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Title: The role of adult attachment orientation and coping in psychological adjustment to living with skin conditions.

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What's already known about this topic? Skin conditions can be associated with significant psychological impact including impact on everyday functioning and intimate relationships. Personal characteristics such as attachment orientation conceptualised in terms of two dimensions: attachment avoidance and attachment anxiety, can affect adjustment to skin conditions with preliminary evidence suggesting that insecure attachment (characterised by either high attachment avoidance, high attachment anxiety or both) can be associated with poorer outcomes.

What does this study add? This study provides evidence that insecure attachment is associated with wider forms of lowered psychological adjustment (higher appearance related distress and poorer

quality of life). This association is partially explained by more frequent use of defeatism coping strategies, and in the case of appearance related distress also activity coping strategies. Consequently, people with insecure attachment might benefit from attachment oriented psychological interventions.

Abstract

Background: Skin conditions can be associated with significant psychological distress. Investigation of attachment orientation and associated use of coping strategies is a promising perspective from which to investigate psychological adjustment to skin conditions.

Objectives: To examine the role of adult attachment orientation, conceptualised as two dimensions: attachment avoidance and attachment anxiety, in psychological adjustment (appearance related distress and skin related quality of life) and the mediating role of two coping strategies: defeatism and activity.

Methods: Attachment avoidance and attachment anxiety (ECR), use of coping strategies (COPE), appearance related distress (DAS 24) and skin related quality of life (Skindex-16) were assessed through a cross-sectional online survey in 207 adults with skin conditions. Multiple mediation analyses were performed using PROCESS path analysis.

Results: Overall, higher attachment avoidance and higher attachment anxiety were associated with higher appearance related distress and greater impact on emotions and functioning aspects of quality of life. For attachment anxiety, the relationship was fully explained by more frequent use of defeatism coping. For attachment avoidance, the relationship was partially explained by more frequent use of defeatism coping (and in the case of appearance related distress also more frequent use of activity coping), and higher attachment avoidance was also associated with poorer psychological adjustment in a way that could not be explained by use of assessed coping strategies.

Conclusions: Insecure attachment orientation (high attachment avoidance or high attachment anxiety) is linked to poorer adjustment. People with insecure attachment might benefit from psychological interventions that target underlying attachment orientation.

INTRODUCTION

Skin conditions can be associated with significant psychological impact including impact on everyday functioning and intimate relationships. [1,2] The potentially visible nature of skin conditions can result in unwanted reactions from others and interfere with social interactions, causing social anxiety, fear of negative evaluations and appearance related concerns. [3] There is variation in adjustment with some people experiencing few negative impacts and others reporting significant distress. [4] Importantly, clinical and demographic factors do not appear to be strong predictors of distress severity. [5,6] This indicates a need for investigating individual difference factors, to better understand what determines psychological adjustment to skin conditions, and attachment theory can provide a useful framework for this.

Attachment theory postulates that our experiences of care in close relationships throughout life become internalised as an 'attachment orientation' - a trait like factor that influences how a person manages distress, and the extent to which they seek support from close relationship partners (including parents, friends, and romantic partners). [7,8] In adulthood, attachment orientation has been conceptualised in terms of two dimensions: avoidance of intimacy and anxiety about abandonment. [9] When an individual has consistently received care from others that is responsive and supportive, they develop a secure attachment orientation and exhibit low levels of avoidance and anxiety. When an individual has consistently received rejecting care from others, they develop an attachment orientation that is high in avoidance. Attachment avoidance is associated with discomfort with closeness and use of deactivating affect regulation strategies to cope with distress, such suppressing the distress.. When an individual has typically received inconsistent or insensitive care from others, they develop an attachment orientation that is high in anxiety. Attachment anxiety is linked with intense worries about being rejected, and use of hyperactivating affect regulation strategies, such as intensifying distress in a bid to secure support from others.

Attachment orientation predicts how well people cope with chronic health conditions. [10] A number of studies report a relationship between adult attachment and stress-responsive physiological systems. [11] Indeed, there is emerging evidence that individual differences in attachment orientation are influential in the repair following skin damage. [12] Insecure attachment, characterised by either high attachment avoidance, or high attachment anxiety, or both, has been found to be associated with higher depressive symptoms in individuals with hepatitis C and lower health related quality of life in people with HIV/AIDS. [13,14] Secure attachment has been linked with higher wellbeing in people living with HIV/AIDS. [15]

Use of coping strategies has been investigated as a mechanism through which attachment orientation influences adjustment to health conditions. High attachment avoidance has been linked with avoidance and passive resignation, while high attachment anxiety has been linked with negative emotional coping (e.g., ruminating). Both result in poorer adjustment in a variety of conditions including morbid obesity, cancer, type 1 diabetes and alopecia. [16-18] Conversely, secure attachment has been associated with use of problem oriented coping and social support seeking in one study. [17]

Because of the visible nature of skin conditions and their impact on interpersonal relationships specifically, [19,20] and because of the intensely relational nature of attachment orientation, attachment theory is a promising perspective from which to investigate psychological adjustment in people living with skin conditions. However, while there is a wealth of research linking attachment orientation to coping with other health conditions, [10,21] and to psychological adjustment generally, [22,23] to date, there is little research with skin conditions. The few available studies suggest that insecure attachment is associated with greater negative impact on quality of life in atopic dermatitis [24,25] and alopecia. [26] There is also a lack of investigation of the mechanisms underlying the relationship between attachment and psychological adjustment, such as use of different coping strategies.

The present study aimed to investigate the role of attachment orientation in psychological adjustment to living with skin conditions and the mediating role of different coping strategies. The study focused on two indicators of psychological adjustment that are especially relevant to skin conditions: appearance related distress and skin related quality of life. Appearance related distress is a broad concept referring to a range of psychological difficulties such as self-consciousness, social avoidance, and poor self-esteem. [27] Skin related quality of life is a concept well established in dermatology, with previous studies demonstrating the significant impact skin conditions may have on everyday functioning. [28]

One potential mechanism, through which attachment orientation might influence psychological adjustment, is via the use of different coping strategies. We aimed to test the mediating effect of two coping dimensions with a potential to be determined by attachment orientation: defeatism coping and activity coping. [29] Defeatism coping is characterised by use of coping strategies such as giving up, turning to drugs and alcohol, or denial. A low score on defeatism coping indicates resilience. Activity coping is characterised by use of strategies such as getting help and advice from other people, venting, humour or coming up with a plan. A low score on activity coping indicates passivity. [29]

Figure 1 shows a conceptual model of the role of adult attachment orientation and coping in psychological adjustment to living with skin conditions. Based on the previous research on attachment orientation and coping, we hypothesised that: higher attachment avoidance and higher attachment anxiety will lead to more frequent use of defeatist coping strategies, which in turn will lead to poorer psychological adjustment. Additionally, we hypothesised that higher attachment avoidance and higher attachment anxiety will lead to less frequent use of active coping strategies, which in turn will also lead to poorer psychological adjustment.

[Please insert Figure 1 here]

METHOD

Study design

This was a cross-sectional online survey study. Ethical approval was obtained from the institutional Research Ethics Committee. At the end of the survey participants could elect to be entered into a prize draw to win five £10 and one £50 vouchers.

Participants

Participants were recruited online through university staff and students volunteer lists, and through advertisements on websites and newsletters of skin related charities. The inclusion criteria were: being over 18 years of age, being diagnosed with a skin condition by a health care professional and experiencing symptoms over the last 6 months.

Measures

Participants completed measures of adult attachment orientation, coping, appearance related distress and skin related quality of life (QoL). Information on age, gender, level of education, type of skin condition and duration of condition were collected. [1]

The two dimensions of adult attachment orientation were assessed using the Experience in Close Relationship Scale (ECR), a validated 36 items measure that consists of two subscales: attachment avoidance (18 items, e.g., 'I find it difficult to allow myself to depend on close relationship partners') and attachment anxiety (18 items, e.g., 'I worry about being rejected or abandoned'). [9] Each item from the measure is assessed on a 1 (Strongly disagree) to 7 (Strongly agree) scale. The scores for the two dimensions are calculated separately by averaging the scores for the subscale items, and can vary from 1 to 7 with higher scores indicating higher attachment avoidance and higher attachment anxiety. The measure has excellent reliability and validity. [9]

Appearance related distress was measured using the Derriford Appearance Scale Short Form (DAS 24). [30] This measure assesses distress including fear, social anxiety, shame, negative affect and

[1] The study survey is available from the corresponding author on request.

behavioural problems such as avoidance and withdrawal from social interactions in relation to the respondent's appearance. The original version of the measure focused on the respondent's primary area of concern with regards to any aspect of their appearance. However, for the purpose of this study, we modified the questionnaire (with the author's permission) so that the questions related specifically to the skin. Items are scored on a 1 to 4 scale. The total score ranged from 11 to 96, with higher score indicating higher appearance related distress. The scale has good reliability and validity. [30]

Defeatism and activity coping strategies were assessed using the Brief COPE (28 items). [31] Participants were asked to rate how frequently they use a particular coping strategy to deal with their skin condition on a scale from 1 (I haven't been doing this at all) to 4 (I've been doing this a lot). The items were then grouped into activity coping (17 items, e.g., 'I've been trying to come up with a strategy about what to do.') and defeatism coping (11 items, e.g., 'I've been saying to myself 'this isn't real.'). [29] The possible score for both scales was 1 to 4 with higher scores indicating more frequent use of defeatism or activity coping strategies. The two dimensions have excellent reliability and validity. [29]

Finally, Skindex-16 was used to assess skin related QoL. The measure assesses three types of impact: QoL symptoms (4 items, e.g., 'Your skin condition itching'), QoL emotions (6 items e.g., 'Feeling depressed about your skin condition') and QoL functioning relating to impact of skin condition on social and romantic interactions and ability to perform daily activities (5 items, e.g., 'Effects of your skin condition on your interactions with others'). [32] For each statement participants were asked to rate on a scale of 1 (Never bothered) to 7 (Always bothered). The possible range for each subscale is 0 to 100 with higher scores indicating higher impact. Skindex-16 has excellent reliability and validity. [32]

Analysis

We used PROCESS path analysis to investigate direct and indirect effects [33] (through defeatism and activity coping) of attachment avoidance and attachment anxiety on psychological adjustment in people living with skin conditions (Figure 1). Separate analyses were conducted for the following indicators of psychological adjustment: appearance related distress, QoL symptoms, QoL emotions and QoL functioning. Bootstrap confidence intervals (95% CI) with 10,000 resamples were used to investigate the significance of indirect effects. [34] The effects were assumed to be significant if '0' fell outside the confidence intervals. When more than one indirect effect was significant for one of the predictors (i.e., attachment avoidance or attachment anxiety) we performed contrast analysis to investigate if the mediators differ from one another. [35] Analyses for attachment avoidance were performed controlling for attachment anxiety and analyses for attachment anxiety were performed controlling for attachment avoidance. Additionally, we controlled for age and gender in all analyses. Due to some limited missing data for age, analyses containing age were performed on data from 200 participants. SPSS version 23 and PROCESS [34] were used to analyse the data.

RESULTS

Characteristics of the study sample

In total 206 individuals completed the study, of which 156 (75.7%) accessed the survey through university volunteering list and 50 (24.3%) via charities. The demographic and clinical characteristics of participants are described in Table 1.

[Insert Table 1 here]

Correlations

Bivariate associations between study variables are shown in Table 2. Higher attachment avoidance and higher attachment anxiety were significantly associated with higher appearance related distress, higher impact on QoL in terms of both emotions and functioning, and with more frequent use of defeatism coping strategies. Additionally, both defeatism and activity coping were significantly

associated with higher appearance related distress and higher impact on all three aspects of skin related QoL. With an exception of significant positive association between age and impact on QoL functioning, there were no significant associations between age and gender and other variables.

[Please insert Table 2 here]

Mediation analyses

The results of the multiple mediation analyses indicated that both attachment avoidance and attachment anxiety had direct and indirect effects on the psychological adjustment to living with skin conditions including effects on appearance related distress, and QoL in relation to both emotions and functioning (Figure 2 and Table 3). No evidence of direct or indirect effects of either attachment avoidance or attachment anxiety on the symptoms subscale of QoL was found. [2]

[Please insert Table 3 here]

For appearance related distress, higher attachment avoidance (controlling for attachment anxiety; Figure 2 and Table 3) was significantly related to more appearance related distress through more frequent use of defeatism coping strategies (indirect beta coefficient 0.87) and less frequent use of activity coping strategies (indirect beta coefficient -0.36). Additionally, attachment avoidance had a direct effect (not explained by the use of either defeatism or activity coping strategies) on appearance related distress, so that higher attachment avoidance was associated with more appearance related distress (direct beta coefficient 6.82). Attachment anxiety (controlling for attachment avoidance) was significantly related to appearance related distress through the use of defeatism coping strategies (indirect beta coefficient 1.38), i.e., higher attachment anxiety was related to more frequent use of defeatism coping strategies which in turn was associated with higher appearance related distress. The direct effect of attachment anxiety was not significant (direct beta coefficient 1.16).

[2] Results of the multiple mediation analysis for the symptoms subscale of QoL were not a focus and are not displayed in this paper, but are available from the authors upon request (no significant relationships were found).

[Please insert Figure 2 here]

Similar patterns were found in the case of effects on QoL emotions and QoL functioning. Higher attachment avoidance (controlling for attachment anxiety) was significantly related to higher impact on QoL emotions (indirect beta coefficient 1.87) and on QoL functioning (indirect beta coefficient 1.78) through the more frequent use of defeatism coping strategies (Figure 2 and Table 3). Additionally, higher attachment avoidance had a direct effect (not explained by the use of either defeatism or activity coping strategies) on higher impact on QoL emotions (direct beta coefficient 6.61) and on QoL functioning (direct beta coefficient 11.70). Higher attachment anxiety (controlling for attachment avoidance) was significantly related to higher impact on QoL emotions (indirect beta coefficient 2.97) and QoL functioning (indirect beta coefficient 2.83) through more frequent use of defeatism coping strategies. Same as in the case of appearance related distress, the direct effect of attachment anxiety on QoL emotions (direct beta coefficient -0.46) and QoL functioning (direct beta coefficient -0.70) was not significant.

The proposed models explained between a quarter and half of the variance in outcome measures (48% for appearance related distress, 38% for QoL functioning, 28% for QoL emotions). All three presented models were significant at the $p < .001$ level (Table 3).

DISCUSSION

To the best of our knowledge, this was the first study to comprehensively examine the role of attachment orientation and the mediating role of copings strategies in psychological adjustment across a range of skin conditions. Our initial hypothesis about the impact of attachment and the mediating role of coping on psychological adjustment were largely confirmed. We found that insecure attachment orientations (i.e., high attachment avoidance or high attachment anxiety) were associated with higher appearance related distress and greater impact on emotions and functioning aspects of QoL. For attachment anxiety, the relationship was fully explained by the more frequent use of defeatism coping strategies, so that people higher on attachment anxiety used more

defeatism coping strategies, which accounted for the negative impact on psychological adjustment. For attachment avoidance, more frequent use of defeatism coping strategies (and in the case of appearance related distress more frequent use of activity coping strategies) partially explained the relationship. Higher attachment avoidance was related to higher appearance related distress and impact on QoL in a way that was not fully explained by the use of the assessed coping strategies. It might be that some of the impact of attachment avoidance therefore operated via mechanisms that were not measured in this study, or that the impact on adjustment to skin conditions was direct.

Interestingly, contrary to our hypotheses activity coping did not mediate between the two attachment dimensions and impact on emotional and functioning QoL. Furthermore, higher attachment avoidance was associated with more frequent use of activity coping strategies (and not as hypothesised with less frequent use), which in turn led to more appearance related distress (and not as hypothesised less appearance related distress). There are mixed findings in the literature with some studies supporting this apparently counter-intuitive result, [36,37] and other studies not finding a relationship between attachment orientation and problem-oriented coping. [38,39] More work is needed to understand how and under what conditions attachment orientation shapes use of coping strategies. Interestingly, activity coping in our study was associated with poorer psychological adjustment, regardless of attachment orientation. Our surprising results suggest that in chronic health conditions, where symptoms can only be controlled to an extent, continued use of activity coping strategies of proactive coping strategies might lead to worse outcomes, potentially by hindering acceptance. More research is needed to understand how and under what conditions attachment orientation shapes use of coping strategies, and to investigate the relationship between attachment and acceptance in long-term skin conditions.

The cross-sectional design of this study limits the potential to establish the direction of the influence of the investigated variables. Future longitudinal research would be encouraged to confirm the directionality of the proposed model. In addition, our study focused on two broad categories of

coping (defeatism and activity coping). It is possible that there are relationships between more specific types of coping (e.g., rumination, acceptance) and attachment orientation that were not captured in our study. Future studies might investigate other types of coping as well as other mechanisms that might mediate between attachment orientation and psychological adjustment. Additionally, our individual sample size for different skin conditions (e.g., eczema, acne) were too small to perform separate analyses with sufficient power. Consequently, further studies are required to investigate the role of attachment orientation with specific skin conditions.

In terms of the clinical implications of our findings, two points are worth noting. Firstly, the findings suggest that psychological interventions need to be based upon addressing underlying psychological constructs likely to play a role in coping and adjustment such as attachment orientation. [40,41] In addition, given the finding that there was a direct effect of attachment orientation upon adjustment, people with insecure attachment might specifically require one-to-one psychotherapy which is known to be useful with issues relating to interpersonal functioning. [42] Clearly, further studies are needed to examine both the psychosocial and physiological benefits that more in-depth psychotherapies of this type might provide to people distressed by skin conditions.

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Table 1: Participants characteristics (age, gender, level of education, type of skin condition, duration of the skin condition) and descriptive characteristics of the investigated variables (attachment avoidance, attachment anxiety, coping defeatism, coping activity, appearance related distress, QoL symptoms, QoL emotions, QoL functioning)

N = 206	Mean (SD)	Range
Age*	30.85 (12.31)	18 - 65
Attachment avoidance	3.54 (0.91)	1.67 - 6
Attachment anxiety	3.55 (1.12)	1 - 6
Coping defeatism	1.46 (0.43)	1 - 3.36
Coping activity	2.14 (0.50)	1 - 3.59
Appearance r. distress	43.91 (14.96)	17 - 93
QoL symptoms	38.55 (28.72)	0 - 100
QoL emotions	58.52 (29.61)	0 - 100
QoL functioning	29.32 (28.60)	0 - 100
		Number (%)
Females		161 (78.2)
Education		
Postgraduate qualification		44 (21.4)
Degree level qualification		27 (13.1)
Higher educational qualification below degree level		59 (28.6)
A level or equivalent		8 (3.9)
Other or don't know		
Type of the skin condition		
Eczema		68 (33.0)
Acne		45 (21.8)
Vitiligo		38 (18.4)
Psoriasis		17 (8.3)
Ichthyosis		12 (5.8)
Rosacea		5 (2.4)
Darier's disease		5 (2.4)
Other		16 (7.8)
Duration of the skin condition		
Less than 1 year		5 (2.4)
Between 1 and 3 years		20 (9.7)
Between 3 and 5 years		22 (10.7)
Between 5 and 10 years		33 (16.0)
Between 10 and 20 years		64 (31.1)
More than 20 years		62 (30.1)

* Age was only available for 200 participants

Table 2: Pearson correlation coefficients between attachment avoidance, attachment anxiety, coping defeatism, coping activity, appearance related distress, symptoms, emotions, functioning, age and gender.

		Attachment		Coping		Psychological adjustment				Demographics	
	Cronbach's Alpha[ii]	Attachment avoidance	Attachment anxiety	Coping defeatism	Coping activity	Appearance related distress	QoL symptoms	QoL emotions	QoL functioning	Age	Gender
Attachment avoidance	.908	-									
Attachment anxiety	.920	.494***	-								
Coping defeatism	.776	.388***	.449***	-							
Coping activity	.837	-.053	.078	.413***	-						
Appearance r. distress	.932	.566***	.424***	.550***	.262***	-					
QoL symptoms	.847	.118	.097	.181**	.178*	.175*	-				
QoL emotions	.933	.296***	.254**	.469***	.339***	.691***	.355***	-			
QoL functioning	.908	.474***	.303***	.487***	.230**	.731***	.327***	.723***	-		
Age	-	.066	-.109	.005	-.030	.108	.000	.031	.215**	-	
Gender[i]	-	-.016	.024	.067	.053	.076	.050	.037	-.008	-.028	-

[i] Negative sign of correlation coefficient indicates that being a woman was associated with higher score on the investigated variables, while positive sign indicates that being a man was associated with higher score.

[ii] These Cronbach's Alpha values presented here represent values found in the study sample

** Significant at the level $p < .01$, *** Significant at the level $p < .001$

Table 3: Direct and indirect effect of attachment orientation on psychological adjustment in people living with skin conditions.

Outcome	Mediator	Attachment avoidance		Attachment anxiety		R^2
		B (SE)	95% CI	B (SE)	95% CI	
Appearance r. distress	Coping defeatism	0.87 (0.30)	0.38; 1.59*	1.38 (0.40)	0.84; 2.66*	R^2 = .48
	Coping activity	-0.36 (0.25)	-1.05; -0.01*	0.31 (0.23)	-0.01; 0.92	
	Direct effect	6.82 (1.04)	4.77; 8.87*	1.16 (0.87)	-0.56; 2.88	
QoL emotions	Coping defeatism	1.87 (0.73)	0.74; 3.65*	2.97 (0.94)	1.81; 6.18*	R^2 = .28
	Coping activity	-1.01 (0.69)	-2.84; -0.03	0.88 (0.64)	-0.03; 2.65	
	Direct effect	6.61 (2.45)	1.78; 11.44*	-0.46 (2.05)	-4.50; 3.58	
QoL functioning	Coping defeatism	1.78 (0.67)	0.71; 3.46*	2.83 (0.94)	1.26; 4.95*	R^2 = .38
	Coping activity	-0.59 (0.47)	-1.95; 0.02	0.51 (0.43)	-0.04; 1.82	
	Direct effect	11.70 (2.18)	7.40; 16.00*	-0.70 (1.82)	-4.30; 2.90	

B refers to unstandardised beta coefficients. Coefficients intervals were calculated using bootstrapping with 10 000 resamples.

* indicates significant confidence intervals (i.e., the ones that do not include '0'). Attachments anxiety was controlled for attachment avoidance analyses and vice versa. All analyses were controlled for age and gender. R^2 refers to all predictors in the model. All models were significant at the $p < .001$ level.

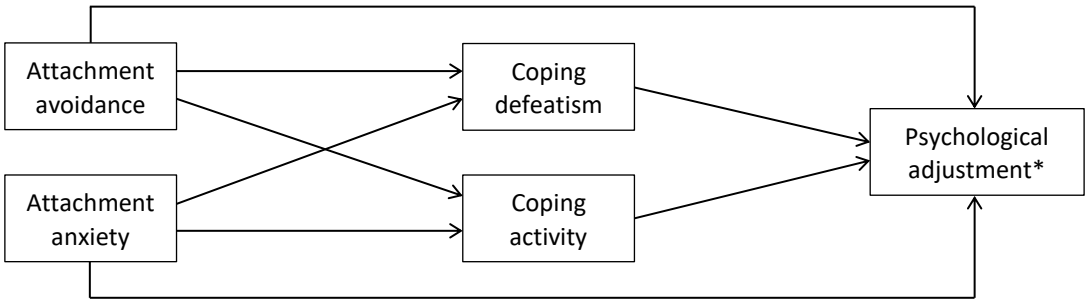

Figure 1: Proposed multiple mediation model of psychological adjustment in people living with skin conditions.

* The investigated aspects of psychological adjustment included: appearance related distress and QoL symptoms, QoL emotions and QoL functioning.

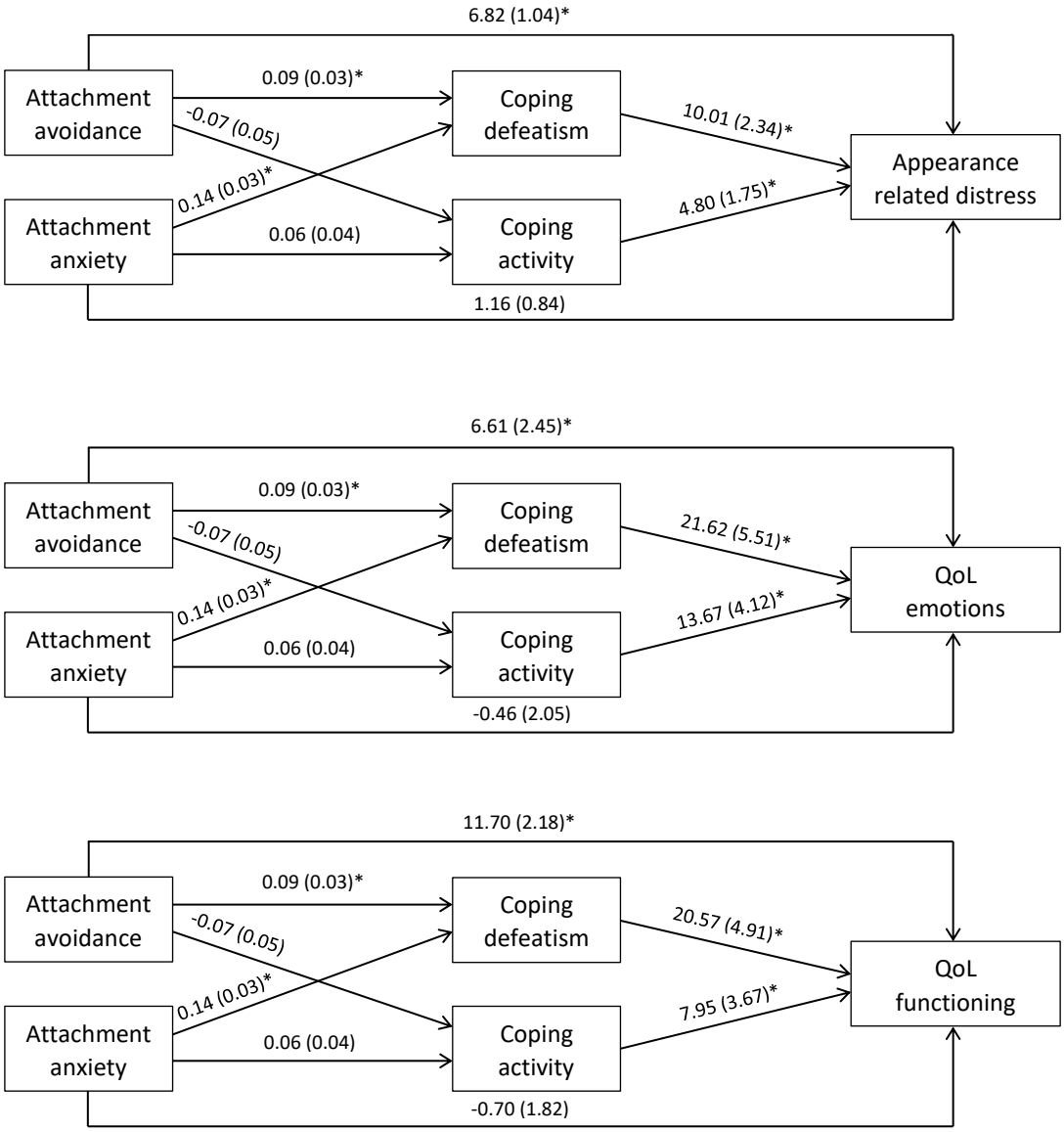

Figure 2 Individual path coefficients for proposed multiple mediational model of psychological adjustment in people living with skin conditions.

Only significant paths are displayed ($p < .05$). Standard errors are displayed in parentheses. Attachment avoidance coefficients were calculated controlling for attachment anxiety and vice versa. Models were calculated controlling for age and gender.