Depression modulates pruritus perception: A study of pruritus in psoriasis, atopic dermatitis, and chronic idiopathic urticaria. *Psychosomatic Medicine*, 56, 36–40.
- Hashiro, M., & Okumura, M. (1997). Anxiety, depression and psychosomatic symptoms in patients with atopic dermatitis: Comparison with normal controls and among groups of different degrees of severity. *Journal of Dermatological Science*, 14, 63–67.
- Holm, E.A., Esmann, S., & Jemec, G.B. (2004). Does visible atopic dermatitis affect quality of life more in women than in men? *Gender Medicine*, 1, 125–130.
- Johnson, M. (2004). Approaching the salutogenesis of sense of coherence: The role of 'active' self-esteem and coping. *British Journal of Health Psychology*, 9, 419–432.
- Jowett, S., & Ryan, T. (1985). Skin disease and handicap: An analysis of the impact of skin conditions. *Social Science and Medicine*, 20, 425–429.
- Julkunen, J., & Ahlström, R. (2006). Hostility, anger, and sense of coherence as predictors of health-related quality of life. Results of an ASCOT substudy. *Journal of Psychosomatic Research*, 61, 33–39.
- Kopper, B.A., & Epperson, D.L. (1996). The experience and expression of anger: Relationships with gender, gender role socialization, depression, and mental health functioning. *Journal of Counseling Psychology*, 43, 158–165.
- Mar, A., & Marks, R. (1999). The descriptive epidemiology of atopic dermatitis in the community. *Australasian Journal of Dermatology*, 40, 73–78.
- Mortz, C.G., Lauritsen, J.M., Bindslev-Jensen, C., & Andersen, K.E. (2001). Prevalence of atopic dermatitis, asthma, allergic rhinitis, and hand and contact dermatitis in adolescents: The odense adolescence cohort study on atopic diseases and dermatitis. *British Journal of Dermatology*, 144, 523–532.

- Palmer, C.N.A., Irvine, A.D., Terron-Kwiatkowski, A., Zhao, Y., Liao, H., Lee, S.P., et al. (2006). Common loss-of-function variants of the epidermal barrier protein filaggrin are a major predisposing factor for atopic dermatitis. *Nature Genetics*, 38, 441–446.
- Ponarovsky, B., Amital, D., Lazarov, A., Kotler, M., & Amital, H. (2011). Anxiety and depression in patients with allergic and non-allergic cutaneous disorders. *International Journal of Dermatology*, 50, 1217–1222.
- Radloff, L.S. (1977). The CES-D Scale: A self-report depression scale for research in the general. *Applied Psychological Measurement*, 1, 385–401.
- Sacki, H., Furue, M., Furukawa, F., Hide, M., Ohtsuki, M., Katayama, I., et al. (2009). Guidelines for management of atopic dermatitis. *Journal of Dermatology*, 36, 563–577.
- Shima, S. (1998). *The center for epidemiologic studies depression scale: CES-D Scale*. Tokyo: Chiba Test Center (in Japanese).
- Skärsäter, I., Langius, A., Ågren, H., Häggström, L., & Dencker, K. (2005). Sense of coherence and social support in relation to recovery in first-episode patients with major depression: A one-year prospective study. *International Journal of Mental Health Nursing*, 14, 258–264.
- Snekkevik, H., Anke, A.G.W., Stanghelle, J.K., & Fugl-Meyer, A.R. (2003). Is sense of coherence stable after multiple trauma? *Clinical Rehabilitation*, 17, 443–453.
- Spielberger, C.D. (1988). *Manual for the State-Trait Anger Expression Inventory (STAXI)*. Odessa FL: Psychological Assessment Resources.
- Suzuki, T., & Haruki, Y. (1994). The relationship between anger and circulatory disease. *The Japanese Journal of Health Psychology*, 7(1), 1–13 (in Japanese).
- White, A., Horne, D.J., & Varigos, G.A. (1990). Psychological profile of the atopic eczema patient. *Australasian Journal of Dermatology*, 31, 13–16.
- Wolff, A. C., & Ratner, P. A. (1999). Stress, social support, and sense of coherence. *Western Journal of Nursing Research*, 21, 182–197.
- Yamazaki, Y. (1999). Salutogenesis as new perspectives on health and sense of coherence. *Quality Nursing*, 5, 825–832 (in Japanese).