



The
University
Of
Sheffield.

Access to Electronic Thesis

Author: Anastasia Lavda
Thesis title: Psychological Factors in Skin Conditions
Qualification: DClinPsy
Date awarded: 01 November 2010

This electronic thesis is protected by the Copyright, Designs and Patents Act 1988. No reproduction is permitted without consent of the author. It is also protected by the Creative Commons Licence allowing Attributions-Non-commercial-No derivatives.

This thesis was embargoed until 30 November 2015.

If this electronic thesis has been edited by the author it will be indicated as such on the title page and in the text.

Psychological Factors in Skin Conditions

**Thesis submitted to the Department of Psychology, University of
Sheffield for the degree of Doctor of Clinical Psychology**

Anastasia C. Lavda, BSc (Hons), MSc
August 2010

The results, discussions and conclusions presented herein are identical to those in the printed version. This electronic version of the thesis has been edited solely to ensure conformance with copyright legislation and all excisions are noted in the text. The final, awarded and examined version is available for consultation via the University Library.

Declaration

This work has not been submitted to any other institution for any other qualification

Structure

Chapter One. The literature review was written in accordance to the guidelines for the British Journal of Dermatology

Chapter Two. The research report was written in accordance to the guidelines for the journal Behaviour Research and Therapy

Word Count

Chapter One

Literature Review	7998
References	2259
Total	10246

Chapter Two

Research Report	10369
References	1426
Total	11795

Appendices 8539

Total word count (excluding references and appendices) 18367

Total word count (including references and appendices) 30580

Thesis Abstract

The first chapter of the thesis is a meta-analytic review investigating the effectiveness of psychological interventions for skin conditions. Twenty-one controlled trials are included and results indicate a medium average effect size of psychological interventions on outcomes relating to itch/scratch and outcomes relating to psychosocial functioning and a small average effect size on outcomes relating to skin severity. The overall average effect of psychological interventions on skin conditions was found to be medium. Ten moderating variables relating to the type of skin conditions, the nature of the interventions and methodological characteristics of the studies were also investigated. The review concluded that psychological interventions have a beneficial effect on skin conditions. Recommendations for future research and clinical practice are explored. There is extensive literature linking the distress experienced by people with skin conditions to social anxiety. As attentional biases are implicated in the aetiology and maintenance of social anxiety, the second part of the thesis investigates their presence in people with skin conditions and matched controls, using the Visual Dot Probe task. To explore what factors predict attentional biases, measures of social anxiety, appearance concerns, shame and self-esteem were administered. An attentional bias was found away from positive words, however no attentional biases were found towards social and appearance threat words. Low levels of shame and self-esteem predicted the attentional bias away from positive words. No other factors predicted variance in response latencies to the word groups.

Acknowledgements

I wish to extend my sincerest gratitude to my supervisors Dr. Thomas Webb and Dr. Andrew Thompson for their invaluable guidance and support during the completion of the research and this thesis. I would also like to thank Dr. Margaret Wood and Dr. Ruth Sabroe for their help with the recruitment of participants. Many thanks to all the participants who kindly volunteered their time for free and made this project a reality. Thank you to my friends for being a source of laughter or comfort whenever needed.

I wish to say a very special thank you to my family and especially my mother, sister, Kiki and Alan for their endless love, nurture and support, with a particular thanks to my mum for taking the time to proofread and Alan for his excellent frontline help and for being my N^o1 butler. Many thanks also to John and Christine for their encouragement and interest in my work.

In memory of my beloved father who I know would be very proud of me.

List of Contents

Chapter One: The effectiveness of psychological interventions for skin

conditions: A meta-analysis

Abstract	2
Introduction	3
Method	13
Results	26
Discussion	31
References	38

Chapter Two: Attentional biases in people with skin conditions: Nature and

determinants

Abstract	49
Introduction	50
Method	59
Results	67
Discussion	80
References	89

Appendices

Appendix A. Formats	94
Appendix B. Ethical Approvals	111
Appendix C. Standard Measures	124
Appendix D. Literature Review Appendices	144
Appendix E. Research Report Appendices	147

Chapter One: Literature Review

**The effectiveness of psychological interventions for adults with skin
conditions: A meta-analysis**

Abstract

Psychological distress has been implicated in the onset, maintenance and exacerbation of skin conditions. Numerous studies have examined the effectiveness of psychological interventions designed to improve severity of and adjustment to skin conditions. The present study meta-analysed psychological interventions and investigated possible moderators of effects. Twenty studies met the inclusion criteria for the review. Average sample-weighted effect sizes were estimated for outcome measures relating to skin severity, psychosocial functioning and itch/scratch. Effect sizes ranged from small to medium. The overall average effect size was medium. Ten moderating variables relating to the type of skin conditions, the nature of the interventions and methodological characteristics of the studies were investigated. Type of intervention, time interval to longest follow up, type of skin condition (affecting appearance only vs. affecting appearance and physical discomfort) and age moderated the effect of interventions on outcomes. Duration of intervention, duration of condition, recruitment strategy for the skin conditions group and the control group, mode of delivery of intervention and quality of the study did not influence effect sizes. Recommendations for future research and clinical practice are explored.

Abstract Word Count: 180

The effectiveness of psychological interventions for adults with skin conditions: A meta-analysis

The present review investigates the effectiveness of psychological interventions designed to improve severity of and adjustment to skin conditions. 'Skin conditions' here refer to common chronic conditions of the skin, such as psoriasis, acne, vitiligo and atopic dermatitis (eczema), that are differentiated from conditions with a primary psychiatric diagnosis (e.g., body dysmorphic disorder, delusions of parasitosis) or a dual psychiatric/ dermatologic diagnosis (e.g., skin picking, trichotillomania). This definition accords with Koblenzer's¹ classification system. However, it is not a concrete one, as numerous classification systems exist and none is universally accepted².

Prevalence differs between conditions, with estimates of 0.7-2.4% for atopic dermatitis³, 1% for vitiligo⁴, and 0.5-3% for psoriasis⁵. Acne affects 30% of teenagers to a degree that requires medical treatment⁶. The burden of chronic skin conditions on the individual is long-term and includes economic, psychological and social aspects⁴. Skin conditions also place a high economic burden on society⁴, which is incurred not only in terms of medical care but also in lost productivity⁴. Atopic dermatitis alone costs the National Health Service in the UK approximately £168 million annually⁷. The annual cost of atopic dermatitis and psoriasis are similar to the costs incurred by diseases such as epilepsy and emphysema⁸.

The medical model implicates pathophysiological mechanisms, such as genetics, abnormal immunological reactions, and allergens, in the aetiology of skin conditions⁹⁻¹⁰. However it is argued that these do not sufficiently account for the

aetiology^{9,11}. As a result psychological mechanisms have also been linked. For example, Kimyai-Asadi and Usman¹⁰ describe a 'stress-disease cycle' where stress is implicated in the onset and maintenance of the skin condition, while the skin condition in turn causes stress to the patient. Faulstich and Williamson⁹ suggest that psychological factors may trigger existing pathophysiological mechanisms causing the onset of the condition, or may lower the itch threshold through changes in autonomic activity, thus contributing to the itch-scratch cycle that serves to maintain and exacerbate certain conditions.

Studies have found that people with skin conditions suffer from higher levels of distress than the general population¹². The disfiguring effects of skin conditions have been cited as the primary cause of psychological distress¹³ in part because of the stigma and negative reactions encountered by others¹⁴. Nonetheless, according to Ginsburg et al¹⁵ and Linnet & Jemec¹⁶, the experience of psychological distress is not associated with disease severity. This is in line with findings in the field of disfigurement that show severity to contribute only a small amount to the degree of psychological distress¹⁷. Thompson and Kent¹⁸ propose that psychological factors play a more prominent role than clinical severity in the process of adjustment to disfigurement.

Medical treatments for skin conditions (e.g., topical or systemic steroids) generally result in improvement but are not universally effective⁹ and are liable to limitations such as side-effects¹⁹ and non-compliance²⁰. The utility of treatments that address the psychological factors involved in skin conditions have, therefore, been explored and recent therapeutic guidelines for vitiligo²¹ and atopic dermatitis²² have incorporated psychological interventions into their recommendations.

Psychological Interventions for Skin Conditions

Psychological treatments for skin conditions include the following^a.

Psychodynamic psychotherapy, which aims to reduce unconscious conflicts, and to explore psychological defenses thus addressing the underlying psychopathology that is thought to cause or maintain the skin condition³¹. *Cognitive behavioural therapy* (CBT), which aims to change dysfunctional cognitions and behaviours that either harm the skin or hinder dermatological therapies²⁵. Techniques can focus on addressing treatment expectations, self-training to alter problematic thoughts and behaviours, and systematic desensitisation or relaxation techniques to reduce anxiety²⁴. *Behavioural therapies*, which aim to increase an adaptive behaviour or reduce a maladaptive behaviour. A technique commonly used in dermatology is habit reversal that was first developed for nervous habits and tics⁸⁵ and was adapted for use with dermatological patients to reduce behaviours such as scratching⁸⁶. *Relaxation techniques* aiming to reduce the anxiety associated with having a skin condition. *Emotional disclosure*, which refers to the expression of stressful or traumatic events through writing. Psychological interventions can be delivered in a variety of settings, such as individually, in groups or through self-help.

The effectiveness of such interventions has been investigated in case studies and small-scale uncontrolled studies with positive outcomes³³⁻⁴⁶. There have also been a few studies with larger samples of participants. For example, Cormia⁴⁷ found that 50% of patients with atopic dermatitis treated with insight-oriented psychotherapy showed either some or significant improvements. CBT has also been shown to reduce the emotional impact and perceptions of visibility and

^a The interested reader is also directed to review papers describing these approaches^{24-25,28-32}

severity of disfigurement⁴⁸. Fortune et al⁴⁹⁻⁵⁰ investigated a brief multidisciplinary CBT-based intervention and found positive outcomes for physical and psychological aspects of psoriasis, as well as a change in dysfunctional disease-related cognitions.

Chida et al⁵¹ conducted a meta-analysis of 8 randomised controlled trials investigating the effectiveness of psychological and other non-medical interventions (aromatherapy, hypnosis and educational interventions) for atopic dermatitis in adults and children. The review found small, moderate and large average effects for the reduction of severity, scratching and itching, respectively, relative to standard medical care, waiting-list and 'active' comparison control groups. Ersser et al⁵² conducted a review of psychological and educational interventions for children with atopic dermatitis. Only one of their included studies was defined as a psychological intervention, describing a hypnotherapy group and a biofeedback relaxation group. Both were reported to result in significant reductions in skin severity, as compared to a 'discussion only' control group. Bessell and Moss⁵³ conducted a narrative review with a focus on the quality of studies of psychosocial interventions for visible differences, including skin conditions. They concluded that there was limited evidence in support of self-help interventions and individual CBT; poor evidence for person centred group counselling and support groups; and poor-to-limited evidence for group social skills training and group CBT.

Aims and Rationale of Present Review

The aim of the current study was to conduct a meta-analysis of controlled trials that investigate psychological interventions for skin conditions in adults. The primary objectives being to systematically evaluate the effectiveness of

psychological interventions and to investigate potential moderators of treatment effects.

Bessell and Moss's review and conclusions were not focused specifically on skin conditions, and therefore important aspects such as physical discomfort e.g., itch/scratch, were not adequately addressed. Bessell and Moss concluded that the effectiveness of psychosocial interventions for visible difference has not been adequately demonstrated, but that the interventions are necessary. This conclusion is based on their assessment of the quality of the reviewed studies, and not on reported treatment effects. The advantage of a meta-analysis over a narrative review is that it uses effect sizes and computes an average size of effect across studies that are weighted by sample size⁵⁴. This means that the effectiveness of interventions can be assessed objectively, without giving the reviewed studies equal weighting.

The meta-analytic review by Chida et al⁵¹, which focused exclusively on atopic dermatitis, concluded that psychological interventions were beneficial; however it included non-medical complementary therapies alongside psychological interventions, rendering conclusions with regards to psychological interventions alone difficult. Furthermore, their meta-analysis did not consider moderating variables for the treatment effects.

The present meta-analysis would contribute significantly to the existing literature by providing an objective assessment of treatment effectiveness that is specific to psychological interventions for the range of skin conditions. Furthermore it will be the first review to systematically examine moderators of treatment effects.

The present meta-analysis includes only controlled studies with adequate (not introducing systematic differences between the groups) allocation of

participants to condition. Research has shown that studies with no controls overestimate the size of effects by 60%⁵⁵. The meta-analysis will focus solely on adults because existing evidence points to variation in interventions targeting adults and children. For example, interventions for children often involve parent education programmes or parent support⁵² and therefore need to be evaluated separately. Moreover, a comparison between interventions for adults and children would be further complicated by differences in the patients' respective developmental stages⁵².

What factors influence the effectiveness of psychological interventions for skin conditions?

Several variables may influence the effectiveness of psychological interventions for skin conditions; in the present review, these are organised into variables pertaining to the (i) type of skin condition, (ii) nature of the intervention, and (iii) methodological characteristics of the study.

Type of skin condition

Whereas all skin conditions can be potentially disfiguring, some are accompanied by pain and discomfort (e.g. psoriasis and atopic dermatitis) and others are not (e.g. vitiligo). Papadopoulos et al⁵⁶ suggest that whether or not skin conditions are accompanied by discomfort could potentially influence treatment outcomes. Specifically effect sizes could be smaller for interventions that are targeting two areas of difficulty (i.e., impaired appearance and discomfort) versus one (impaired appearance alone). Secondly, the duration of the condition prior to the implementation of the intervention may influence outcome. Evidence suggests that longer duration is associated with poorer outcome e.g., higher incidence of scarring in acne⁵⁷ and comorbidities in psoriasis, such as psoriatic arthritis, that

may be preventable with early suppression of inflammations⁵⁸. Thus longer duration of skin condition may be associated with smaller effect sizes.

Nature of the intervention

The second category of moderators pertains to the nature of the intervention employed, such as the therapeutic modality or technique followed. Chida et al⁵¹ put forward that interventions aiming to decrease stress or break the itch/ scratch cycle should result in higher effects for atopic dermatitis and they found that cognitive behavioural therapy, habit reversal and autogenic training (a form of relaxation) significantly reduced the clinical severity of atopic dermatitis, whereas psychodynamic psychotherapy and stress management did not.

Another characteristic of the intervention that may moderate the effect on outcome would be its duration. Keinan⁵ argues that longer contact time may be associated with better outcomes.

The mode of intervention delivery may also influence effect sizes. For example individual therapy has the advantage of being private but on the other hand can be isolating⁵⁹. Because much of the distress in people with skin conditions arises from feelings of isolation and stigma¹², whether people are placed in group situations or not may be an important moderator of outcome.

Methodological characteristics

Certain methodological characteristics may also moderate the effects of the interventions on outcomes. The first characteristic is the nature of the control group employed. Vedhara et al⁶⁰ suggest that 'active' control conditions such as those provided with a task or intervention that is comparable in terms of regularity or intensity of contact may benefit from non-specific therapeutic effects that other controls such as 'no treatment' will not. It is possible, therefore, that effect sizes for

intervention groups compared to active control conditions will be smaller than those where the intervention group is compared to, for example, 'no treatment' groups. Lipsey and Wilson⁵⁵ conducted a large-scale meta-analysis of psychological, educational and behavioural meta-analyses and found a bias towards larger effect sizes for 'no treatment' control groups.

The second methodological characteristic involves the recruitment strategy for the treatment group. Whether participants have been recruited from hospitals or the community may be an indication of whether they were actively seeking treatment at the time of the study. Participants not seeking treatment may be managing well already or may be less motivated to change their condition.

A third study characteristic that may influence effect sizes concerns the time interval between the end of the intervention and the post-intervention outcome assessment. Larger or smaller effect sizes associated with longer follow up periods would allow for an assessment of whether outcomes are effective long-term. In a study of psychological interventions for irritable bowel syndrome findings showed no convincing evidence that gains were maintained after treatment⁶¹. It is possible therefore that larger follow up periods will be associated with smaller effect sizes.

Finally, of importance when examining moderators of effectiveness is to consider the quality of the clinical trials examined. Lipsey and Wilson⁵⁵ found no significant differences between effect sizes of high and low quality studies. Certain quality scales, however, such as the Jadad⁶² scale, also allow reviewers to assess the internal validity of studies in order to determine whether effect sizes are being inflated by biases⁶³.

Method

Selection of Studies

The search strategy is described in line with guidance by the PRISMA group⁶⁴. The search strategies used to identify relevant studies were: computerised searches of databases including Web of Science (1900-2010), Medline (1950-2010), PsychINFO (1806-2010) and the Cochrane Central Register for Controlled Trials. Articles' reference lists were also searched (ancestry approach⁶⁵), as were citation lists. The search was completed in January and February 2010.

Combinations of search terms in the computerised database search were as follows: 'atopic dermatitis' OR 'skin diseases' OR 'skin condition' AND 'intervention studies'; 'atopic dermatitis' OR 'skin diseases' OR 'skin condition' AND 'psychotherapy' OR 'psychological interventions' OR 'behaviour therapy'; 'treatment' OR 'Cognitive Behaviour Therapy' OR 'Psychotherapy' OR 'Intervention' OR 'psychotherapeutic techniques' OR 'psychological interventions' AND 'skin disorders' OR 'skin conditions' OR 'dermatitis'; 'skin condition intervention', 'psych* interventions skin conditions', 'psych* treatment skin conditions', 'skin condition' AND 'psychotherapy' OR 'cognitive' OR 'behavioural' OR 'psychiatry'; 'acne intervention'; 'vitiligo intervention'; 'psoriasis intervention'; 'eczema intervention', 'rosacea intervention'; 'chronic urticaria intervention'; and 'skin condition psycholog* interventions'.

The following inclusion criteria were employed: The study must (a) describe an intervention for an appropriate skin condition (b) describe an appropriate psychological intervention. Solely educational interventions and complementary therapies were excluded, (c) include a control group, (d) allocate participants to conditions in a manner that would not introduce systematic differences between

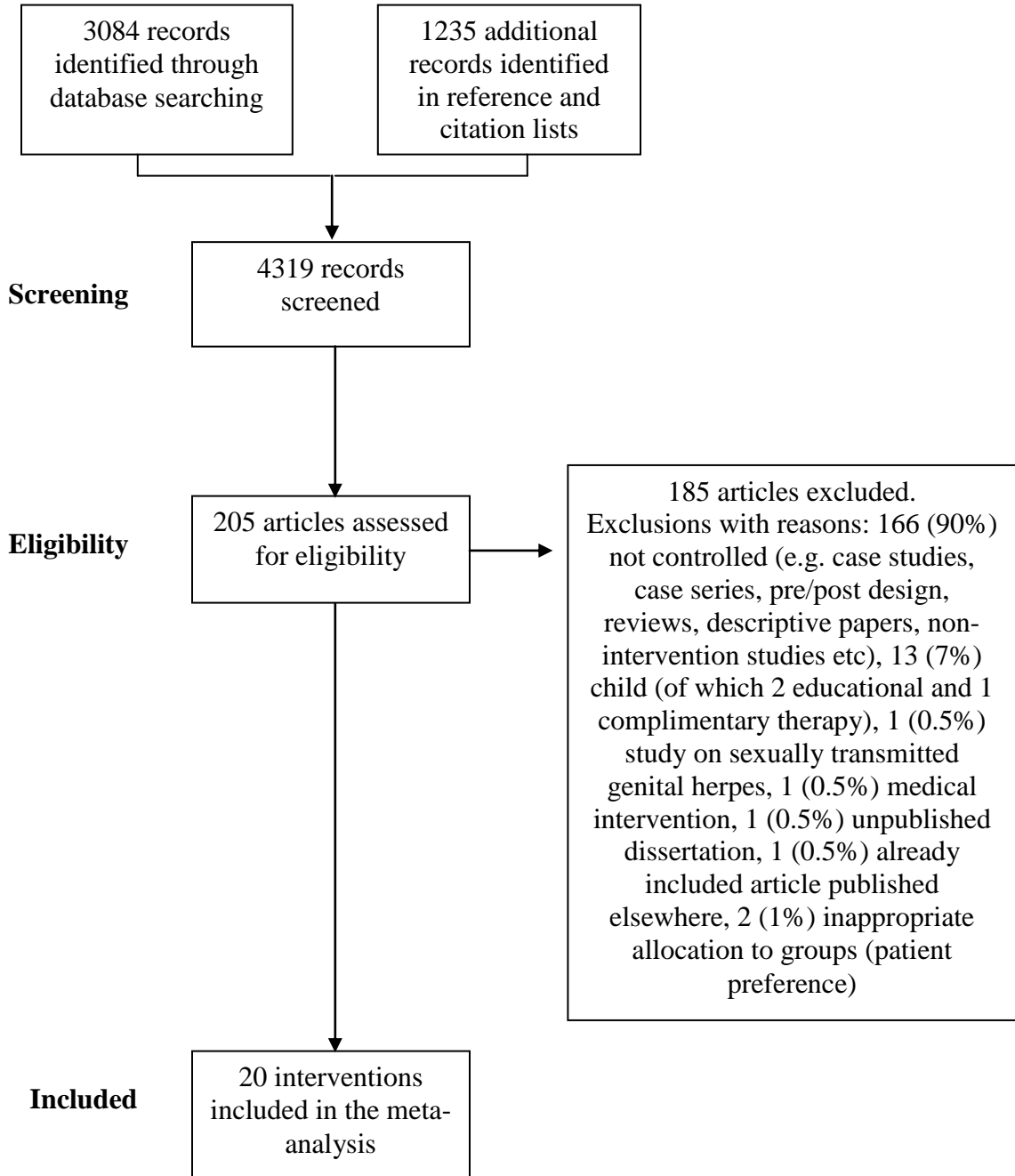
the groups (e.g. not selected for a particular group based on factors such as age or participant preference), (e) be written in English and (f) be published in a peer reviewed journal.

The search strategy is presented in a flow diagram in Figure 1 (adapted from Moher et al⁶⁴). A total of 3084 records were identified and scanned via the computerised databases using the above search terms. A further 659 titles of records were scanned in reference lists and 576 in citation lists. After duplicates were removed, a total of 205 records were screened, of which 185 were excluded. The majority of studies (90%) were excluded because they did not employ a control group (e.g. pre-post design). Twenty studies^{3,5,56,59,60,66-80} were eligible for inclusion in the meta-analysis. Table 1 lists the selected studies and provides a summary of their main characteristics.

Figure 1.

Schematic representation of the search strategy for the meta-analysis

Identification



Meta-analytic Strategy

Effect sizes associated with the effect of psychological interventions on skin conditions were computed using Comprehensive Meta-analysis Version 2⁸¹. Hedge's *g* was used as the primary estimate of effect size for each study included in the analysis and for the sample weighted average effect size. Hedges *g* provides standardised mean differences between the experimental and control groups. A random effects model was used because the variability between studies is likely to be random and not accounted for merely by study characteristics⁸². Variability between studies' effect sizes is estimated by the Homogeneity *Q* statistic, which indicates heterogeneity when significant. Effect sizes were interpreted using Cohen's⁸³ guidelines, where 0.20 indicates a small effect size, 0.50 indicates a moderate effect size and 0.80 indicates a large effect size.

Nine studies reported information that allowed the computation of precise effect sizes. Because the majority of studies reported non-adjusted effect sizes, where both non-adjusted and covariate-adjusted effect sizes were available, non-adjusted effect sizes were used. Previous studies have shown that weighted effect sizes do not differ between studies that report covariate-adjusted and studies that report non-adjusted effect sizes⁸⁴. Where the information needed to compute precise effect sizes was not available from the article or contact with authors, estimated values were used based on significance levels. Where significance levels were reported as $p < 0.05$ or $p < 0.01$, a *p* value equal to the level of significance reported was used as a conservative estimate (i.e. $p = 0.05$ and $p = 0.01$). Where non-significant results were reported as *ns* with no other information as to the value of *p*, the dependent variable was excluded from the analysis as an estimate was deemed to be too imprecise. Due to the relatively small number of

studies included in the meta-analysis, where studies only employed one dependent variable and this was reported as *ns*, a conservative estimate of $p = 0.5$ was used⁶⁶ in order to ensure the study was not entirely excluded from the analysis. Where studies reported overall effects as non-significant but then analysed subgroups of the sample with significant results e.g.,^{66,74} the overall data were inputted into the analysis. This strategy was chosen in order to limit potential bias in the meta-analysis.

Eighteen studies measured more than one outcome, for example, Papadopoulos et al⁵⁶ measured the effect of CBT on skin severity, dermatological quality of life, body image and self-esteem. Where studies employed more than one outcome measure, the effect sizes within each study across outcome measures were meta-analysed in their own right prior to being included in the main dataset. This procedure captures the richness of data while still maintaining sample independence, which is central to the validity of meta-analysis⁸⁵. An overall effect size was calculated for each study based on all the variables examined and then separately for the following categories of outcomes (where relevant): skin severity, itch/scratch and psychosocial factors. Skin severity refers to the actual clinical severity of the skin condition and has been measured through the use of objective ratings by physicians, nurses or trained researchers. In the 16 studies that measured skin severity, there was use of four different published measures, and six different idiosyncratic measures including Likert-type rating scales (of varying ranges) and Visual Analogue Scales. As the majority of studies employed objective ratings (physician, nurse, trained researchers) only, where both objective and self-report ratings were utilised only objective ratings were inputted into the analysis.

Itch/scratch was primarily measured with idiosyncratic rating scales, diaries or subscales of two published measures. The 'psychosocial outcomes' category comprises a large variation of measures broadly covering emotional difficulties (e.g. depression, anxiety), cognition (e.g., illness cognitions), coping, and quality of life (e.g. general health).

In line with Cochrane's recommendations⁸⁶, where post intervention data were measured at more than one time point in the study, data from the longest follow up period were included. For example Ehlers et al³ reported data for post-intervention and 12-month follow-up, the latter being included. Where more than one comparison group existed in a study, the most passive one was included to aid interpretation. Where more than one intervention was compared to the same comparison group, only one of the interventions was chosen. The decision on which intervention to include was made on the basis of comparability to interventions used in other studies. For example, if a study comprised of a 'relaxation group and a 'biofeedback relaxation group, the relaxation group was included because it was more comparable to other studies in the review. Where it was not possible to separate the data of the intervention or comparison groups, then the sample sizes of the groups were combined and treated as one intervention or comparison group. For example, Papadopoulos⁷⁷ compared two intervention groups (group CBT and group person-centred) to one comparison group, but only aggregate data were reported. Therefore, the intervention groups were combined and treated as 'group therapy'. Decisions pertaining to selection of intervention and comparison groups for individual studies are included in Table 1.

Coding

The author coded each study based on a manual that was prepared for coding (see Appendix D.1.). Studies were coded for the following characteristics (described in detail below): methodological quality, type of psychological intervention, mode of intervention delivery (individual, group or self-help), time interval between end of intervention and measurement point in days (where no follow up was employed, the time interval was coded as zero), duration of therapeutic intervention (in months), type of experimental condition (patients vs. non-patients), type of control condition (waiting list, standard medical care, comparison group, no treatment), type of skin condition, skin condition accompanied by pain/discomfort or not, number of participants in experimental and control groups (at point of analysis), mean age of participants in the experimental condition, mean duration of illness in the experimental condition, the dependent variables (outcome measures) and effect sizes overall and for the following subgroups of outcomes: skin severity, skin itch/scratch, psychosocial factors.

Coding intervention type

Seven categories of interventions emerged from the located studies. The first category was *habit reversal*. Any study focusing solely on breaking the itch/scratch cycle with behavioural techniques was included in this category. One study⁷⁴ comprised of two treatment and two control groups, and these have been included in the review separately.

The second category referred to interventions *informed by Cognitive Behavioural Therapy (CBT)*. Studies that contained core elements of cognitive and behavioural models to their intervention were included in this category, irrespective of whether the authors had labelled their intervention CBT or not.

The third category referred to *relaxation techniques* - interventions that have made use of any type of relaxation technique (e.g. progressive muscle relaxation, biofeedback assisted relaxation, mindfulness meditation²⁹) in the absence of other cognitive or behavioural techniques. One study⁶⁷ used a relaxation with visual imagery treatment group and a relaxation control group to investigate the effect of imagery. Hence, a fourth category was created named 'imagery', which only consists of this one study.

The fifth category referred to *group therapy* - interventions delivered in group settings that did not fit into other well-defined treatment modalities. One of the studies⁷⁷ included in this category examined two treatment modalities (CBT and person centred) comparing them to the same control group. However, because the data were aggregated across the two treatment groups they were combined into one group and defined as group therapy.

The sixth category was *psychotherapy*, defined as therapies based on psychoanalytic or psychodynamic ideas. Only one study⁷⁴ was included in this category. Although not much detail was given as to the content of the therapeutic protocol followed, the authors described their approach as falling into the "general framework of psychodynamic psychotherapy" (p. 633).

The seventh category was *emotional disclosure* – the expression of stressful or traumatic events through writing or talking. Only one study⁶⁰ employed this intervention.

Finally, we included an eighth '*other*' category for studies that had a poorly defined treatment protocol. For example, in Brown & Bentley⁶⁶, the intervention offered varied between participants, and included one or a combination of the

following: psychotherapy, medication, relaxation and hypnosis. In addition, the psychotherapeutic component did not follow a discernible therapeutic approach.

Coding quality

The Jadad scale⁶², which has been cited as the most widely utilised bias/quality rating scale in medicine⁶³, was used to obtain a quality score for each study. The Jadad scale is based on the assessment of five objective aspects of design thought to identify bias. A score is derived based on the answers to the following five questions: (1) Was the study described as randomised? In the present review, studies that used opportunistic sampling⁷⁹ or did not randomly allocate the control group (i.e. used existing waiting list^{3,68}) were coded as not random. (2) Was the randomisation process described and adequate? (3) Was there a description of withdrawals and dropouts? A basic explanation of withdrawals and dropouts was deemed adequate, as participants in psychology studies are often assured for ethical reasons that they do not have to give a reason for withdrawing. (4) Was the study described as double-blind? (5) Was a blinding method described and appropriate? Double blinding is difficult in studies involving psychological interventions, and, therefore, a study received a score if it had been described as 'blind' only. This modification has been used in previous studies^{51,88-89}. If a study had not employed blind rating but described an adequate checking of the reliability of the ratings against blind assessment then a score was awarded. One study⁵⁹ that reported blinding of objective ratings (e.g. scoring of psychometric tests) with no mention of blinding for subjective measures (e.g. severity ratings) was not awarded a score. In addition, another study⁵ that reported blinding for pre-intervention assessment without mentioning post-intervention assessment, also did not receive a score. Studies that only used psychometric questionnaires^{73,78} with

objective scoring systems did not necessitate the use of a blind rater. Points for blinding were awarded to these studies, as not doing so may have resulted in scores that inaccurately implied poor methodological quality. Each question was scored 1 if the answer was 'yes' and 0 if the answer was 'no'. Scores can therefore range between 0 and 5. A breakdown of the scores can be found in Appendix D.2.

Table 1.
Characteristics of the Studies Included in the Meta-analysis

Study	Sample Size		Mean age	Skin condition	Intervention (session N ^o)	Mode of delivery	Exp group	Control	Follow up	Outcome measures ^a
	(exp)	(control)								
Brown & Bentley (1971) ⁶⁶	34	38	43.1	Atopic dermatitis	Undefined (various)	Individual	Patients	SMC	18	Skin severity (scale 1-5)
De L. Horne et al (1999) ⁶⁷	9	9	28.8	Atopic dermatitis	Imagery (1)	Individual	Patients	CG	0	Skin itchiness (VAS), mental and physical relaxation (VAS), state anxiety (STAI-s), trait anxiety (STAI-t)
Ehlers et al (1995) ³	27	23	25.4	Atopic Dermatitis	CBT informed ^a (12)	Group	Patients	SMC	12	Skin severity (idiosyncratic) itching and scratching (scale 0-10), skin related distress (MADQ) disability (scale 0-4), anxiety (STAI), depression (CES-D)
Evers et al (2009) ⁶⁸	59	30	37.0	Atopic dermatitis	CBT informed (10)	Group	Patients	WL	0	Skin severity (EASI), itch and scratch (ISDL) quality of life (ISDL), itch coping (ASE, PCS), illness cognitions (ISDL)
Gaston (1991) ⁶⁹	5	5	34.3	Psoriasis	Relaxation ^b (12)	Individual	Patients	WL	1	Skin severity (scale 0-3)
Habib & Morrissey (1999) ⁶⁷⁰	9	8	36.0	Atopic dermatitis	CBT informed (6)	Group	Patients + community	WL	0	Pruritus (ADAM), social anxiety (SCS)

Table 1 continues

Table 1. Continued

Study	Sample Size		Mean age	Skin condition	Intervention (session N ^o)	Mode of delivery	Exp group	Control	Follow up	Outcome measures ^a
	(exp)	(control)								
Hughes et al (1983) ⁷¹	10	10	27.3	Acne	Relaxation (5)	Individual	Patients	SMC+ CG ^c	1	Skin severity (scale 1-6)
Kabat-Zinn et al (1998) ⁷²	19	18	41.4	Psoriasis	Relaxation (until clearing)	Individual	Patients	SMC	0	Skin severity (idiosyncratic), psychological status (SCL-90, STAI)
Keinan et al (1995) ⁵	11	11	41.2	Psoriasis	Relaxation ^d (3)	Individual	Patients	WL	0	Skin severity (scale 1-6)
Kelly et al (2009) ⁷³	25	25	22.0	Acne	CBT informed ^e (2)	Self-help	Community	NT	0	Depressive experiences (DEQ), depression (BDI), shame (ESS), skin related distress (SKINDEX-16)
Linnet & Jemec (1998) ⁷⁴	14	11	28.3	Atopic Dermatitis	Psychotherapy (16)	Individual	Patients	SMC	6	Skin severity (SCORAD), anxiety (STAI)
Melin et al (1986) ⁷⁵	9	7	30.5	Atopic Dermatitis	Behavioural (2)	Individual	Patients	SMC	0	Skin severity (scale 0-3) annoyance (unspecified), scratching (frequency), itch in 'worst situations' (idiosyncratic)
Noren & Melin (1989) ⁷⁶ (a)	13	11	24.8	Atopic Dermatitis	Behavioural (2)	Individual	Patients	SMC	0	Skin severity (scale 0-3) scratching (frequency)

Table 1 continues

Table 1. continued

Study	Sample Size		Mean age	Skin condition	Intervention (session N ^o)	Mode of delivery	Exp group	Control	Follow up	Outcome measures ^a
	(exp)	(control)								
Noren & Melin (1989) ⁷⁶ (b)	10	11	24.8	Atopic Dermatitis	Behavioural (2)	Individual	Patients	SMC	0	Skin severity (scale 0-3) scratching (frequency)
Papadopoulos et al (1999) ⁵⁶	8	8	37.8	Vitiligo	CBT informed (8)	Individual	Patient+ community	SMC	5	Severity (AUTOCAD), quality of life (DLQI) self-esteem (RSES), situational body image (SIBID), automatic body image (BIATQ)
Papadopoulos et al (2004) ⁷⁷	29	15	36.1	Vitiligo	Group therapy (8)	Group	Patient+ community	SMC	12	Quality of life (DLQI) self esteem (RSES), situational body image (SIBID), automatic body image (BIATQ), general health (GHQ), stress (PSS)
Price et al (1990) ⁵⁹	11	12	42.8	Psoriasis	Group therapy	Group	Patients	SMC	6	Anxiety (HADS), depression (HADS), self esteem, Social adjustment (SAS), neuroticism (EPQ-R) extraversion (EPQ-R)

Table 1. continues

Table 1. continued

Study	Sample Size		Mean age	Skin condition	Intervention (session N ^o)	Mode of delivery	Exp group	Control	Follow up (months)	Outcome measures ^a
	(exp)	(control)	(exp)							
Van Os-Medendorp et al (2007) ⁷⁸	29	36	57.0	Pruritic	CBT informed	Individual	Patients	SMC	9	Itching/ scratching (idiosyncratic), itch coping (ICQ), skin related functioning (ACS), psychosocial functioning (SCL-90)
Vedhara et al (2007) ⁶⁰	31	28	48.0	Psoriasis	Emotional Disclosure (telephone contact)	Self-help	Patients+ community	CG	0	Skin severity (PASI), quality of life (DLQI), mood (POMS, HADS)
Wiholm et al (2000) ⁷⁹	66	50	Not reported	Unspecified	Relaxation (12)	Unknown	Community	NT	5	Skin severity (scale4-16), work related questionnaire (QWC), prolactin levels (blood tests)
Zachariae et al (1996) ⁸⁰	23	21	38.7	Psoriasis	CBT informed (12)	Individual	Patients	SMC	0	Skin severity (PASI) stress (BSQ)

Note. Abbreviation key: SMC = Standard medical care, CG = Comparison group, WL = Waiting list, NT = No treatment, VAS = Visual analogue scale, STAI = Spielberger Trait Anxiety Inventory, MADQ = Marburg Atopic Dermatitis Questionnaire, CES-D = Center of Epidemiological Studies Depression Scale, EASI = Eczema Area and Severity Index, ISDL = Impact of Chronic Skin Disease on Daily Life, ASE = Arthritis Self Efficacy questionnaire (modified), PCS = Pain Catastrophizing Scale (modified), ADAM = Atopic Dermatitis Assessment Measure, SCS = Self Consciousness Scale, SCL-90 = Symptom Checklist-90, DEQ = Depressive Experiences Questionnaire, BDI = Beck Depression Inventory, Experiences of Shame Scale, DLQI = Dermatological Life Quality Index, RSES = Rosenberg Self Esteem Inventory, SIBID = Situational Inventory of Body Image Dysphoria, BIATQ = Body Image Automatic Thoughts Questionnaire, GHQ = General Health Questionnaire, PSS = Perceived Stress Scale, HADS = Hospital Anxiety and Depression Scale, SAS = Social Adjustment Scale, EPQ-R = Eysenck Personality Questionnaire- Revised, ICQ = Itching Cognitions

Questionnaire, ACS= Adjustment to Chronic Skin Diseases Questionnaire, PASI = Psoriasis Area and Severity Index, POMS = Profile of Mood States, QWC = Quality Work and Competence, BSQ = Brief Stress Questionnaire.

^a Chosen from four original intervention groups. Other interventions included 'Dermatological Education', 'Relaxation', 'Dermatological education + CBT'.

^b Chosen from two original intervention groups. Other intervention group was 'Meditation + Imagery'.

^c Chosen from two comparison groups. Other comparison group was 'assessment only' and did not include post-intervention data

^d Chosen from two original intervention groups. These included 'relaxation' and 'relaxation + biofeedback'. In addition, study originally included two levels of outcome: (i) self report symptom improvement in relation to 'same time last year' and (ii) in relation to the start of the intervention phase. The review included the latter to reduce risk of confound.

^e Study originally employed two different types of cognitive therapy: (i) self-soothing and (ii) self-attack resisting. Only self-attack resisting included here.

Results

Effect sizes

Effect sizes for individual studies ranged between 0.00 and 1.96 (See Table 2). The average weighted effect size was $g = 0.50$ ($p < 0.001$) with a 95% confidence interval from 0.31 to 0.68. The homogeneity statistic was significant, $Q(20) = 31.94$, $p < 0.05$. These results are based on 21 studies with a combined sample size of $N = 457$ participants (range 5 to 66, $m = 21.76$)^b. Based on Cohen's⁸³ guidelines the effect of psychological interventions on skin conditions can be interpreted as 'medium'.

Effect sizes were calculated for different categories of outcome variables. There was a 'small' effect size for skin severity outcomes ($g = 0.27$, $p < 0.001$, 95% CI: 0.19 to 0.42) with a significant homogeneity statistic, $Q(13) = 39.61$, $p < 0.001$. There was a 'medium' effect size for outcomes relating to itch/scratch ($g = 0.67$, $p < 0.001$, 95% CI: 0.35 to 0.99) with a non-significant homogeneity statistic, $Q(7) = 9.860$, *ns*. There was also a 'medium' effect size for psychosocial factors ($g = 0.47$, $p < 0.001$, 95% CI: 0.28 to 0.65) with a non-significant homogeneity statistic $Q(13) = 17.67$, *ns*.

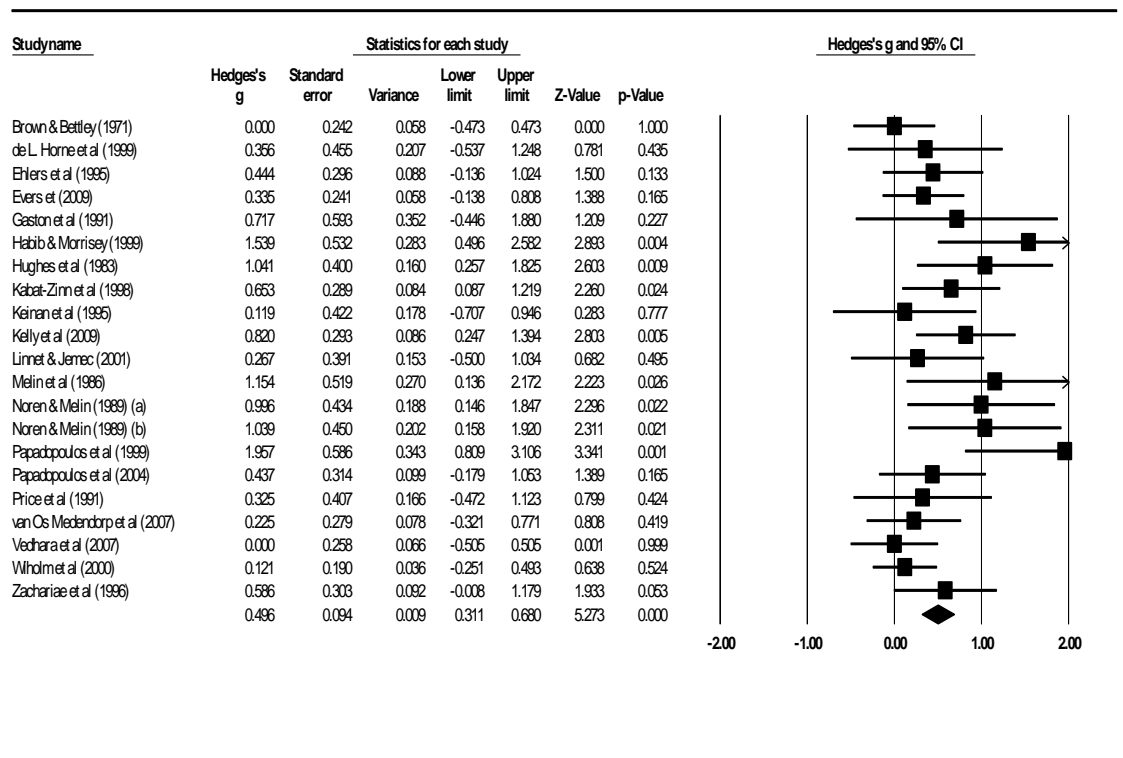
Separate effect sizes were also calculated for the different skin conditions examined in the studies. A 'small-to-medium' effect size was found for interventions targeting psoriasis ($g = 0.36$, $k = 6$, 95% CI: 0.09 to 0.63), a 'medium' effect size was found for interventions targeting atopic dermatitis ($g = 0.55$, $k = 9$, 95% CI: 0.24 to 0.86), while a 'large' effect size was found for

^b Nine studies that offered precise effect sizes were analysed separately. Effect sizes ranged from 0.00 to 0.82 with an average weighted effect size of $g = 0.33$ ($p < 0.01$, 95% CI: 0.12 to 0.54) and non significant heterogeneity ($Q(8) = 5.71$, *ns*)

interventions targeting vitiligo ($g = 1.12, k = 2, 95\% \text{ CI: } -0.36 \text{ to } 2.60$) and acne ($g = 0.90, k = 2, 95\% \text{ CI: } 0.43 \text{ to } 1.36$)

Table 2.

Forest Plot Showing Effect Sizes from the Studies



Moderators

There was significant heterogeneity between the primary effect sizes, necessitating a search of moderators of the relationship between psychological variables and skin condition outcomes. Characteristics relevant to ten moderating variables were examined in total. These have been grouped in terms of their relevance to the skin conditions, the interventions, the samples and studies' design.

Effect sizes of categorical variables were deemed meaningfully significant based on Cohen's⁸³ guidelines^c. To ensure reliable estimates of the moderating effect of the categorical moderators, those supported by less than three studies were excluded. Meta-regression analyses were used to investigate the effect of continuous moderators. Table 3 summarises the effect sizes of the moderators and results of the meta-regression analyses.

In terms of skin conditions, a 'large' effect size ($g = 0.92$, $k = 4$, 95% CI: 0.42 to 1.41) was found for interventions targeting skin conditions that are generally associated with impaired appearance only (vitiligo, acne) and a 'medium' effect size ($g = 0.40$, $k = 16$, 95% CI: 0.24 to 0.57) was found for interventions targeting conditions associated with impaired appearance and physical discomfort (psoriasis, atopic dermatitis, pruritic conditions).^d

In terms of intervention, only three types of interventions were used by three or more studies and could be reliably examined. Habit reversal ($g = 1.05$, $k = 3$, 95% CI: 0.53 to 1.58) had a 'large' effect size followed by CBT informed interventions ($g = 0.66$, $k = 7$, 95% CI: 0.32 to 1.02) and relaxation techniques

^c Subgroups of categorical moderators were not statistically compared due to the small number of studies in each subgroup

^d This grouping is not concrete, especially with respect to acne, which in very severe cases can result in bleeding.

($g = 0.45$, $k = 5$, 95% CI: 0.08 to 0.82) that showed 'medium' effect sizes.

Individually delivered interventions ($g = 0.59$, $k = 13$, 95% CI: 0.32 to 0.85) and group-based ($g = 0.48$, $k = 5$, 95% CI: 0.17 to 0.78) interventions both showed 'medium' effect sizes. Self-help interventions remained unexamined due to the small number of studies contributing to the effect. There was no relationship between duration of intervention and effect size ($\beta = -0.02$, *ns*).

In terms of sample, increased mean age of the experimental group was negatively associated with effect sizes ($\beta = -0.02$, $p < 0.01$), meaning that psychological interventions tended to have a smaller impact on outcomes in old relative to young samples. There was no relationship, however, between duration of the condition in the treatment group and effect sizes ($\beta = -0.02$, *ns*).

In terms of study design, effect sizes associated with interventions targeting participants recruited from the community ($g = 0.82$, $k = 3$, 95% CI: -0.04 to 1.67) were 'large' followed by intervention targeting participants recruited in clinics ($g = 0.46$, $k = 14$, 95% CI: 0.29 to 0.64) or a combination of patients and non-patients ($g = 0.34$, $k = 3$, 95% CI: -0.02 to 0.71) that were both 'medium'. Effect sizes associated with the comparison of intervention groups to standard medical care groups ($g = 0.57$, $k = 10$, 95% CI: 0.26 to 0.88); waiting list controls ($g = 0.57$, $k = 4$, 95% CI: -0.02 to 1.10) and 'no treatment' control groups ($g = 0.44$, $k = 3$, 95% CI: 0.11 to 0.76) were all 'medium'. Comparison groups were not examined due to small numbers. Meta-regression analysis indicated that increased time interval to follow up had a significant negative impact on effect size ($\beta = -0.03$, $p < 0.05$). Jadad scores for the studies ranged between 1-4 with a mean of 2.70. Meta-regression analysis showed that quality had no relationship with effect size ($\beta = 0.02$, *ns*).

Table 3.

Weighted effect sizes on skin outcomes as a function of the moderating variables^a

Moderator	K^b	Q^c	95%CIs	g^d	β^e
<i>Type of intervention</i>					
Habit reversal	3	0.06	0.53- 1.58	1.05	
CBT	7	12.32	0.32- 1.02	0.66	
Relaxation	5	6.19	0.08- 0.82	0.45	
Group Therapy	2				
Psychotherapy	1				
Emotional Disclosure	1				
Imagery	1				
Undefined	1				
<i>Mode of delivery</i>					
Individual	13	19.32	0.33- 0.86	0.59	
Group Therapy	5	4.50	0.18- 0.78	0.48	
Self-help	2				
Unspecified	1				
<i>Duration of Intervention</i>	18	24.73	-0.03 -0.03		-0.02
<i>Skin condition consequence</i>					
No physical discomfort	4	5.54	0.49- 1.20	0.85	
Physical discomfort	16	18.27	0.24- 0.57	0.40	
<i>Type of Exp Condition</i>					
Community	3	11.22	-0.38- 1.68	0.82	
Patients	14	12.90	0.29- 0.64	0.46	
Patients and Community	3	6.91	-0.02- 0.71	0.34	
<i>Type of Control Condition</i>					
SMC	10	16.61	0.26- 0.88	0.57	
Waiting List	4	5.22	0.02- 1.11	0.57	
No Treatment	3	4.61	0.11- 0.76	0.44	
Comparison Group	2				
Comparison+ SMC	1				
<i>Quality</i>	21	30.07	-0.12- 0.15		-0.01
<i>Time Interval to Follow Up</i>	21	31.94	-0.05- -0.00		-0.03*
<i>Mean Age of Exp group</i>	20	28.28	-0.04 -0.01		-0.02**
<i>Mean Duration of Condition</i>	12	16.90	-0.04 -0.01		-0.02

^a Effect sizes within moderating variables have been reported in order of size. Only characteristics that are supported by 3 or more studies have been included in the analysis to ensure reliability.

^b K = number of studies supporting the characteristic

^c Q statistic examining homogeneity within primary studies supporting the characteristic

^d Hedge's g

^e beta coefficient

* $p < 0.05$

** $p < 0.01$

Discussion

The aim of the present review was to examine the effect of psychological interventions on skin conditions. Overall, psychological interventions had a medium-sized effect across a range of outcomes. Decomposing outcomes into subcategories revealed stronger effects on outcomes relating to itch/scratch, followed by outcomes relating to psychosocial factors, whereas the effect on skin severity was small.

No previous review has calculated an average effect for the combination of outcome measures utilised in studies of psychological interventions for skin conditions. In terms of the subcategories of outcomes, results of the present meta-analysis are consistent with those of Chida et al⁵¹ who found that effects of interventions for itch/scratch were stronger than the effects of interventions on skin severity (they did not calculate effect sizes for psychosocial functioning). Larger effects of interventions on itch/scratch than on skin severity are intelligible on the grounds that itch/scratch is a behavioural measure whereas skin severity is an outcome. Gains in factors such as psychosocial functioning and scratch need to take hold first and may lead to gains in skin severity with time.

Do the Type of Intervention and Skin Condition Characteristics Influence Effectiveness?

Eight different categories of interventions emerged in the located studies: habit reversal, CBT informed, emotional disclosure, group therapy, imagery, psychotherapy, relaxation and 'other'. Only three of these – habit reversal, relaxation and CBT informed – could be reliably examined due to the low number of studies in the other categories. Results show that habit reversal had a large effect on outcomes. This is in line with the review by Chida et al⁵¹, who

put forward habit reversal as an effective intervention technique especially for outcomes relating to scratch and skin severity. Chida et al further recommended relaxation techniques and stress-managing psychotherapy. The recommendation for stress-managing psychotherapy was based on a study that in the present review has been defined as 'CBT informed'. The present study found relaxation techniques and CBT informed interventions to have a medium effect on skin conditions. As all of Chida et al's recommendations regarding psychological interventions are based on one or at most two studies, the present review is able to lend some support to their findings and to generalise them beyond atopic dermatitis. These three techniques/interventions fit with Chida et al's suggestion that to be effective, interventions for skin conditions should target stress levels and behaviours such as scratching. Relaxation techniques are targeted towards stress reduction, and CBT-informed interventions aim to alter cognitions that cause stress, whereas habit reversal targets the itch/scratch cycle.

Future research, however, should be conducted on less frequently investigated interventions as the small numbers of studies have prevented the reliable examination of their effect in relation to CBT informed interventions, relaxation techniques and habit reversal.

The coding frame utilised in this review enables the categorisation of disparate interventions and techniques, thus allowing for some comparison between groups. Interventions employed in the different studies, however, varied and overlapped considerably. This difficulty has been encountered in previous meta-analyses of psychological interventions for health problems such as asthma⁸⁹. Future research should, therefore, aim to employ well-defined and well-described interventions in order to enable a more detailed and accurate

comparison of what type of intervention moderates outcome and an assessment of the 'active ingredient' of change, especially considering that certain interventions such as CBT encompass a range of different techniques.

Examination of other intervention characteristics has also produced interesting findings. Individual and group based interventions have a similar effect on outcomes. In line with Sims⁹⁰ this may suggest that using group-based interventions is a more cost-effective approach to the psychological treatment of skin conditions. It may also allay concerns that individual therapy does not provide patients with an opportunity to reduce isolation.

There was no relationship between the duration of the intervention and its effect, suggesting that shorter interventions may be more cost-effective. However, larger follow up periods had a negative relationship with effect, which suggests that gains may not be maintained in the long term. This should be taken into account when designing interventions, for example, by the provision of booster sessions on a regular basis. Booster sessions of staff support interventions that aim to prevent the negative effects of stress have been shown to be helpful⁹¹. Booster sessions may be especially useful for behavioural approaches such as habit reversal. Literature has shown that booster sessions prolong the positive effects of implementation intentions on dietary behaviours⁹², and abstinence from smoking was doubled for a treatment group that received telephone booster sessions⁹³.

Despite literature (e.g.,⁵⁷⁻⁵⁸) suggesting that longer duration of conditions is associated with poorer outcomes, the present study found no relationship between duration of condition and effect size. However, as a number of authors did not report duration of condition, findings in the present review are based on a relatively low number of participants. Future research needs to consider the

influence of duration of condition when investigating the effectiveness of psychological interventions.

Do Study and Sample Characteristics Influence Effect Sizes?

Studies tended to have moderate methodological adequacy. Most studies did not define their randomisation or blinding procedures. Results indicated that higher quality studies were not associated with larger effect sizes. These findings are in line with Lipsey and Wilson⁵⁵ who found that effect sizes of high quality and low quality studies did not differ significantly. These results might suggest that findings are consistent across methodological variations and that effect sizes are not being inflated by experimental bias.

There was no difference in effects when outcomes were compared against control groups that were receiving standard medical care compared to no treatment or waiting list control groups. This suggests that in the present review there is no bias associated with 'no treatment' controls as predicted on the basis of the results by Lipsey et al⁵⁵. Furthermore, this suggests that psychological interventions can have an effect above and beyond medical care. This is similar to findings of meta-analyses investigating the effectiveness of psychological interventions for other health related problems such as pain⁹⁴ and irritable bowel syndrome⁶¹.

Limitations

Only nine of the studies included in the analysis reported data (i.e. means and standard deviations) from which precise effect sizes could be calculated. This means that for variables reported as significant relatively conservative estimates have been used that may underestimate the true effect of the interventions described. However, where variables were non-significant and reported as *ns* only they were excluded from analysis, which may have

introduced a positivity bias in the results. Future research is encouraged to report full results so that meta-analytic studies can be conducted reliably. This would aid the advancement of the field as meta-analyses are considered high-order reviews and are often used to inform clinical guidelines.

No dissertations or unpublished studies were included in this review. The risk of publication bias arises if primarily significant results are published. Given that 25% of the included studies reported mostly non-significant results, the risk of publication bias in this field can be considered reduced. However, if positive results are over-represented in the published literature, it is possible that they are also over-represented in the present review.

A final limitation pertains to the exclusion of complimentary therapies such as hypnosis. This allowed for a pure assessment of psychological interventions. Hypnosis, however, is used extensively in dermatology and warrants its own review. The same also applies to educational interventions. A comparison of educational, hypnosis and psychological interventions may be informative for the field.

Conclusions and Implications for Clinical Practice and Future Research

This is, to our knowledge, the first meta-analysis to investigate the effect of psychological interventions for a range of chronic skin conditions in adults. It is also the first review to systematically consider moderators of treatment effects. Valuable conclusions and recommendations for clinical practice and future research can be made. The overall effect of psychological interventions for skin conditions was found to be medium, with strongest effects being found for itch/scratch followed by psychosocial factors and smaller effects found for skin severity. The findings suggest that psychological interventions have a beneficial effect on skin conditions. Findings also show that duration and mode

of delivery of intervention does not influence the effect. Therefore, a cost-effective approach may involve the delivery of short, group-based psychological interventions. Habit reversal has been shown to have a positive effect on the treatment of skin conditions. As habit reversal can be administered by trained nurses, it may be a more cost-effective approach compared to interventions that require the skills of psychologists or psychiatrists. This would also make psychological interventions more accessible, which is in line with a stepped care model of service delivery proposed by Thompson⁹⁵.

It is clear from this review that more RCT's are needed in the area, as the majority of studies in the field (90%) had to be excluded due to being anecdotal or inadequately controlled. Studies need to ensure high methodological quality and adequate reporting of their findings. This is the first systematic review to quantify and compare the effect of numerous and varied outcome measures of interventions for skin conditions, especially with regards to psychosocial outcomes. Future research, however, should aim to reach an agreement on commonly utilised measures in order to enhance comparability between studies. Moreover, future research should aim to employ validated measures of severity and itch/scratch, in order to minimise possible inaccuracies introduced by the use of idiosyncratic measures⁹⁶. This is especially important in the field of psychology where double blinding is difficult, as research indicates that lack of double blinding can inflate effect-sizes⁹⁷. Future research should also focus on the long term-effects of interventions or aim to investigate whether booster sessions improve sustainability of gains. Lastly, more studies are needed for less frequently investigated interventions, and studies need to report a specific theoretical framework for the psychological intervention employed and detailed intervention protocols. This would enable

future reviews to compare psychological interventions and draw firmer conclusions as to the superiority of therapeutic models. It would also be useful if future reviews, with a broader focus, compared the effectiveness of psychological, educational and hypnosis-based interventions in order to ascertain the most cost-effective approach.

References

1. Koblenzer CS. Psychosomatic concepts in dermatology. *Arch Dermatol* 1983; **119**: 501-12
2. Jafferany M. Psychodermatology; a guide to understanding common psychocutaneous disorders. *J Clin Psychiat* 2007; **9**: 203-13
3. Ehlers A, Stangier U, Gieler U. Treatment of atopic dermatitis: a comparison of psychological and dermatological approaches to relapse prevention. *J of Consult and Clin Psychol* 1995; **63**: 624-35
4. Basra MKA, Shahrukh M. Burden of skin diseases. *Expert Rev Pharmacoecon Outcomesn Res* 2009; **9**: 271-83
5. Keinan G, Segal A, Gal U, Brenner S. Stress management for psoriasis patients: The effectiveness of biofeedback and relaxation techniques. *Stress Medicine* 1995; **11**: 235-41
6. Garner S. Acne Vulgaris. In: *Evidence-based Dermatology* (Williams H., ed). London: BMJ, 2003
7. Herd RM, Tidman MJ, Prescott RJ, Hunter JA. The cost of atopic eczema. *Br J Dermatol* 1996; **135**: 20-3
8. Ellis CN, Drake LA, Prendergast MM *et al*. Cost of atopic dermatitis and eczema in the United States. *J Am Acad Dermatol* 2002; **46**: 361-70
9. Faulstich ME, Williamson DA. An overview of atopic dermatitis: Toward a bio-behavioural integration. *J Psychosom Res* 1985; **29**: 647-54
10. Kimyai-Asadi A, Usman A. The role of psychological stress in skin disease. *J Cutan Med Surg* 2001; **5**: 140-5 2001
11. Fortune DG, Richards HI, Kirby B *et al*. A cognitive-behavioural symptom management programme as an adjunct in psoriasis therapy. *Br J of Dermatol* 2002; **146**: 458-65

12. Kent G, Keohane S. Social anxiety and disfigurement: The moderating effect of fear of negative evaluation and past experience. *Br J of Clin Psychol* 2001; **40**: 23-34
13. Gilchrest BA. Pruritus: pathogenesis, therapy, and significance in systemic disease states. *Arch Intern Med* 1982; **142**: 101-5
14. Thompson A. Body image issues in dermatology. In: *Body Image: A Handbook of Theory, Research & Clinical Practice* (Cash, T. F. & Pruzinsky, T, eds.), 2nd edn. New York: Guilford Press (in press).
15. Ginsburg IH, Prystowsky JH, Kornfeld DS, Wolland H. Role of emotional factors in adults with atopic dermatitis. *Int J Dermatol* 1993; **32**: 656-60
16. Linnet J, Jemec CBE. An assessment of anxiety and dermatology life quality inpatients with atopic dermatitis. *Br J Dermatol* 1999; **140**: 268-72
17. Rumsey N, Clarke A, White P, Wyn-Williams M, Garlick W. Altered body image: appearance-related concerns of people with visible disfigurement. *J Adv Nurs* 2004; **48**: 443-53
18. Thompson A, Kent G. Adjusting to disfigurement: processes involved in dealing with being visibly different. *Clin Psychol Rev* 2001; **21**: 663-82
19. Cole, WCMA, Roth, HL, Sachs, LB. Group psychotherapy as an aid in the medical treatment of eczema. *J Am Acad Dermatol* 1988; **18**: 286-91
20. Richards HL, Fortune DG, O'Sullivan T *et al*. Patients with psoriasis and their compliance with medication. *J Am Acad Dermatol* 1999; **41**: 581-3
21. Gawkrödger DJ, Ormerod AD, Shaw L *et al*. Guideline for the diagnosis and management of vitiligo. *Br J Dermatol* 2008; **159**: 1051-76
22. Hanifin JM, Cooper KD, Ho VC *et al*. Guidelines of care for atopic dermatitis. *J Am Acad Dermatol* 2004; **50**: 391-404

23. Koblenzer CS. Psychotherapy for intractable inflammatory dermatoses. *J Am Acad Dermatol* 1995; **35**: 609-612
24. Fried RG, Hussain, SH. Nonpharmacologic management of common skin and psychocutaneous disorders. *Dermatol Ther* 2008; **21**: 60-8
25. Galassi F. Cognitive-behavioral techniques. *Clin Dermatol* 1999; **16**: 715-23
26. Azrin N, Nunn G. *Habit control in a day*. New York: Pocket Books; 1977
27. Noren P. Habit reversal: a turning point in the treatment of atopic dermatitis. *Clin Exp Dermatol* 1995; **20**: 2-5
28. Panconessi E, Galassi F, Sarti MG, Bellini MA. Biofeedback, cognitive-behavioral methods, hypnosis: "alternative psychotherapy?" *Clin Dermatol* 1998; **16**: 709-10
29. Tsushima WT. Current psychological treatment for stress-related skin disorders. *Cutis* 1988; **42**: 402-4
30. Shenefelt PD. Biofeedback, cognitive-behavioral methods, and hypnosis in dermatology: Is it all in your mind? *Dermatol Ther* 2003; **16**: 114-22
31. Shenefelt PD. Complementary psychocutaneous therapies in dermatology. *Dermatol Clin* 2005; **23**: 723-34
32. Papadopoulos L, Bor R, Legg, C. Psychological factors in cutaneous disease. *Psychol Health Med* 1999; **4**: 107-26
33. Koblenzer CS. Successful treatment of a chronic and disabling dermatosis by psychotherapy. *J Am Acad Dermatol* 1986; **15**: 390-393
34. Wittkowski A, Richards HL. How beneficial is cognitive behaviour therapy in the treatment of atopic dermatitis? A single-case study. *Psychol Health Med* 2007; **12**: 445-9

35. De L. Horne DJ, White AE, Varigos GA. A preliminary study for psychological therapy in the management of atopic eczema. *Br J Med Psychol* 1989; **62**: 241-8
36. Halford KW, Miller S. Cognitive behavioural stress management as treatment of atopic dermatitis: A case study. *Behav Change* 1992; **9**: 12-24
37. Manuso JSJ. The use of biofeedback-assisted hand warming training in the treatment of chronic eczematous dermatitis of the hands: a case study. *J Behav Ther & Exp Psychiat* 1977; **8**: 445-6
38. McMenemy CJ, Katz, RG, Gipson M. Treatment of eczema by EMG biofeedback and relaxation training: A multiple baseline analysis. *J Behav Ther & Exp Psychiat* 1988; **19**: 221-7
39. Stowe JE, Goldenberg E. Systematic desensitization as a component for treatment of alopecia areata: A case series. *Psychol Per* 1980; **46**: 875-81
40. Hughes HH, England R, Goldsmith DA. Biofeedback and psychotherapeutic treatment of psoriasis: a brief report. *Psychol Rep* 1981; **48**: 99-102
41. Hayne SN, Wilson CC, Jeffe PG, Britton BT. Biofeedback treatment of atopic dermatitis. *Biofeedback Self-Reg* 1979; **4**: 195-208
42. Dobes RW. Amelioration of psychosomatic dermatosis by reinforced inhibition of scratching. *J Behav Ther & Exp Psychiat* 1977; **8**: 185-7
43. Abel EA, Moore US, Glathe JP. Psoriasis patient support group and self-care efficacy as an adjunct to day care center treatment. *Int J Dermatol* 1990; **29**: 640-3

44. Kang Seng T, Siew Nee T. Group therapy: a useful and supportive treatment for psoriasis patients. *Int J Dermatol* 1997, **36**, 110-2
45. Weber MB, Fontes Neto PT, Prati C et al. Improvement in pruritus and quality of life in children with atopic dermatitis and their families after joining support groups. *J European Acad Derm-Venereol* 2008; **22**: 992-7
46. Gupta MA, Gupta AK. Use of Eye Movement Desensitization and Reprocessing (EMDR) in the treatment of dermatologic disorders. *J Cutan Med Surg* 2002; **6**: 415-21
47. Cormia F. Basic concepts in the production and management of psychosomatic dermatoses. *Br J Dermatol* 1951; **7**: 83-151
48. Kleve L, Rumsey N, Wyn-Williams M, White P. The effectiveness of cognitive-behavioural interventions provided at Outlook: a disfigurement support unit. *J Eval Clin Pract* 2002; **8**: 387-95
49. Fortune DG, Richards HL, Kirkby B, et al. A cognitive-behavioural symptom management programme as an adjunct in psoriasis treatment. *Br J Dermatol* 2002; **146**: 458-65
50. Fortune DG, Richards, HL, Griffiths CEM, Main CJ. Targeting cognitive-behaviour therapy to patients' implicit model of psoriasis: Results from a patient preference controlled trial. *Brit J Clin Psychol* 2004; **43**: 65-82
51. Chida Y, Steptoe A, Hiraoka N et al. The effects of psychological intervention on atopic dermatitis. *Int Arch Allergy Immunol* 2001; **144**:1-9
52. Ersser SJ, Latter S, Sibley A et al. Psychological and educational interventions for atopic eczema in children. *Cochrane Database Syst Rev* 2007; **3**: 1-39

53. Bessell A, Moss TP. Evaluation the effectiveness of psychosocial interventions for individuals with visible differences: A systematic review of the empirical literature. *Body Image* 2007; **4**: 227-38
54. Glass G, McGaw B, Lee Smith M. Meta-analysis in Social Research. London: Sage Publications, 1981.
55. Lipsey MW, Wilson DB. Educational and behavioural treatment: confirmation from meta-analysis. *Am Psychol* 1993; **48**: 1181-209
56. Papadopoulos L, Bor R, Legg C. Coping with the disfiguring effects of vitiligo: a preliminary investigation into the effects of cognitive-behavioural therapy. *Br J Med Psychol* 1999; **62**: 385-96
57. Goodman G. Acne and acne scarring- the case for active and early intervention. *Aust Fam Physician* 2006; **35**: 503-4
58. Vena GA, Vestita M, Cassano N. Can early treatment with biologics modify the natural history of comorbidities? *Dermatol Ther* (2010); **23**: 181-93
59. Price ML, Mottahedin I, Mayo PR. Can psychotherapy help patients with psoriasis? *Clin Exp Dermatol* 1991; **16**: 114-7
60. Vedhara K, Morris R, Booth R *et al*. Changes in mood predict disease activity and quality of life in patients with psoriasis following emotional disclosure. *J Psychosom Res* 2007; **62**: 611-9
61. Zijdenbos II, De Wit NS, van der Heijden GJ *et al*. Psychological treatments for the management of irritable bowel syndrome. *Cochrane Database Syst Rev* 2009; **1**
62. Jadad AR, Moore RA, Carroll D, Jenkinson C, Reynolds DJM, Gavanagh DJ, McQuay H. Assessing the quality of reports of randomised clinical trials: is blinding necessary? *Control Clin Trials* (1996); **17**: 1-12

63. Bausell RB, Lee WL, Soeken KL *et al.* Larger effect sizes were associated with higher quality ratings in complementary and alternative medicine randomised controlled trials. *J of Clin Epidemiol* 2004; **57**: 438-46
64. Moher D, Liberati A, Tetzlaff J, Altman, DG. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Ann Intern Med* 2009; **151**: 264-9
65. Johnson BT. *DSTAT. Software for the Meta-analytic Review of Research Literatures* (rev. ed). [Computer software. Hillsdale, NJ: Erlbaum, 1993.
66. Brown DG, Bettley FR. Psychiatric treatment of Eczema: A controlled trial. *Br Med J* 1971; **2**: 729-34
67. De L Horne DJ, Taylor M, Varigos G. The effects of relaxation with and without imagery in reducing anxiety and itchy skin in patients with eczema. *Behav Cog Psychother* 1999; **27**: 143-51
68. Evers AWM, Duller P, De Jong EMGJ *et al.* Effectiveness of a multidisciplinary itch-coping training programme in adults with atopic dermatitis. *Acta Derm Venereol* 2009; **89**: 57-63
69. Gaston L, Crombez J, Lasseonde M *et al.* Psychological stress and psoriasis: Experimental and prospective correlation studies. *Acta Derm Venereol* 1991; **156**: 37-43
70. Habib S, Morrissey S. Stress management for atopic dermatitis. *Behav Change* 1999; **16**: 226-36
71. Hughes H, Brown BW, Lawlis GF, Fulton JE. Treatment of acne vulgaris by biofeedback relaxation and cognitive imagery. *J Psychosom Res* 1982; **27**: 185-91

72. Kabat-Zinn J, Wheeler E, Light T *et al*. Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA). *Psychosom Med* 1998; **60**: 625-32
73. Kelly AC, Zuroff DC, Shapira LB. Soothing oneself and resisting self-attacks: The treatment of two intrapersonal deficits in depression vulnerability. *Cogn Ther Res* 2009; **33**: 301-13
74. Linnet J, Jemec GBE. Anxiety level and severity of skin condition predicts outcome of phototherapy in atopic dermatitis patients. *Int J Dermatol* 2001; **40**: 632-6
75. Melin L, Frederiksen T, Noren P, Swebilius BG. Behavioural treatment of scratching in patients with atopic dermatitis. *Br J Dermatol* 1986; **115**: 467-74
76. Norén P, Melin L. The effect of combined topical steroids and habit-reversal treatment in patients with atopic dermatitis. *Br J Dermatol* 1989; **121**: 359-66
77. Papadopoulos L, Walker C, Anthis L. Living with vitiligo: A controlled investigation into the effects of group cognitive-behavioural and person-centred therapies. *Dermatol Psychosom* 2004; **5**: 172-7
78. Van Os-Medendorp H, Ros WJG, Eland-de Kok PCM *et al*. Effectiveness of the nursing programme 'Coping with itch': a randomised controlled study in adults with chronic pruritic skin disease. *Br J of Dermatol* 2007; **156**: 1235-44
79. Wilhelm C, Arnetz B, Berg M. The impact of stress management on computer-related skin problems. *Stress Med* 2000; **16**: 179-285

80. Zachariae R, Øster H, Bjerring P, Kragballe K. Effects of psychologic intervention on psoriasis: A preliminary report. *J Am Acad Dermatol* 1996; **34**: 1008-15
81. Borestein M, Hedges L., Higgins J, Rothstein H. *Comprehensive Meta-analysis Version 2.*, Englewood, NJ: Biostat, 2005.
82. Cooper HM. *Integrating Research: A Guide for Literature Reviews.* London: Sage, 1986.
83. Cohen J. A Power primer. *Psychol Bull* 1992; **112**: 155-9
84. Webb TL, Sheeran P. Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychol Bull* 2006; **132**: 249-68
85. Hunter JE & Schmidt EL. *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings.* Newbury Park, CA: Sage, 1990.
86. Higgin J, Green S. *Cochrane handbook for systematic reviews of interventions Version 5.0.1.* The Cochrane Collaboration, 2008.
87. Shenefelt PD. Therapeutic management of psychodermatological disorders. *Expert Opin Pharmacother* 2008; **9**: 973-85
88. Astin JA, Beckner W, Socken K et al. Psychological interventions for rheumatoid arthritis: a meta-analysis of randomised controlled trials. *Arthrit Rheum* 2002; **47**: 291-302
89. Yorke J, Fleming SL, Shuldham CM. Psychological interventions for adults with asthma. *Cochrane Databse Syst Rev* 2006; **1**: CD002982
90. Sims J. The evaluation of stress management strategies in general practice: An evidence-led approach. *Br J Gen Pract* 1997; **47**: 577-82
91. Van Wyk BE, Pillay-Van Wyk V. Preventive staff support interventions for health workers. *Cochrane Database Syst Rev* (2010); **3**

92. Chapman J, Armitage CJ. Evidence that boosters augment the long-term impact of implementation intentions on fruit and vegetable intake. *Psychol Health* 2010; **25**: 365-81
93. Metz K, Floter S, Kroger C, Donath C, Piontek D, Gradl S. Telephone booster sessions for optimising cessation for patient in rehabilitation centers. *Nicotine Tob Res* (2007); **9**: 853:863
94. Dixon KE, Keefe FJ, Scipio CD, Perri LCM, Abernethy AP. Psychological interventions for arthritis pain management in adults: A meta-analysis. *Health Psychol* (2007); **26**: 241-250
95. Thompson A. Psychosocial impact of skin conditions. *Dermatol Nurs* 2009; **8**: 43-8
96. Charman C, Chambers C, Williams H. Measuring atopic dermatitis severity in randomised controlled clinical trials: What exactly are we measuring? *J Invest Dermatol* 2003; **120**: 932-41
97. Wood L, Egger M, Gluud LL, Schulz KF, Juni P, Altman DG, Gluud C, Martin RM, Wood AJG, Sterne JAC. Empirical evidence of bias in treatment effect estimates in controlled trials with different interventions and outcomes: meta-epidemiological study. *BMJ* (2008); **15**: 601-605

Chapter Two: Research Report

Attentional Biases in People with Skin Conditions: Nature and Determinants

Abstract

People with skin conditions often experience psychological distress primarily involving social anxiety and fear of negative evaluation (FNE). Attentional biases have been implicated in the aetiology and maintenance of social anxiety. Whereas, there is some evidence that appearance concerns, including those arising from skin conditions, lead to biased attention for appearance related stimuli, this is the first study to compare cognitive processes underlying the distress associated with skin conditions and social anxiety. Attentional biases relating to six types of word stimuli were examined, using the Visual Dot Probe task; FNE, somatic sensations, appearance threat, physical threat, positive and neutral. Measures of social anxiety, appearance concerns, shame and self-esteem were administered to investigate predictors of biases. The groups differed in appearance concerns but not social anxiety, shame and self-esteem. No attentional biases were found towards threatening word stimuli. An attentional bias was found away from positive word stimuli, predicted by high shame and low self-esteem. No other predictors accounted for variations in attentional responses. It remains unclear whether cognitive processes underlying distress associated with skin conditions and social anxiety are dissimilar or not captured in the present study due to limitations. The findings are discussed in relation to the existing literature.

Abstract Word Count: 199

Attentional Biases in People with Skin Conditions: Nature and Determinants

People with dermatological conditions such as acne, vitiligo, psoriasis, eczema and port wine stains tend to experience higher levels of emotional distress than the general population (Kent & Keohane, 2001). Emotional reactions include depression, shame, low self-esteem, appearance concerns and anxiety. However it has been argued that it is social anxiety and, particularly, fear of negative evaluation that are most relevant in understanding the psychological distress experienced (e.g. Kent & Keohane, 2001; Leary, Rapp, Herbst, Exum & Feldman, 1998; Thompson & Kent, 2001).

Studies have shown similarities in the way that distress is experienced by people with disfigurement and people with social phobia. For example Newell and Marks (2000) found a similar pattern of responses between people with disfigurement and people with social phobia to the Fear Questionnaire, which includes subscales on social phobia and avoidance. No studies to date, however, have compared the cognitive processes underlying the psychological distress associated with disfiguring skin conditions and those of social anxiety. This is important given the extensive literature that implicates cognitive processes - particularly biased attention - in the aetiology and maintenance of social anxiety. It is therefore essential to clarify whether similar processes are at play for people with disfiguring skin conditions, as this would have implications for psychological interventions offered. This introduction will outline the relevance of social anxiety in accounting for distress experienced by people with skin conditions, discuss what is known about cognitive processes and biases in social anxiety, describe studies on attentional biases in people with appearance concerns and skin conditions and explore which factors associated

with disfigurement might predict processing biases in people with skin conditions.

The Relevance of Social Anxiety in Accounting for Psychological Distress in People with Skin Conditions

As skin conditions are often highly visible to other people, the disfiguring effects add a clear social dimension to the psychological impact encountered (Thompson, in press; Papadopoulos, 1999). Research findings suggest that implicit negative attitudes are held towards people with disfiguring skin conditions (Grandfield, Thompson & Turpin, 2005). Implicit negative attitudes refer to attitudes that are not conscious and are thus uncontaminated by social desirability (Greenwald & Banaji, 1995). These findings indicate an evolutionary or entrenched cultural basis to the social reactions met (Thompson, in press). Misconceptions that the conditions are contagious have been cited as one of the reasons for the social stigma experienced (Miles, 2002). People with disfigurements are subject to intrusive or avoidant behaviours from others and even verbal and physical abuse (Furness, Garrud, Faulder & Swift, 2006). Not surprisingly then, people with visible disfigurements report experiencing difficulties in interactions with other people and a preoccupation with others' reactions to their appearance (MacGregor, Abel, Brut, Lauer & Weissmann, 1953).

Experiences of stigma lead to feelings of anticipated rejection (or 'felt stigma', Jacoby, 1994), which Kent & Keohane (2001) argue can be understood in terms of social anxiety and fear of negative evaluation due to similarities in terms of expectations of other people's reactions and behaviours. Similarly, Newell's (1999) fear-avoidance model, postulates that negative experiences encountered in social situations result in social anxiety and social avoidance.

Social anxiety is defined by the Diagnostic and Statistical Manual, 4th edition (DSM-IV, American Psychological Association) as a “persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others” (p.456), and social avoidance is a recognised aspect in the criteria for diagnosis. Social avoidance can take the form of not engaging in social situations or intimacy, or other behavioural strategies such as concealment and camouflage (Kent, 2002). For example, in a qualitative study of people living with the condition vitiligo, a disease that causes skin de-pigmentation, Thompson, Kent & Smith (2002) found that most participants avoided sexual intimacy and activities that involved social exposure such as swimming.

These self-protective behaviours can be advantageous in reducing anxiety in the short term; however, they lead to fewer opportunities for exposure and habituation, thus maintaining social anxiety in the long term. Furthermore, avoidance can distance potential sources of support (Miles, 2002) with long-term negative consequences in terms of quality of life, mood and relationships (Thompson & Kent, 2001; Kent, 2002).

Social Anxiety and the Role of Attentional Biases

Biases in cognitive processes, e.g. attention, have long been implicated in the aetiology and maintenance of anxiety disorders, including social anxiety. For example, an influential model by Clark & Wells (1995) postulates that socially anxious individuals are vigilant to indicators of negative evaluation. Once the potential of negative evaluation is detected attention is shifted toward the self and internal cues indicative of anxiety (e.g. symptoms of physiological arousal, such as sweating) are noticed. These are used to shape a representation of the self, which in turn, is used as evidence of what other

people are thinking. According to this model, the individual does not look to others for information on how they are being received; the obvious implication being that disconfirmation of the individual's negative appraisals is hindered. Although there is some debate concerning the nature of biases in attention (e.g. as to whether attention is directed towards or away from threatening stimuli), there is, however, consensus that a bias in attention does exist in people with social anxiety that does not exist in people without it and that this bias is reliably demonstrated in different types of anxious populations (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg & van Ijzendoorn, 2007)¹.

Attentional Biases in People with Skin Conditions

Attentional biases relating to appearance have been primarily investigated in analogue samples or clinical samples not relating to skin conditions (e.g. eating disorders). In a study by Labarge, Cash & Brown (1998) women who were deemed as 'appearance schematic' (based on scores on the Appearance Schemas Inventory, Cash & Labarge, 1996) showed higher Stroop interference to appearance related words than aschematic women. This study, however, did not compare positive versus negative (threatening) appearance words. In another study by Rosser, Moss & Rumsey (2010), ambiguous appearance words were classified by participants as appearance related or non-appearance related and as positive, negative or neutral and subsequently presented in a Visual Dot Probe task. Results indicated that higher levels of appearance concerns (as measured by the Derriford Appearance Scale-24, Moss Harris & Carr, 2004) were associated with increased attentional biases towards words that had been classified as appearance related. However, there was no difference in attentional biases between words classified as negative,

¹ The interested reader is directed to this systematic review for a thorough description of the different theories of attentional biases in anxiety.

positive and neutral. Furthermore, as the effect size between appearance concerns and attentional biases was small the authors concluded that more mediators than just appearance concerns must be implicated in the processing biases observed.

In another study, significant differences were found in attentional biases between a sample of participants with eating disorders and a control group, but again these were not specific to negative/ threatening stimuli (Shafran, Lee, Cooper, Palmer & Fairburn, 2007). Instead biases were found towards negative and neutral pictures relating to weight and shape, and positive pictures relating to eating.

These studies, however, have failed to consider what factors influence the biases observed. Furthermore, the presence of attentional biases relating to appearance concerns cannot be generalised to people with skin conditions on the basis of these findings.

In the only study to date to measure attentional biases in people with skin conditions, Fortune et al (2003) investigated reaction times in people with psoriasis using the modified Stroop task. Four categories of words were examined: disease-specific (e.g. flaking, scaling, burning), negatively emotional relating to self (e.g. stupid, awkward, ugly), negative emotional relating to others' reactions (e.g. ridicule, repelled, ignore) and neutral. Results showed significantly slower reaction times in the psoriasis group compared to the control group in all categories of words except neutral.

To investigate factors that predict the attentional biases, Fortune et al (2003) gathered measures of psychological distress relating to anxiety, depression and worry and found that these did not influence the observed Stroop interference. They concluded that participant status (patient vs. control)

was more important than psychological distress in predicting the interference. They speculated that, alternatively, the stigma experienced by participants may have resulted in the interference reaching ceiling so that psychological distress was not able to make an additional contribution. The measures used were the Hospital Anxiety and Depression Scale, (Zigmond and Snaith, 1983) and the Penn State Worry Questionnaire (Mey, Miller, Metzger, & Borkovec, 1990), which are not related to social anxiety or disfigurement. It could be argued that in order to validly conclude that participant status is more important in predicting attentional biases, the measures used need to be more relevant and specific to the type of psychological distress known to be experienced by people with disfiguring skin conditions.

The measure of attentional bias used in the study by Fortune et al (2003) was the Stroop task. This however has been criticised as a potentially invalid measure of attentional bias (MacLeod, 1991). Instead MacLeod, Mathews & Tata (1986) argue that it is possible that processing is the same for both the neutral and threat-related words but that participants' negative affective state is intensified by the presentation of the threat-related words and consequently impairs reaction times, the bias therefore occurring at response selection rather than during encoding. According to this theory, therefore, impaired reaction times should not necessarily be interpreted as a direct measure of attention.

MacLeod et al (1986) put forward the Visual Dot Probe (VDP) paradigm as a superior measure of attention. In the original VDP, a pair of stimuli (e.g. words) was presented, consisting of one emotionally threatening and one neutral word or two neutral words. After a set amount of time the word stimuli disappeared and a probe (a dot) appeared after the presentation of the emotionally-threatening-neutral word pairs only. The participant's task was to

indicate the presence of the dot. An attentional bias was considered indicative of heightened vigilance to the word groups that contained an emotionally threatening word. Mogg and Bradley introduced the differentiation variant of the VDP where the probe is a letter (either E or F) and it replaces one of the two words in all trials, including the neutral-neutral pairs. The participant is required to indicate what letter has appeared. Response latencies are compared between the two spatial locations, and decreased response latency to the probe replacing the emotionally threatening word is seen as an indicator of whether visual attention is shifted towards that word. This variation of the VDP decreases the risk of response bias (e.g., participants learning that the dot only appears after the presentation of an emotionally threatening word).

MacLeod et al (1986) argue that the VDP is a better measure of visual attention because the presence of the emotionally threatening word can both facilitate and impair probe detection depending on probe location and this directional effect cannot be accounted for by general explanations of negative affect as in the Stroop task.

What Variables Associated with Disfigurement Might Predict Processing Biases?

Clinical severity of the disfigurement poorly predicts the degree of psychological distress experienced (e.g. Rumsey, Clarke, White, Wyn-Williams & Garlick, 2004) and the relationship is moderated by a number of factors, not least the location of the disfigurement and the measure of severity (self-rated vs. objective). For example, Miles (2002) found that severity affects levels of anxiety and depression differently depending on the location of the affected area. In emotionally charged areas (face, neck, scalp, groin, hands) severity was found to be a significant predictor of anxiety and depression, whereas in

non-emotionally charged areas (legs, arms, trunk) it was not. Moss (2005) found that self-rated severity is more critical to the adjustment process than objective severity and that the two are often uncorrelated. Perceived severity also plays an important role in a model put forward by Rumsey, Newell, Clarke, Newman, Moss, Kent et al (under submission). This model proposes that subjective experiences of perceived severity and perceived noticeability of the affected area can lead to appearance or disfigurement becoming more salient within the person's self concept and more prone to negative valence (how negatively or positively the affected individual perceives their appearance). In turn, salience and negative valence can have significant influence on psychological outcomes (Rumsey et al, 2004). Thus, Rumsey et al (under submission) have concluded that perceived severity, perceived noticeability, salience and valence of the disfigurement are influential in predicting psychological distress, whereas clinical severity is not.

Limited evidence exists that disease type is influential, for example, one study found that people with psoriasis experience higher emotional distress than people with vitiligo (Porter, Beuf, Lerner & Nordlund, 1986). Similarly, in terms of demographic variables, findings in the literature pertaining to the contribution of age and gender are equivocal (e.g. Andreasen & Norris, 1977; Brown, Roberts & Browne, 1988; Ben-Tovim & Walker, 1995; Robinson, Clarke & Cooper, 1996).

An influential review (Thompson & Kent, 2001) that tries to organise the factors influencing the relationship between psychological distress and disfigurement has linked the experience of social anxiety to concepts such as shame, low self esteem and appearance concerns. Thompson and Kent (2001)

argue that there may even be a conceptual overlap between these constructs and that social anxiety may act as the “overarching notion” (p. 672).

Self-esteem has been shown as an important factor in attentional biases in non-disfigured populations. In a reaction time study, individuals with low self-esteem were shown to have higher attentional vigilance for rejection-related words as compared to acceptance-related words (Dandeneau and Baldwin, 2004). Dandeneau, Baldwin, Baccus, Sakellaropoulo and Pruessner (2007) argue that individual differences in self-esteem drive cognitive mechanisms of attention to rejection. It is important therefore to examine the contribution of self esteem to processing biases in people with skin conditions, especially considering the link between experiences of stigma and feelings of anticipated rejection seen in people with disfigurements (e.g., Jacoby, 1994; Kent & Keohane, 2002).

Shame has also been said to originate from experiences of stigma (Gilbert, 2002) and has been specifically linked to skin conditions ('dermatological shame') because of their common association with ideas of contamination and disgust (Kellet, 2002). Shame can be categorized as external or internal, the former relating to a person's beliefs and feelings on how others perceive them and the latter to self-evaluation and an internalisation of others' negative views (Miles, 2002). Kellet (2002) argues that individuals with skin conditions who experience shame display cognitive processes, including attentional biases to interpersonal information that help maintain the shame. For example, they may notice negative reactions and minimize positive ones. This has not been empirically tested however, and therefore it is important in the present study to determine shame's contribution to attentional biases relating to social and appearance threat.

The Present Study

The present study used the Visual Dot Probe (VDP) task to investigate attentional biases to social and appearance threat in people with skin conditions. As attentional biases are implicated in the aetiology and maintenance of social anxiety it seemed important to determine whether similar cognitive processes are associated with disfiguring skin conditions, due to the implications for psychological interventions offered. Measures of social anxiety, appearance concerns, salience, valence, perceived severity and perceived noticeability, shame, self-esteem, and demographic variables were used to explore what factors predict the biases in attention.

Aside from word groups relating to social threat and appearance threat, a word group relating to physical threat was included, to rule out attentional biases being associated with general negativity bias and a word group of positively emotional words was included in order to rule out a general emotionality bias.

The first hypothesis predicted that people with skin conditions and people without skin conditions would differ in measures of social anxiety, appearance concerns, shame and self-esteem. The second hypothesis predicted that people with skin conditions would show an attentional bias towards threatening stimuli relating to social anxiety and appearance concerns. No attentional bias towards physical threat, positive and neutral words was predicted. Finally, the third hypothesis held that the effect of skin condition on attentional biases would occur over and above the demographic variables, social anxiety, appearance concerns, shame, self-esteem, salience, valence, perceived visibility and severity.

Method

Design

The main independent variable was the presence or absence of disfigurement. The secondary independent variables were measures of social anxiety, appearance concerns, shame, self-esteem, and demographic variables (age, gender). The dependent variable was the presence of attentional bias as measured by response latencies to six types of word stimuli: social threat negative evaluation, social threat somatic, appearance threat, physical threat, positive and matched neutral controls.

Participants

A power analysis using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007) was conducted to determine the required sample size for a reliable regression model. Twelve predictors (based on the number of measures used) were inputted into the analysis. Thus, assuming an effect size of $f^2 = 0.05$ (based on a meta-analysis in the field of attentional biases, Bar-Heim et al, 2007), significance level of $\alpha = 0.05$ and power of 0.8, 160 participants were required.

Recruitment of participants. Ethical approval for the study was obtained by the Leeds West NHS Ethics Committee and the University of Sheffield Department of Psychology Ethics Sub-Committee (See Appendix B.1. and B.2.). Participants were recruited through advertisements in two local dermatology clinics and the university. Advertising for the skin condition group was conducted through the circulation of leaflets (see Appendix E.1) at the clinics and emails at the university. Control participants were recruited only through emails at the university. Participants in the skin condition group were required to have a formal diagnosis for at least 6 months prior to recruitment (to

avoid the complicating issue of a new diagnosis) and all participants were required to be over 18 years of age, with no known learning disability. Participants were allocated to the skin condition group if they fulfilled the criteria for recruitment as verified by the consultant dermatologists of the clinics, or through self-selection if recruited at the university.

Participant characteristics. A total of 122 participants were recruited, 53 in the skin condition group and 69 in the control group. The skin condition group consisted of 39 female and 14 male participants with a mean age of 28.27 ($SD = 13.54$). The control group consisted of 50 female and 19 male participants with a mean age of 24.57 ($SD = 9.67$). A total of four participants were recruited from dermatology clinics and 118 from the university. The types of skin conditions prevalent in the skin conditions group were eczema (37.73%) and acne (32.07%). Other skin conditions included psoriasis (9.43%), vitiligo (3.77%), lichen sclerosis (3.77%) and chronic urticaria (1.88%). Three participants (5.66%) had more than one diagnosis and three participants (5.66%) had an unspecified diagnosis.

Measures

Social anxiety was measured using the Social Avoidance and Distress scale (SAD, Watson & Friend, 1969) and the Fear of Negative Evaluation scale (FNE, Watson & Friend, 1969). The SAD consists of 28 items (e.g., 'I feel relaxed even in unfamiliar social situations') that are responded to by selecting true or false. The FNE consists of 30 items (e.g., 'I am afraid that others will not approve of me') that are also responded to by selecting true or false. Reliability analysis showed good internal consistency in the present study with $\alpha = 0.89$ and $\alpha = 0.91$ for the SAD and FNE respectively.

Appearance concerns were measured using the Derriford Appearance Scale (DAS-24, Carr, Moss & Harris, 2005). The DAS-24 is a validated shorter version of the DAS-59 (Carr, Harris & James, 2000). Internal consistency was found to be $\alpha = 0.92$. The DAS-24 ascertains the presence or absence of a primary feature of concern (in terms of appearance) and its nature. Participants can also list up to two other secondary features of concern. Following are 24 items, rated between 1-4, which measure appearance concern levels (e.g., 'how distressed do you get when you see yourself in the mirror?'). Most items can be responded to regardless of whether the participant has indicated the presence of a feature of concern. For items that are specific to a feature of concern (e.g., 'other people misjudge me because of my feature') there is an option to respond with N/A, which is scored with a zero.

Measures of salience of appearance, valence of appearance, and perceived severity and noticeability of feature of concern were also taken. These have been developed by leading professionals in the field (Rumsey et al, under submission) and used in research concerning appearance and disfigurement for the Healing Foundation. Salience of appearance is a seven-item questionnaire (e.g., 'for me my appearance is an important part of who I am') responded to on a six-point Likert type scale. In the present sample the internal consistency was found to be $\alpha = 0.91$. Valence is a six-item questionnaire (e.g., 'I am satisfied with my physical appearance') responded to on a six-point Likert type scale. Internal consistency was found to be $\alpha = 0.94$. Perceived severity is a two-item questionnaire (e.g., 'how different from normal do you judge the appearance of the area of your body that you are concerned about to be?') responded to on a seven-point Likert type scale. The correlation of the two items was found to be $r = 0.70$. Perceived noticeability is also a two-

item questionnaire (e.g., 'consider the area of your body that you are concerned about. How visible is it to other people if fully clothed?') responded to on a seven-point Likert type scale. The correlation of the two items was found to be $r = 0.47$. This correlation is low because the second item asks the same question but in the context of the participants wearing swimwear.

Shame was measured using the Internalized Shame Scale (ISS, Cook, 1988). The ISS is a 30-item questionnaire (e.g., 'I feel like I am never quite good enough'). The response options are 'never', 'seldom', 'sometimes', 'often', and 'almost always', which are scored between 0-4. Internal consistency was found to be $\alpha = 0.96$.

Self-esteem was measured using the Rosenberg Self Esteem Scale (RSES, Rosenberg, 1986). The RSES is a 10-item questionnaire (e.g. 'I feel like I am a person of worth at least on an equal plane with others'). The response options are 'strongly agree', 'agree', 'disagree', 'strongly disagree', which are scored between 0-3. The RSES proved internally consistent ($\alpha = 0.90$).

All measures can be found in Appendix C. In accordance to the scoring manuals, to obtain composite scores, items in each measure were summed².

As high composite scores in all measures represented high values of their

² In order to account for missing item values in the composite scores, we applied the following calculation: (number of items in questionnaire/ number of items responded to) x the score obtained from the items responded to. For example, if a questionnaire had 30 items and a participant responded to 26 of these, obtaining a score of 21, the calculation would yield a scaled score of: $(30/26)*21= 24.23$. The usual method for accounting for missing values consists of obtaining mean scores, which is better used when the total measure score is a mean rather than a sum. It was important to follow the scoring manual instructions of summing the measures instead of calculating a mean, in order to obtain meaningful scores that would be comparable to other studies.

underlying constructs, reverse coding was applied to items where high scores represented low values of the underlying construct.

Procedure

The procedure took on average 45 minutes to complete. On arrival, participants were given an Information Sheet (see Appendix E.2.a. and E.2.b.) and Consent Form (see Appendix E.3.a and E.3.b.). Participants were then asked to complete their demographic details (see Appendix E.4.) and the psychometric measures described above.

Socially threatening situation. After completion of the measures participants were seated at a computer where a screen of instructions informed them that: *“This part of the experiment will take approximately 10 minutes to complete. After that the experimenter will take you to another room to join a group of other participants, in order to have a group discussion about your experience of this study and to provide you with a debrief of the experiment. Your feedback will be very valuable”*

This manipulation was designed to create a socially threatening situation in order to heighten anxiety and activate any existing biases. Similar social evaluative manipulations have been used in previous research (e.g., Mogg & Marsden, 1990; Mogg, Bradley, & Hallowell, 1994; Ononaiye, Turpin & Reidy, 2007; Webb et al, 2010) because the most consistent attentional bias effects are demonstrated with participants under high-state anxious conditions. Kent (2002) noted that any impending social event would be sufficient to achieve this. A group situation was therefore deemed adequate for the purpose of creating a socially threatening situation in this study.

The effect of the social evaluative situation on anxiety was measured using the Spielberger State Trait Anxiety Inventory –state version (STAI_s,

Spielberger, Gosuch, Lushene, Vagg & Jacobs, 1983)³, which was administered three times during the study. The first measured baseline levels of social anxiety and was completed alongside the other psychometric measures at the start. The second STAI was completed immediately after the instructions on the group feedback session, and the final STAI was completed at the end of the procedure after participants were informed that the group feedback process would not happen.

The visual dot probe. Participants then completed a differentiation variant of the VDP (Salemnic, van den Hout & Kindt, 2007). This is different to the original VDP in that it requires participants to differentiate between two types of probes. Participants were presented with the following instructions: *“The next part of the experiment is a computer task. You will see two words on the screen, one above the other. One of these words will be replaced by an E or by an F. Your task is to press ‘E’ on the keyboard if the letter E appears and ‘F’ if the letter F appears. You need to do this as quickly and as accurately as possible. Press the SPACE BAR to start a short practice session.”*

Attentional bias was measured by obtaining an attentional bias index score from the response latencies based on the following equation by MacLeod et al (1986): $0.5 \times [(UpLt - UpUt) + (LpUt - LpLt)]$, where U = upper position, L = lower position, p = probe, t = threat word. A positive value indicates an attentional bias towards a given word/ word group, while a negative value indicates an attentional bias away from a given word/ word group.

The VDP was prepared using E-prime software. A trial of the VDP consisted of the following procedure of events: A central fixation cross was presented for 500ms. A pair of words was then presented for 200ms, above and

³ Internal consistency of the STAI in the present study was found to be $\alpha = 0.92$

below the fixation point⁴. The words in the pair were positioned 3cm apart on the screen and presented in upper case, size 30 font (Webb et al, 2010). After 25ms the probe (an E or an F, chosen to enhance the perceptual difficulty of the task, thus minimising the influence of response bias, Weierich Treat & Hollingworth, 2008) appeared in the location of one of the words on the screen. The participant was required to identify whether the probe was an E or F by pressing a designated key on the keyboard. The probe remained on the screen until a response was made. After a 500ms or 1250ms random delay (to maintain vigilance) the central fixation cross appeared again for the next trial.

Word stimuli. Attentional biases to social threat were measured by words representing negative evaluation and somatic sensations experienced in conditions of social threat. These were taken from a word list derived by Ononaiye et al (2007). Attentional biases relating to appearance concerns were measured by words representing appearance threat. As no appearance threat wordlist relevant to a wide range of skin conditions was available from previous studies, the wordlist was developed by the authors. It was ensured that there was no confound between appearance and 'negative evaluation' words. The VDP also included physically threatening words, taken from Ononaiye et al (2007), to rule out attentional biases being related to general negativity. Positively emotional words, taken from Webb et al (2010), were also included to rule out attentional biases being related to general emotionality. Words were

⁴ More traditionally used 500ms presentations have been criticised for being too long (e.g. Bradley, Mogg & Miller, 2000; Fox et al, 2001) as participants have time to attend to both words making it difficult to conclude whether the bias was due to an initial shift of attention or a difficulty in withdrawing attention. Weierich et al (2008) have identified that 100-200ms allows enough time for an orienting shift but not enough time for a second shift away from location, thus aiding in conclusions that an attentional bias was due to an initial shift of attention.

paired with neutral words matched for length and frequency of use in the English language (Kucera & Francis, 1967). Each word group consisted of 8 words (see Table 1 for a list of the threat and positive words) thus totalling 40 word pairs. There were an additional 40 neutral word pairs, taken from Webb et al (2010), used as fillers to make the objective of the experiment less obvious to the participants. Each word pair was presented twice in random order and with the probe replacing a different word each time, amounting to 160 trials.

Table 1.

Word stimuli by category

Negative	Somatic	Appearance	Physical	Positive
Evaluation	Sensation	Concerns	Threat	Emotionality
Ashamed	Blushing	Skin	Ambulance	Gallant
Disgraced	Faint	Marked	Deadly	Playful
Embarrassed	Nausea	Blemish	Emergency	Rejoice
Humiliated	Nervous	Appearance	Violence	Angelic
Inadequate	Palpitations	Defect	Coffin	Happy
Inferior	Shaky	Flaw	Stroke	Affectionate
Mocked	Sweating	Disfigurement	Fatal	Glorious
Worthless	Tense	Body	Coronary	Cheer

After completion of the VDP, a message appeared on the screen informing participants that there would not be a group discussion of the experiment and asking them to complete the final STAs. The experimenter then provided a written debrief letter (See Appendix E.5.) explaining the purpose of

the study and of the deceptive socially threatening situation. The debrief also contained details of support groups and self-help resources for people with skin conditions.

Results

Participant Characteristics

A randomisation check was performed on the demographic variables, which revealed no significant differences between the groups (skin condition vs. control) in terms of age, $F(1,119) = 3.23$, *ns*, and gender, $\chi^2(1) = 0.02$, *ns*⁵. To investigate the first hypothesis of group differences on measures of social anxiety (SAD and FNE), appearance anxiety (salience, valence, perceived severity, perceived noticeability), shame (ISS) and self esteem (RSES), a Multivariate Analysis of Variance (MANOVA)⁶ was performed with participant status (skin conditions vs. control) as the between-subjects factor⁷. The multivariate effect of group was non-significant, $F(9, 95) = 1.61$, *ns*⁸. However,

⁵ A measure of educational level was also taken, however due to possible ambiguity in the wording of the question ('how many years have you been in education') it was not answered consistently by participants and could not be reliably analysed.

⁶ Box's M indicated equality of variance - covariance matrices, $M(36, 34698) = 37.21$, *ns*

⁷ As the severity and noticeability scales comprise of only two items each, when neither had been responded to a composite score was not obtained. Therefore the MANOVA reported is based on 57 control and 49 clinical participants for whom scaled scores on all questionnaires were available.

⁸ When the MANOVA is run on unscaled totals of the measures, with participants excluded for missing variables, there is a tendency towards a main effect of group on the measures, $F(1, 92) = 1.75$, $p = 0.089$.

because we were anticipating differences in the measures of disfigurement, we examined the univariate statistics⁹. Results are presented in Table 2.

⁹ Levene's test indicates that all univariate statistics have equal variances, all $F_s(1, 120) < 3.24$, *ns*

Table 2

Means (SDs) and F values of questionnaire scores between groups

Variable	Group		Univariate F
	Skin condition	Control	
SAD ^a	7.92 (6.90)	6.82 (6.12)	0.76
FNE	17.94 (8.27)	15.34 (8.28)	2.58
DAS-24	46.20 (14.07)	39.11 (11.46)	8.19*
Salience ^a	32.55 (7.23)	30.16 (7.95)	2.59
Valence	20.31 (8.52)	23.26 (7.52)	3.58
Perceived severity	7.82 (2.91)	6.14 (2.39)	10.63*
Perceived noticeability	9.57 (3.16)	7.89 (3.17)	7.38
ISS	48.00 (23.87)	38.61 (23.33)	4.17
RSES	18.10 (6.24)	19.63 (5.73)	1.73

Notes. The Bonferroni correction has been applied to take into account the multiple comparisons. Thus the new significance criterion is $0.05 / 9 = 0.006$. * $p < 0.006$

Higher scores indicate higher distress, except for self-esteem and valence.

^a Inspection of the variables' histograms revealed normal distributions for all except the SAD and 'salience' measures. Mann-Whitney U tests were performed on those measures and the results corroborated those of the univariate ANOVAs.

SAD = Social Avoidance and Distress, FNE = Fear of Negative Evaluation, DAS-24 = Derriford Appearance Scale-24, ISS = Internalised Shame Scale, RSES = Rosenberg Self-Esteem Scale.

^bNo formal clinical cut-offs indicative of 'caseness' exist for any of the measures. Normative means of the SAD and FNE have been reported as 9.11 ($SD = 8.01$) and 15.47 ($SD = 8.62$) respectively (Watson and Friend, 1969). The mean of the DAS-24 in the general population is 37.52 ($SD = 15.29$) and in clinical samples 53.7 ($SD = 17.3$), (Moss et al, 2005) although these means cannot be directly compared to our sample as they are derived from an all female sample. In the ISS scores above 50 are considered "possibly problematic" and above 60 "extreme" (Turner & Lee, 1998), while in the RSES scores below 15 are considered indicative of "low self-esteem" (Rosenberg, 1989).

Participants in the skin condition group had significantly higher scores on the DAS-24 ($M = 46.20$, $SD = 14.07$) compared to control participants ($M = 39.11$, $SD = 11.46$), indicating higher levels of appearance concerns. Both groups' means were below those reported by Moss et al (2005) for clinical samples, but were both higher than the reported norms of the general population. The percentage of participants who had a feature of concern was 86.80% in the skin conditions group and 73.91% in the control, however a Chi-Square test indicated that the relationship between participant status and presence or absence of a feature of concern was not significant, $\chi^2(1) = 3.05$, ns. This suggests that the groups differed, not in terms of the presence or absence of appearance concerns, but in terms of their extent, which is further corroborated by a significant difference in severity ratings, where participants in the skin condition group ($M = 7.82$, $SD = 2.91$) had significantly higher scores than participants in the control group ($M = 6.14$, $SD = 2.39$), $F(1,111) = 10.63$, $p < 0.006$.

In the skin conditions sample, 58.70% specified their skin as their primary concern, with the percentage going up to 76.09% when secondary concerns were also taken into account. Other primary concerns in the skin conditions group include weight/ shape/ size (26.09%), stomach (15.21%), hair (8.70%), legs (10.90%), nose (4.35%), cellulite (2.17%) and fingers (2.17%). There was more diversity in the features indicated by the control group with the most common feature of concern being weight/ shape/ size (37.25%), followed by stomach (15.69%), face/ facial features (9.80%), legs (7.84%), hair (7.84%), and wrinkles, toes, chest, gait, height, nose, back, smile, scar, eyes, body hair with 1.96% each.

No significant differences were found between the groups in measures of social anxiety, salience, valence, perceived noticeability, shame and self-esteem. In terms of social anxiety both groups scored below the norms reported by Watson & Friend (1969) for the SAD, whereas for the FNE the skin condition group scored above the norms and the control group scored below. With respect to shame, both groups scored below the cut-off (50) that indicates 'possibly problematic' levels of shame (Turner & Lee, 1989), though the mean of the skin condition group was only marginally below ($M = 48$). Both groups scored above the cut-off for low self-esteem, indicating that neither group had low self-esteem.

Socially threatening situation. To investigate the effectiveness of the socially threatening situation in increasing anxiety, mean scores of the three STAI scales (see Table 3) were submitted into a two-between (group: skin condition vs. control group) by three-within (time-point: first, second, third) repeated measures ANOVA¹⁰. Results showed a significant effect of time-point of administration, $F(2,115) = 3.62, p < 0.05$. The mean score across both groups at the first time-point was $M = 35.80$ ($SD = 10.02$). A small increase in anxiety levels is evident in both groups at the second time-point ($M = 36.37, SD = 11.34$), followed by a small decrease at the third time-point. ($M = 34.66, SD = 11.06$). Pairwise comparisons revealed that the significant difference is found between the second and third time-points, $F(1, 116) = 7.13, p < 0.01$. In addition, the difference between the first and third time-points was marginally significant, $F(1, 121) = 3.82, p = 0.053$.

¹⁰ Mauchley's test of Sphericity indicated that the equality of variance assumption was satisfied, $W(2) = 1.00, ns$

The main effect of group was non-significant, $F(2,115) = 0.02$, *ns*, as was the interaction between time and group, $F(2, 114) = 0.12$, *ns*, suggesting that the inclusion of the 'socially threatening situation' did not impact differently on the two groups.

Table 3

Means (SDs) of the three STAs measures

Group	STAs administration		
	First	Second	Third
Clinical	35.99 (10.14)	36.31 (11.66)	34.85 (11.39)
Control	35.66 (10.01)	36.42 (11.18)	34.30 (10.80)

STAs = Spielberger State Anxiety Inventory

Attentional Biases

In accordance with the recommendations by Fox et al (2001), we excluded response latencies that were more than 2.5 standard deviations from each participant's mean, or faster than 100ms. Furthermore, to ensure that the probe had been seen, only correct trials (where the E and F were correctly identified) were entered into the attentional bias index score calculations. The average error rate was 5.62% in the control group and 4.37% in the skin conditions group. Mean attentional bias scores (and *SD*) of the clinical and control groups for each word type are presented in Table 4.

Table 4

Mean attentional bias scores of each group for each word type

Word group	Skin condition group		Control group	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Neg. Evaluation	-6.77	54.66	3.81	47.34
Somatic Sensations	11.47	49.43	-3.26	36.08
Appearance	-6.40	47.66	4.00	39.46
Physical	-5.93	39.83	1.42	31.89
Positive	-18.42	52.12	3.42	34.65
Neutral	1.63	24.23	-0.56	16.08

To examine the second hypothesis attentional bias scores were submitted to a two-between (group: skin condition vs. control) by six-within (word type: negative evaluation, somatic sensations, appearance threat, physical threat, positive, neutral) repeated measures ANOVA. No significant main effect of word type was found, $F(5,119) = 2.71$, *ns*. There was, however, a significant main effect of group, $F(1, 119) = 4.94$, $p < 0.05$). Specifically the skin conditions group showed a mean attentional bias score of -4.07 ($SD = 13.36$) and the control group showed a mean attentional bias score of 1.47 ($SD = 13.75$). However, this main effect was qualified by a significant two-way interaction between group and word type ($F(3.80, 452.11) = 2.72$, $p < 0.05$)¹¹.

Attentional biases in individual word groups. Inspections of histograms revealed high levels of kurtosis in the distribution of all word groups. Therefore non-parametric Mann Whitney U-tests were used to examine differences between the groups in each word group. No significant differences were found between participants in the clinical and control condition in the negative evaluation, $U = 1739.00$, *ns*, somatic sensations, $U = 1679.50$, *ns*, appearance threat, $U = 1679.50$, *ns*, physical threat, $U = 1621.00$, *ns*, and neutral words, $U = 1639.00$, *ns*. There was, however, a significant difference between the clinical and control groups in attentional biases relating to positive words. Specifically, control participants attended towards positive words ($M = 3.42$, $SD = 34.65$), whereas participants in the clinical group attended away from positive words ($M = -18.42$, $SD = 52.12$), $U = 1357.50$, $p < 0.05$.

¹¹ Mauchley's test of sphericity indicated that the equality of variance assumption was violated. Therefore the Greenhouse-Geisser correction has been applied to the degrees of freedom, which returns a more conservative significance level.

What Factors Predict Attentional Biases?

To investigate potential reasons for the difference in attentional responses to positive words between the groups and to investigate the factors that predict differences in attentional processes to the different word groups (third hypothesis), a series of hierarchical multiple regressions were performed with attentional bias scores as the dependent variables, and demographic variables and measures of social anxiety, appearance anxiety, shame and self-esteem as predictors. Tables 5 and 6 display the correlations between the variables.

Table 5.

Correlations between measures of age, social anxiety, appearance concerns, shame and self esteem

Predictors	Age	SAD	FNE	DAS-24	Salience	Valence	Severity	Noticeability	ISS
SAD	0.11								
FNE	-0.11	-0.54**							
DAS-24	-0.16	0.48**	0.57**						
Salience	0.12	0.15	0.51**	0.44**					
Valence	-0.05	-0.37**	-0.46**	-0.72**	-0.27**				
Severity	0.07	-0.28**	0.034**	0.63**	0.31**	-0.60**			
Noticeability	-0.00	0.23*	0.32**	0.49**	0.25**	-0.57**	0.57**		
ISS	-0.04	0.59**	0.74**	0.79**	0.39**	-0.69**	0.52**	0.42**	
RSES	0.10	-0.54**	-0.72**	-0.69**	-0.38**	0.64	-0.43**	-0.31**	-0.86**

* $p < 0.01$, ** $p < 0.05$, SAD = Social Avoidance and Distress, FNE = Fear of Negative Evaluation,

DAS-24 = Derriford Appearance Scale, ISS = Internalised Shame Scale, RSES = Rosenberg Self-Esteem Scale

Table 6.

Correlations between measures of social anxiety, appearance concerns, shame, self esteem and attentional biases

Predictors	Neg. Evaluation	Somatic	Appearance	Physical	Positive	Neutral
Age	-0.17	0.00	0.00	0.00	0.00	0.00
SAD	-0.05	0.12	-0.19*	-0.13	-0.08	-0.05
FNE	-0.05	0.18	-0.11	-0.07	-0.05	-0.05
DAS-24	-0.03	0.13	-0.11	-0.02	-0.11	-0.03
Saliency	0.18*	0.08	0.03	-0.07	0.00	-0.10
Valence	-0.05	-0.11	0.07	0.10	0.11	-0.09
Severity	-0.01	0.19*	-0.08	0.09	-0.14	-0.08
Noticeability	0.01	0.178	-0.02	-0.01	-0.10	-0.13
RSES	-0.04	-0.13	0.08	0.11	0.19*	-0.08
ISS	-0.02	0.11	-0.15	-0.03	-0.04	0.11

* $p < 0.01$, ** $p < 0.05$, SAD = Social Avoidance and Distress, FNE = Fear of Negative Evaluation,

DAS-24 = Derriford Appearance Scale, ISS = Internalised Shame Scale, RSES = Rosenberg Self-Esteem Scale

High correlations ($r > 0.70$) were observed between a number of predictors, indicating possible multicollinearity (see Table 5). Tabachnick & Fidell (1996) advise that consideration should be given to reduce variables correlating higher than $r = 0.70$, although statistical problems only arise when correlations exceed $r = 0.80$ ¹². Only one of the correlations was above 0.80 (shame and self-esteem) and collinearity diagnostics indicated that all Variance Inflation Factor values were below 10 (a suggested cut-off, Field, 2005). If multicollinearity exists, then it can result in an inflation of the standard error to the extent that none of the coefficients are significant (Berry, 1993, cited in Tabachnick & Fidell, 1996). It was decided to keep both shame and self-esteem in the subsequent hierarchical regression, despite their high correlations, on theoretical grounds. Self-esteem has been shown to be an important predictor of attentional biases to rejection (Dandeneau et al, 2004), while it is argued that skin related shame causes and in turn is maintained by cognitive mechanisms, such as attentional biases to negatively interpreted interpersonal information (Kellet, 2002). It is therefore theoretically important to include both variables in the regression in order to ascertain their contribution to attentional biases.

¹² Factor analysis was used to reduce the variables to coherent independent subsets of variables (Tabachnick & Fidell, 1996) to be entered into the regression analysis instead. However, as the extracted factors were not helpful in the investigation of what predicts variance in attentional biases, we reverted back to our original strategy and entered the observed variables into the hierarchical regression. The factor analysis and subsequent hierarchical multiple regression, using the factors as predictors, can be found in Appendix E.6.

Hierarchical multiple regressions. The demographic variables were entered into the first step of the regression. Measures of social anxiety, which have a known effect on attentional processes, were entered into the second step, novel variables, measuring appearance concerns, shame and self esteem, were entered into the third step, while participant status (skin condition group vs. control group) was entered into the final step of the model. This model allows for the examination of the contribution of the novel variables to the attentional biases above and beyond social anxiety, and also allows testing of the hypothesis that participant status is more important than the psychological variables in accounting for the attentional biases. This analysis was repeated for all word groups. Prior to regressions, histograms and scatterplots of the residual values of the dependent variables were inspected to determine if the assumptions for linearity, homoscedasticity and normality were satisfied. As a violation of normality was observed in the somatic sensations word group, a logarithmic transformation was conducted, which succeeded in correcting the distribution. Prior to the logarithmic transformation, a constant was added to the somatic sensations variable, relative to its lowest negative value, in order to ensure that all values were above zero. Demographic variables accounted for 5.7% of the variance in attentional biases relating to the somatic sensations word group (log), $R^2(2, 119) = 0.05$, $p < 0.05$, with both age ($\beta = 0.18$, $p < 0.05$) and gender ($\beta = -0.18$, $p < 0.05$) contributing significantly to the variance. Demographic characteristics were not found to be significant for any of the other word groups, all $R^2(2, 119) < 0.03$, *ns*. Social anxiety measures were not found to significantly predict the variance in responses over and above demographic variables in any word groups, all $\Delta R^2(2, 117) < 0.04$,

ns. In the negative evaluation, somatic sensations, appearance, physical threat and neutral word groups, the additional measures of appearance concerns, shame and self esteem were not found to significantly predict variance in responses over and above demographic variables and social anxiety, all $\Delta R^2 (7, 110) < 0.10$, *ns*, and neither did participant status, all $\Delta R^2 (1, 109) < 0.01$, *ns*.

However, in the positive word group the additional measures of appearance concern, shame and self esteem significantly increased the variance explained in response to the positive word group by 14.20%, $\Delta R^2 (7, 110) = 0.14$, $p < 0.05$. Inspection of unique contributions of each predictor revealed that self-esteem ($\beta = 0.70$, $p < 0.001$) and shame ($\beta = 0.70$, $p < 0.01$) were significant predictors of attentional biases away from positive words. In addition, participant status increased the variance significantly explained by 4% ($\Delta R^2 (1, 109) = 0.04$, $p < 0.05$). Table 7 presents the results of the regression analysis for positive words.

Although multicollinearity has not in the case of the present study resulted in an underestimation of the importance of the independent variables, the pattern of findings for shame and self-esteem in the regression model appear somewhat unusual. In simple correlations (see Table 6) attentional biases to positive words were positively correlated with self-esteem but not correlated with shame, and the two independent variables were inversely correlated to each other (see Table 5). However, in the regression both self-esteem and shame positively predicted attentional bias to positive words. If shame is taken out of the regression model then self-esteem remains a significant predictor, whereas if self-esteem is taken out of the regression model shame is no longer a significant predictor. This pattern of results suggests that the two independent variables (self-esteem and shame)

may have a suppressor relationship. Tabachnick and Fidell (1986) explain that suppression happens when variables can be found to be predictive of the dependent variable merely because of their correlation with another variable, and that suppressor variables are so named because they suppress the error variance thus enhancing prediction of the dependent variable. In the case of the present research, self-esteem seems to be a suppressor variable to the extent that once shared variance for self-esteem is taken out shame becomes a predictor of attentional biases to positive words. Thus it is the non self-esteem related aspects of shame that are predictive of attentional biases away from positive words.

Table 7.

Regression model for attentional bias scores of positive words

Predictors	B	SE	β	t
Step 1				
Age	-0.31	0.36	-0.08	-0.85
Gender	15.50	9.17	0.16	1.69
Step 2				
SAD	-0.44	0.78	-0.06	-0.57
FNE	0.12	0.77	0.02	0.15
Step3				
DAS-24	-0.36	0.57	-0.11	-0.63
Saliency	0.73	0.57	0.14	1.30
Valence	-0.43	0.82	-0.08	-0.53
Severity	-1.85	2.00	-0.12	-0.92
Noticeability	-0.92	1.56	-0.07	-0.59
RSES	5.17	1.36	0.70	3.82**
ISS	1.32	0.42	0.70	3.20**

Step 4

Ppt status	-20.09	8.15	-0.23	-2.47*
------------	--------	------	-------	--------

Notes. Betas reported for the final step. $R^2(2, 119) = 0.02$, *ns*, for Step 1; $\Delta R^2(2, 117) = 0.01$, *ns* for Step 2; $\Delta R^2(7, 110) = 0.14$, $p < 0.05$ for Step 3; $\Delta R^2(1, 109) = 0.04$, $p < 0.05$ for Step 4; * $p < 0.01$, ** $p < 0.001$, SAD = Social Avoidance and Distress, FNE = Fear of Negative Evaluation, DAS-24 = Derriford Appearance Scale, ISS = Internalised Shame Scale, RSES = Rosenberg Self-Esteem Scale

Discussion

This is the first study, to our knowledge, to investigate attentional biases to social- and appearance-related threat-information in people with a range of skin conditions using the Visual Dot Probe paradigm. Our primary aim was to investigate the independent and conjoint contributions of social anxiety and disfigurement to processing biases that may underlie levels of emotional distress. Two groups of participants were recruited; those who self-identified as having a skin condition (skin conditions group) and those who did not (control group). As expected, the skin conditions group and the control group differed significantly in measures of appearance concerns and the severity of the feature that they identified to be of concern. Participants in the two groups, however, did not differ significantly in measures of social anxiety, shame and self esteem. Contrary to predictions (second hypothesis) participants in the two conditions did not differ in their attentional responses to threat-related words. An attentional bias away from positive words was, however, found among people with skin conditions, which was not present in the control group.

Previous studies that have included a positive valence stimulus group have shown inconsistent findings. Rosser et al (2008) and Shafran et al (2007) found

that participants with appearance concerns (analogue population and eating disorders respectively) showed an attentional bias towards negative, neutral and positive stimuli that were related to appearance or eating. Ononaiye et al (2005) did not find a bias towards or away from positive words among people with social anxiety. Webb, Ononaiye, Sheeran, Reidy & Lavda (unpublished) found a bias away from positive words among people with social anxiety. This variability in findings suggests that future research needs to include a positive word group as it may be a meaningful one to examine. Specifically, attentional biases away from positive words may be indicative of decreased well-being, although no measure of well-being was included in the present study to allow this to be explored.

Results of the regression analysis indicate that attentional bias away from positive words is predicted by low levels of self-esteem and low levels of shame. Although this pattern of result seems unusual, it is likely a result of a suppressor relationship where shame becomes a predictor of the attentional bias solely by virtue of its high correlation with self-esteem. It is worth considering why only the non self-esteem related aspects of shame are predictive of the attentional bias. A possible explanation may relate to the two subcategories of shame – internal and external shame. Internal shame relates to self-evaluation and self-feelings, and may be therefore conceptualised as more similar to self-esteem than external shame that refers to perceptions of other people's views. Hence, external shame may be a better predictor of attentional biases away from positive words than internal shame. External shame being a better predictor also fits with Kellet's argument that people who experience skin related shame cognitively minimize positive interactions with other people. This explanation, however, does not take

into account why low self-esteem itself is also a significant predictor of attentional biases away from positive words. This is the first study to include self-esteem and shame as predictors of attentional biases and clearly further research is necessary to disentangle their relationship.

The regression analysis also showed that the presence or absence of a skin condition (i.e., group) predicted attentional responses to positive words above and beyond shame and self-esteem. The importance of group as a predictor is consistent with findings by Fortune et al (2003) who reported participant status to be more important than psychological variables in accounting for attentional biases. Social anxiety and appearance concerns were not important predictors of the attentional bias.

We also investigated whether the predictors could potentially account for variance in attentional responses to the other word groups (fear of negative evaluation, somatic sensations, appearance concerns, physical threat and neutral). The variance in attentional responses to the somatic sensations word group was significantly accounted for by age. No other variables were found to significantly predict variance in attentional responses to the other word groups. Participant status was not found to be an important predictor, thus the third hypothesis has not been confirmed.

The absence of an attentional bias towards socially threatening stimuli in the skin condition group was surprising because of the literature linking social anxiety to disfigurement and skin conditions, and attentional biases to social anxiety. One possible explanation for this is the low levels of social anxiety present in our skin

condition group. Previous studies on attentional biases and social anxiety have allocated participants to groups on the basis of their social anxiety scores (e.g. Mansell, Clark, Ehlers & Chen, 1999; Webb et al, 2010) or the presence or absence of a diagnosed social anxiety disorder (e.g. Musa, Lepine, Clark, Mansel, & Ehlers, 2003) resulting in clinical groups comprising of people with high levels of social anxiety and control groups of participants with low levels of social anxiety. Our groups, however, were defined on the basis of the presence or absence of a skin condition and did not differ in levels of social anxiety.

Given the amount of literature that links disfigurement to social anxiety this is perhaps a surprising finding. Therefore it is important to ascertain why our skin condition sample was not socially anxious. Some authors (e.g. Miles, 2002) argue that recruiting from both hospital and community settings is more inclusive and captures a range of individuals, some of which will actively be seeking treatment and some not. In the present study, however, the majority of the sample consisted of university students and staff members. Participants self-identified as fulfilling the criteria, i.e. that they had received a formal diagnosis of a skin condition and that this had been given to them at least six months prior to the study. However, it was not possible to verify this with their physician. It is also not known how many participants were actively seeking treatment at the time of the study. It is reasonable to believe that participants who were not actively seeking treatment had a condition that was either perceived to be mild or already under control (e.g. acne that had been treated successfully at adolescence). This may clarify why our skin condition sample did not present high levels of social anxiety.

These findings, therefore, imply that disfigurement or appearance concerns alone do not lead to attentional biases relating to socially threatening stimuli. Instead it may be the presence of high levels of social anxiety that result in attentional biases and not the disfigurement per se. Our results have also indicated that appearance concerns do not lead to processing biases in relation to appearance threatening words.

These findings contradict previous literature that indicates the presence of attentional biases in relation to appearance related stimuli in women with eating disorders (e.g. Shafran et al, 2007), analogue populations (Rosser et al, 2010; Labarge et al, 1998) as well as in a sample of patients with psoriasis (Fortune et al, 2003). However, none of these studies have directly compared the underlying processes of the disfigurement/ appearance concerns to those of social anxiety. It is still, therefore, unclear if biases towards socially threatening words do not exist in this population or were not captured in the present study. Whereas the present study employed a good measure of attention (VDP) and validated word groups for the socially threatening stimuli, limitations exist that need to be addressed in future research before this issue can be answered. The remainder of this discussion outlines these limitations, what future research can do to address them and the clinical implications involved.

Limitations

It was hoped that the skin conditions group would consist of 80 patients attending dermatology clinics in the region and the control group would consist of 80 people without skin conditions. However, there were significant problems with recruitment, which impacted on sample size and type. The number of participants

recruited (skin conditions $N = 53$, and controls $N = 69$) meant that the study was underpowered, especially with respect to the regression analyses, raising the possibility that effects were too small to be detected (Type II error). Furthermore, as very low numbers of patients from dermatology clinics volunteered to participate, a decision was made to further extend recruitment of people with skin conditions at the university. This may have resulted in groups that were too similar in terms of levels of social anxiety, as discussed above.

This limitation may have been further compounded by the recruitment strategy for the control group. The only criterion for inclusion in the control group was the absence of a skin condition. Participants in the control group, therefore, were not screened for other conditions, such as eating disorders, that may have affected the presence or absence of appearance concerns. Despite significant differences between the groups in the DAS-24 and severity measures, both groups had high number of participants with appearance concerns. This may have been another contributing factor to our groups being too similar to show any significant differences in their attentional responses to the threatening word stimuli.

Another potential limitation concerns the choice of words presented in the appearance threat word group of the VDP. Previous research has indicated the presence of attentional biases towards appearance related stimuli in people with appearance concerns. As our skin conditions group did show high levels of appearance concerns it is worth considering why no attentional biases were detected. Words in the appearance threat word group were developed by the authors, without the administration of a pilot. It is therefore possible that they did not capture the immediate concerns of the skin conditions group. The words were

purposefully chosen to be generic to include the possible concerns of people with wide-ranging skin conditions, as our sample was not limited to one type of condition. However, generic words may not adequately capture those aspects of appearance that cause distress to the individual and lead to attentional biases. Findings by Fortune et al, (2003) who showed that patients with psoriasis had increased Stroop interference towards disease-specific words would suggest that these more adequately capture the concerns of the population measured. Furthermore, the generic nature of the appearance words may have triggered appearance concerns in the control group as well. For example, the word 'body' seems relevant to the present control group, where the most prevalent concern was body size/ weight.

Another limitation of the study concerns the 'socially threatening situation' implemented to trigger feelings of anxiety in people who do experience it. Although the effect of time was significant, the significant difference did not lie between the first and second time-points of administration when the social threatening instructions were presented. Instead the difference lies in the third time-point, which may have been a result of the ending of the study overall. Furthermore, there was no interaction between time and group, suggesting that the skin conditions group was no more affected by the socially threatening message than the control group. These findings are not consistent with previous research (e.g. Ononaiye et al, 2007) and are most likely due to our groups not differing in levels of social anxiety from the start. In addition, however, no measure of believability was taken and so it is not possible to know to what extent participants were convinced by the socially threatening instructions.

Recommendations for Future Research

Future research is encouraged to address the limitations of the present study in order to investigate whether people with skin conditions show attentional biases consistent with those observed in social anxiety, over and above the influence of social anxiety itself. As research in this field is in its infancy, it would be premature to entirely discount the existence of such a link on the basis of the findings of this study, especially given the obstacles and limitations described above.

Future research should aim to include a sample of people with skin conditions who are actively seeking treatment, as this would ensure that the disease and its consequences are salient to them at the time of the study. Furthermore it would ensure that biases in attention, present in patients with higher levels of distress, would be captured in the population measured.

As not all people with skin conditions experience psychological distress, it is recommended that future research distinguishes between people with skin conditions that have high versus low social anxiety and compares them to people with social phobia and to control participants with low social anxiety, in order to provide insight into potential differences and similarities between these groups in terms of biases in attention. A control group recruited on the basis of no other appearance related conditions, would also ensure that analysis is not confounded by similarities between the experimental and the control participants.

Future research should aim to include experimental stimuli with positive valence as they may be meaningful to examine. The addition of measures of well-

being would also allow future research to investigate whether attentional biases away from positive words are associated with decreased well-being.

Furthermore, in terms of exploring biases to appearance related threat, it may be advantageous to recruit patients who have a specific skin condition. This is because people with a variety of skin conditions may have different appearance concerns that could be difficult to capture in the experimental stimuli. However, it is also recommended that wordlists be piloted to check salience and valence of the words for the population measured, before use in a VDP task. This can be done either specifically for the population of a given study (similar to Rosser, Moss & Rumsey, 2008) or, more usefully, word lists could be developed that can be used across studies.

Another important area in the field concerns the question of what psychological constructs are most relevant in accounting for the psychological distress experienced by people with potentially disfiguring skin conditions, and whether social anxiety is an overarching notion. The present study attempted to address this topic with regression analysis, but future research would be encouraged to apply path analysis in order to ascertain causal relationships between the variables. Furthermore, it would be advantageous to add measures of depression to explore its relationship with constructs of self-esteem, shame and anxiety and to examine if it is associated with attentional biases related to appearance concerns. Clearly further research needs to address the relationship between self-esteem, shame and attentional biases in order to examine if a suppressor relationship is replicated and the possible reasons for it.

Clinical Implications

The clinical implications of finding a link between attentional processes in people with skin conditions and social anxiety can be considerable. Attention modification techniques have already been used with success in people with social anxiety (e.g. Dandeneau et al, 2007; Matthews & MacLeod, 2002; Bogels, Mulkens & DeJong, 1997; Webb et al, 2010) and these would be open to people with skin conditions to try and alleviate the distress experienced. Fortune et al (2003) stress the importance of understanding the impact of every day illness related events and this can be seen as relevant to people who experience actual stigma in their everyday life. It seems important for people with disfiguring skin conditions to be able to attend to the real threat that is posed by the stigma, rejection and abuse that is sometimes experienced. On the other hand, being able to retrain attention so that it is not directed to everyday non-threatening events is also of huge benefit. This would allow people to be exposed to and re-appraise social situations, thus becoming less socially avoidant and leaving them open to learn new adaptive coping skills and social skills necessary to manage the real threat that is also present.

Conclusions

The present study showed evidence of an attentional bias away from positive words in people with skin conditions. However, no attentional biases were found towards socially threatening and appearance threat word stimuli as had been predicted by the hypotheses of the study. Due to limitations in the present study, which include no social anxiety present in the skin conditions group, it is still unclear if attentional biases consistent with social anxiety are not present in people

with skin conditions or if they were not captured in the present study. This is an exciting field of research with important clinical implications for people with skin conditions who experience distress. Future research is encouraged and potential avenues have been explored.

References

- American Psychiatric Association. (1994). *The diagnostic and statistical manual of mental disorder* (3rd ed., revised). Washington, DC: APA
- Bar-Haim, Y., Lamy, D., Pergamin, L., Bakermans-Kranenburg, M. J., & van Ijzendoorn, M. H. (2007). Threat-related attentional bias in anxious and non-anxious individuals: A meta-analytic study. *Psychological Bulletin*, *133*, 1-24.
- Ben-Tovim, D., & Walker, M. K. (1995). Body image, disfigurement and disability. *Journal of Psychosomatic Research*, *39*, 283-291.
- Carr, T., Harris, D., & James, C. (2000). The Derriford Appearance Scale (DAS-59): A new scale to measure individual responses to living with problems of appearance. *British Journal of Health Psychology*, *5*, 201-215.
- Carr, T., Moss, T. P., & Harris, D. (2005). The DAS-24: A short form of the Derriford Appearance Scale (DAS59) to measure individual responses to living with problems of appearance. *British Journal of Health Psychology*, *10*, 285-298.
- Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. Liebowitz, D. Hope, & F. Schneider (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 69-93). New York: Guilford.
- Cook, D. R. (1988). Measuring shame: The internalized shame scale. *Alcohol Treatment Quarterly*, *4*, 197-215
- Dandeneau, S. D., & Baldwin, M. W. (2004). The inhibition of socially rejecting information among people with high versus low self-esteem: The role of attentional bias and the effects of bias reduction training. *Journal of Social and Clinical Psychology*, *23*, 584-602

- Dandeneau, S. D., Baldwin, M. W., Baccus, J. R., Sakellaropoulo, M., & Pruessner, J. C. (2007). Cutting stress off at the pass: Reducing vigilance and responsiveness to social threat by manipulating attention. *Journal of Personality and Social Psychology, 93*, 651-666.
- Faul, F., Erdfelder, E., Lang, A., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191.
- Field, A. (2005). *Discovering Statistics Using SPSS. Second Edition*. London: Sage Publications
- Fortune, D. G., Richards, H. L., Corrin, A., Taylor, R. J., Griffiths, C. E. M., Main, C. J (2003). Attentional bias for psoriasis-specific and psychological threat in patients with psoriasis. *Journal of Behavioral Medicine, 29*, 211-224
- Fox, E., Russo, R., Bowles, R., & Dutton, K. (2001). Do threatening stimuli draw or hold visual attention in subclinical anxiety? *Journal of Experimental Psychology: General, 130*, 681-700.
- Furness, P., Garrud, P., Faulder, A & Swift J. (2006) Coming to terms: A grounded theory of adaptation to facial surgery in adulthood. *Journal of Health Psychology, 11*, 453-466
- Gilbert, P. (2002) Body shame: A biopsychosocial conceptualisation and overview of treatment implications. In: Gilbert, P. & Miles, J. (Eds.) *Body Shame: Conceptualisation, Research and Treatment*. London: Routledge

- Grandfield, T., Thompson, A. R., & Turpin, G. (2005). An attitudinal study of response to a range of dermatological conditions using the implicit attitudes association test. *Journal of Health Psychology, 10*, 821-829
- Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem and stereotypes. *Psychological Review, 1*, 4-27
- Jacoby, A. (1994). Felt versus enacted stigma: A concept revisited. *Social Science and Medicine, 38*, 269-274
- Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika, 23*, 187-200
- Kellet, S. (2002) Acne-fused shame: a biopsychosocial conceptualization and treatment rationale. In: Gilbert, P. & Miles, J. (Eds.) *Body Shame: Conceptualisation, Research and Treatment*. London: Routledge
- Kent, G., & Keohane, S. (2001). Social anxiety and disfigurement: The moderating effect of fear of negative evaluation and past experience. *British Journal of Clinical Psychology, 40*, 23-34.
- Kent, G. (2002). Testing a model of disfigurement: effects of a skin camouflage service on well-being and appearance anxiety. *Psychology and Health, 17*, 377-386.
- Kucera, H., & Francis, W. N. (1967). *Computational analysis of present-day American English*. Providence, MA: Boston University Press.
- Leary, M., Rapp, S., Herbst, K., Exum, M., & Feldman, S. (1998). Interpersonal concerns and psychological difficulties of psoriasis patients: effects of disease severity and fear of negative evaluation. *Health Psychology, 17*, 1-7

- MacGregor, F., Abel, T. M., Brut, A., Lauer, E. & Weissmann, S. (1953). *Facial Deformities and Plastic Surgery: A Psychosocial Study*. Springfield, Illinois: Thomas
- MacLeod, C. (1991). Half a century of research on the Stroop effect: An integrative review. *Psychological Bulletin*, 109, 163-203
- MacLeod, C., Mathews, A., & Tata, P. (1986). Attentional bias in emotional disorders. *Journal of Abnormal Psychology*, 95, 15-20.
- Mansell, W., Clark, D. M., Ehlers, A. & Chen, Y. P. (1999). Social anxiety and attention away from emotional faces. *Cognition and Emotion*, 13, 673-690.
- Miles, J. (2002) Psoriasis: The role of shame on quality of life. In: Gilbert, P. & Miles, J. (Eds.) *Body Shame: Conceptualisation, Research and Treatment*. London: Routledge
- Meyer, T. J., Miller, M. L., Metzger, R. L. and Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy*, 28: 487-495
- Mogg, K., Bradley, B. P., & Hallowell, N. (1994). Attentional bias to threat: Roles of trait anxiety, stressful events, and awareness. *Quarterly Journal of Experimental Psychology: Human Experimental Psychology*, 47A, 841–864.
- Mogg, K., & Marsden, B. (1990). Processing of emotional information in anxious subjects. *British Journal of Clinical Psychology*, 29, 227–229.
- Mogg, K. & Bradley, B. P. (1999). Orienting of attention to threatening facial expressions presented under conditions of restricted awareness. *Cognition and Emotion*, 13, 713-740
- Moss, T. P. (2005). The relationships between objective and subjective ratings

- of disfigurement severity, and psychological adjustment. *Body Image*, 2, 151-159
- Musa, C., Lepine, J. P., Clark, D. M., Mansell, W., & Ehlers, A. (2003). Selective attention in social phobia and the moderating effect of a concurrent depressive disorder. *Behaviour Research and Therapy*, 41, 1043-1054.
- Newell, R. (1999). Altered Body Image: A fear-avoidance model of psychosocial difficulties following disfigurement. *Journal of Advanced Nursing*, 30, 1230-1238
- Newell, R. & Marks, I. (2000). Phobic nature of social difficulty in facially disfigured people. *British Journal of Psychiatry*, 176, 177-181
- Ononaiye, M., Turpin, G., & Reidy, J. (2007). Attentional bias in social anxiety: Manipulation of stimulus duration and social-evaluative anxiety. *Cognitive Therapy and Research*, 31, 727-740.
- Porter, J., Beuf, A., Lerner, A., & Norlund, J. (1986). Psychosocial effects of vitiligo: a comparison of vitiligo patients with 'normal' control subjects, with psoriasis patients, and with patients with other pigmentary disorders. *Journal of American Academy of Dermatology*, 15, 220-224
- Papadopoulos, L., Bor, R., & Legg, C. (1999) Psychological factors in cutaneous disease: An overview of research. *Psychology, Health and Medicine*, 42, 107-126
- Rosenberg, Morris. 1989. *Society and the Adolescent Self-Image*. Revised edition. Middletown, CT: Wesleyan University Press.

- Rosser, B., Moss, T., & Rumsey, N. (2008). Are things as they appear? Information processing biases and appearance adjustment. *Oral paper presented at Appearance Matters III Conference, Bath, 2008*
- Rumsey, N., Clarke, A., White, P., Wyn-Williams, M., & Garlick, W. (2004). Altered body image: appearance-related concerns of people with visible disfigurement. *Journal of Advanced Nursing, 48*, 443-453.
- Rumsey, N., Newell, R., Clarke, A., Newman, S., Moss, T., Kent, G., Thompson, A., Harcourt, D., Charlton, R., & Saul, K. (2005). Identifying factors and processes contributing to successful adjustment to disfiguring conditions. *Unpublished research protocol submitted to the Healing Foundation*
- Salemink, E., van den Hout, M. A., & Kindt, M. (2007). Selective attention and threat: Quick orienting versus slow disengagement and two versions of the dot probe task. *Behaviour Research and Therapy, 45*, 607-615
- Spielberger, C. D., Gorsuch, R. L., Jacobs, G. A., Lushene, R. & Vagg, P. R. (1968). *State-Trait Anxiety Inventory for Adults*. Mind Garden, Inc.
- Tabachnick, B. G., & Fidell, L. S. (1996). *Using Multivariate Statistics, Third Edition*. New York: Harper Collins
- Thompson, A. (in press). Body image issues in dermatology. In: Cash, T. F. & Pruzinsky, T (Eds.), *Body Image: A Handbook of Theory, Research & Clinical Practice*. 2nd Edition
- Thompson, A. & Kent, G. (2001). Adjusting to disfigurement: processes involved in dealing with being visibly different. *Clinical Psychology Review, 21*, 663-682.
- Thompson, A., Kent, G., & Smith, J. A. (2002). Living with vitiligo: Dealing with difference. *British Journal of Health Psychology, 7*, 213-225.

- Turner, S. & Lee, D. (1998). Measures in Post-traumatic Stress Disorder: A Practitioners Guide, London, GB: NFER-Nelson
- Watson, D., & Friend, R. (1969). Measurement of socio-evaluative anxiety. *Journal of Consulting and Clinical Psychology*, 33, 448-457.
- Webb, T. L., Ononaiye, M. S. P., Sheeran, P., Reidy, J. G., & Lavda, A. (2010). Using implementation intentions to overcome the effects of social anxiety on attention and appraisals of performance. *Personality and Social Psychology Bulletin*, 35, 612-627
- Weireich, M. R., Treat, T. A., & Hollingworth, A. (2008). Theories and measurement of visual attentional processing in anxiety. *Cognition and Emotion*, 22, 985-1018
- Zigmond, A., & Snaith, R. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 67, 361-370

Appendices Table of Contents

Appendix A. Formats	116
A.1. Letter of approval of nominated journals for publication.	116
A.2. Instructions to authors from British Journal of Dermatology	117
A.3. Instructions to authors from Behaviour Research and Therapy	127
Appendix B. Ethical approvals	133
B.1. Letter of approval from Leeds West NHS Research Ethics Committee	133
B.2. Email of approval from Department of Psychology Ethics Sub-Committee.....	140
B.3. Email of approval from Department of Psychology Ethics Sub-Committee to recruit people with skin conditions from the university	141
B.4. Governance approval letter from Barnsley General District Hospital NHS Foundation Trust.....	142
B.5. Governance approval letter from Rotherham General District Hospital NHS Foundation Trust	144
Appendix D. Literature Review appendices.....	147
D.1. Coding manual for the extraction of data for the meta-analysis.....	147
D.2. Breakdown of scores of the Jadad quality scale for each study	148
Appendix E. Research Report Appendices	149
E.1. a. Avertising Leaflet.....	149
E.1.b. Email to recruit control participants	153
E.1.c.i. Email to recruit skin condition sample from university.....	154
E.1.c.ii. Second Email to be sent after people have opted in	155
E.2. Participant Information Sheets	156
E.2.a. Participant Information Sheet – NHS recruitment site	156
E.2.b. Participant information sheet – University recruitment site.....	158
E.3. Consent Forms	160
E.3.a. Consent form – Skin condition group	160
E.3.b. Consent Form – Control group	161
E.4. Demographic characteristics form.....	162
E.5. Debrief letter	163
E.6. Exploratory Factor Analysis	165

Appendix A. Formats

A.1. Letter of approval of nominated journals for publication.



Department Of Psychology.
Clinical Psychology Unit.

Doctor of Clinical Psychology (DClin Psy) Programme
Clinical supervision training and NHS research training
& consultancy.

Clinical Psychology Unit
Department of Psychology
University of Sheffield
Western Bank
Sheffield S10 2TP UK

Telephone: 0114 2226550
Fax: 0114 2226610
Email: c.harrison@sheffield.ac.uk

26 March 2010

Anastasia Lavda
Third year trainee
Clinical Psychology Unit
University of Sheffield

Dear Anastasia

I am writing to indicate our approval of the journal(s) you have nominated for publishing work contained in your research thesis.

Literature Review: British Journal of Dermatology

Research Report: Behaviour Research and Therapy

Please ensure that you bind this letter and copies of the relevant Instructions to Authors into an appendix in your thesis.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Rebecca Knowles'.

Dr Rebecca Knowles
Research Tutor

A.2. Instructions to authors from British Journal of Dermatology

British Journal of Dermatology

An Official Journal of the British Association of Dermatologists

Edited by:

Dr Tanya O. Bleiker, Derby, UK

Print ISSN: 0007-0963

Online ISSN: 1365-2133

Frequency: Monthly

Current Volume: 162 / 2010

ISI Journal Citation Reports® Ranking: 2008: 4/43 Dermatology

Impact Factor: 3.489

TopAuthor Guidelines

NEW (20 October 2009)

Authors are now required to provide bulleted statements (maximum 70 words) in answer to each of the following two questions: i. What's already known about this topic? ii. What does this study add?

BJD FORMS

Exclusive Licence Form

Patient Consent Form

Author Consent Form

1. AIMS & SCOPE

British Journal of Dermatology (BJD) publishes papers on all aspects of the biology and pathology of the skin. Originally the Journal, founded in 1888, was devoted almost exclusively to the interests of the dermatologist in clinical practice. However, the rapid development, since the 1950s, of research on the physiology and experimental pathology of the skin has been reflected in the contents of the Journal, which now provides a vehicle for the publication of both experimental and clinical research and serves equally the laboratory worker and the clinician.

2. MANUSCRIPT CATEGORIES

BJD invites the following types of submission:

Review articles

The Journal aims to publish concise, high-quality review articles of recent advances in laboratory or clinical research. Review articles may be solicited by

the Editor or may be submitted by authors for publication subject to peer review. Review articles must include an unstructured abstract (maximum 250 words), and should not exceed 3000 words of body text. Use of illustrations and figures is encouraged. Review articles must include bulleted statements (maximum 70 words) in answer to the following questions: what's already known about this topic?; what does this study add?

Original articles

Original articles are the Journal's primary mode of communication. Original articles must include a structured abstract (maximum 250 words), and should not exceed 3000 words of body text. Original articles must include bulleted statements (maximum 70 words) in answer to the following questions: what's already known about this topic?; what does this study add?

For purposes of presentation only, accepted original articles are divided into the following sections:

- Cutaneous biology
- Clinical and laboratory investigations[1]
- Contact dermatitis and allergy
- Dermatological surgery and lasers
- Dermatopathology
- Epidemiology and health services research
- Paediatric dermatology
- Photobiology
- Therapeutics

Concise communications

Concise communications usually describe completed laboratory[2] or clinical work and are restricted to no more than 1100 words, 15 references, one table and two figures. Concise communications must include a structured abstract. Concise communications must include bulleted statements (maximum 70 words) in answer to the following questions: what's already known about this topic?; what does this study add?

Case reports

BJD includes only case reports of novel and extraordinary significance. Case reports must include an unstructured abstract. Case reports must include bulleted statements (maximum 70 words) in answer to the following questions: what's already known about this topic?; what does this study add?

Gene corner

The Gene corner section provides a forum for unusual case reports illustrating a novel phenotype associated with mutation in a known gene. No abstracts are required.

Correspondence

Correspondence (Letters to the Editor) may be in response to issues arising from recently published articles, or short, free-standing pieces expressing an opinion. Items of correspondence should be formatted in one continuous section and should not exceed 800 words, 10 references and two figures. All letters are subject to expert review.

3. SUBMISSION OF MANUSCRIPTS

All submissions should be made online at the BJD ScholarOne Manuscripts site (formerly known as Manuscript Central). New users should first create an account. Once a user is logged onto the site, submissions should be made via the Author Centre.

Submissions should be accompanied by a completed Exclusive Licence Form. Authors of all manuscripts are required to license copyright in their paper to the British Association of Dermatologists. Copyright licensing is a condition of publication and papers will not be passed to the publisher for production unless copyright has been licensed.

4. PREPARATION OF MANUSCRIPTS

Manuscripts must be written in British English.

Manuscript text must be saved in Word (.doc) or Rich Text Format (.rtf). Do not submit text in PDF format (.pdf). Authors should note that Word 2007 is not yet compatible with journal production systems. Unfortunately, the journal cannot accept Microsoft Word 2007 documents until such time as a stable production version is released. Please use Word's 'Save As' option therefore to save your document as an older (.doc) file type. Figures must be saved as separate figure files. GIF, JPEG, PICT or Bitmap files are acceptable for submission, but only TIFF or EPS files are suitable for printing. After acceptance, you will be contacted to provide print-quality figures if you have not already done so. NOTE: If you're able to supply figures PDF format (.pdf) only they must be distilled using the 'Print Optimised' option.

Abbreviations must be defined when first used in the abstract and in the main text, as well as when first used in table and figure captions.

Manuscripts must be as succinct as possible. Repetition of information or data in different sections of the manuscript must be carefully avoided. Text must comply with the word limits defined in Section 2, and, where appropriate, include:

Title Page

The first page of all manuscripts should contain the following information:

- 1) the title of the paper
- 2) a running head not exceeding 50 characters (not needed for correspondence items)
- 3) 2-6 article keywords. These should be MeSH terms if possible - <http://www.nlm.nih.gov/mesh/2008/MBrowser.html>
- 4) manuscript word, table and figure count
- 5) names of authors as initial(s) followed by surnames
- 6) names of the institutions at which the research was conducted, clearly linked to respective authors
- 7) name, address, telephone and fax number, and email address of corresponding author
- 8) a statement of all funding sources that supported the work
- 9) any conflict of interest disclosures (see Section 5)
- 10) bulleted statements (maximum 70 words) in answer to each of the following questions: what's already known about this topic?; what does this study add?
- 11) names and email addresses of possible manuscript referees.

Abstracts

Authors submitting original articles and concise communications should note that structured abstracts are required. The structured abstract should adopt the format: Background, Objectives, Patients/Methods, Results, Conclusions.

Review articles and case reports require abstracts but they need not be structured.

Abstracts should contain no citations to previously published work.

Correspondence and gene corner articles do not require abstracts.

Text

This should in general, but not necessarily, be divided into sections with the headings: Summary, Introduction, Materials and Methods, Results, Discussion, Acknowledgments, References, Figure legends.

Tables and Figures

Tables should not be inserted in the appropriate place in the text but should be included at the end of the manuscript, each on a separate page.

Figures must be submitted as a separate file or files.

Tables and figures should be referred to in text as follows: Fig. 1, Figs 2-4; Table 1, Table 2. Each table and/or figure must have a legend that explains its purpose without reference to the text. Where a figure has more than one panel, each panel should be labelled in the top left-hand corner using lower case letters in parentheses, i.e. '(a)', '(b)' etc. and a brief description of each panel given in the figure legend.

Colour illustrations are welcomed and all colour is published free of charge to the author.

Authors are themselves responsible for obtaining permission to reproduce previously published figures or tables. When an individual is identifiable in a photograph written permission must be obtained (see Section 5 below).

Electronic Artwork

If submitting artwork electronically, please read the information on the Wiley-Blackwell Publishing website. Vector graphics (e.g. line artwork) should be saved in Encapsulated Postscript Format (EPS), and bitmap files (e.g. photographs) in Tagged Image File Format (TIFF). Line art must be scanned at a minimum of 800 dpi, photographs at a minimum of 300 dpi.

References

References should be in Vancouver format and appear as consecutive, unbracketed superscript numbers in the text, e.g. 'in our previous reports^{1,2} and those of Smith et al. 3-5' and should be listed numerically in the reference list at the end of the article.

Format references as below, using standard (Medline) abbreviations for journal titles. If more than four authors, include the first three authors followed by et al.

1 de Berker DAR, Baran R, Dawber RPR. The nail in dermatological diseases. In: Baran and Dawber's Diseases of the Nails and their Management (Baran R, Dawber RPR, de Berker DAR, Haneke E, Tosti A, eds), 3rd edn. Oxford: Blackwell Science Ltd, 2001; 172-92.

2 Shuster S. The nature and consequence of Karl Marx's skin disease. *Br J Dermatol* 2008; 158:1-3.

3 Graham-Brown R, Burns T. Lecture Notes: Dermatology. Oxford: Blackwell Publishing, 2006.

4 Smith A. (1999) Select committee report into social care in the community [WWW document]. URL <http://www.dhss.gov.uk/reports/report015285.html> [accessed on 7 November 2003].

We recommend the use of a tool such as EndNote for reference management and formatting. EndNote reference styles can be searched for here: <http://www.endnote.com/support/enstyles.asp>.

Standards

Manuscripts reporting randomised trials should follow the CONSORT statement. Manuscripts reporting epidemiological studies should consider the STROBE statement.

Supporting Information

BJD is able to host online supporting information. Supporting information must be important ancillary information that is relevant to the parent article but which does not or cannot appear in the printed edition of the Journal. Supporting information will be published as submitted, and will not be corrected or checked for scientific content, typographical errors or functionality.

Supporting information should be uploaded to Manuscript Central (see Section 3) at the time of manuscript submission using the file designation 'Supplementary material for review'.

5. DECLARATIONS

Original Publication

Submission of a manuscript will be held to imply that it contains original unpublished work and is not being submitted for publication elsewhere at the same time. The author must supply a full statement to the Editor about all submissions and previous reports that might be regarded as redundant or duplicate publication of the same or very similar work.

Conflicts of Interest

Authors are responsible for disclosing all financial and personal relationships between themselves and others that might be perceived by others as biasing their work. To prevent ambiguity, authors must state explicitly whether potential conflicts do or do not exist.

Ethics

When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 1983. Do not use patients' names, initials or hospital numbers, especially in illustrative material. When reporting experiments on animals, indicate whether the institution's or a national research council's guide for, or any national law on, the care and use of laboratory animals was followed. A statement describing explicitly the ethical background to the studies being reported should be included in all manuscripts in the Materials and Methods section. Ethics committee or institutional review board approval should be stated.

Patients have a right to privacy that should not be infringed without informed consent. Identifying information should not be published in written descriptions, photographs and pedigrees unless the information is essential for scientific purposes and the patient (or parent or guardian) gives written informed consent for publication. Identifying details should be omitted if they are not essential but patient data should never be altered or falsified in an attempt to attain anonymity. Complete anonymity is difficult to achieve and informed consent should be obtained if there is any doubt. For example, masking the eye region in photographs of patients is inadequate protection of anonymity.

Authorship

All persons designated as authors should qualify for authorship and all those who qualify should be listed. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. One or more authors should take responsibility for the integrity of the work as a whole, from inception to published article. Authorship credit should be based only on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; 3) final approval of the version to be published. Conditions 1, 2 and 3 must all be met. Acquisition of funding, the collection of data or general supervision of the research group, by themselves, do not justify authorship. All others who contributed to the work who are not authors should be named in the Acknowledgments section.

Committee on Publication Ethics (COPE)

As a member of the Committee on Publication Ethics (COPE), adherence to these submission criteria is considered essential for publication in the BJD; mandatory fields are included in the online submission process to ensure this. If, at a later stage in the submission process or even after publication, a manuscript or authors are found to have disregarded these criteria, it is the duty of the Editor

to report this to COPE. COPE may recommend that action be taken, including but not exclusive to, informing the authors' professional regulatory body and/or institution of such a dereliction.

The website for COPE may be accessed at: <http://www.publicationethics.org.uk>

6. ADDITIONAL INFORMATION ON ACCEPTANCE

Accepted Articles

Further to acceptance in BJD, the manuscripts of Review and Original articles are immediately made publicly available online. 'Accepted Articles' have been peer-reviewed and accepted for formal publication, but have not been subject to copyediting, composition or proof correction. The service provides for the earliest possible dissemination of research data following article acceptance. Accepted Articles appear in PDF format only and are given a Digital Object Identifier (DOI), which allows them to be cited and tracked. The DOI remains unique to a given article in perpetuity and can continue to be used to cite and access the article further to print publication. More information about DOIs can be found online at <http://www.doi.org/faq.html>.

Neither the British Association of Dermatologists nor Wiley-Blackwell can be held responsible for errors or consequences arising from the use of information contained in Accepted Articles; nor do the views and opinions expressed necessarily reflect those of the British Association of Dermatologists or Wiley-Blackwell.

Proofs

Page proofs will be sent electronically to the corresponding author and should be returned within 3 days of receipt to the Production Editor. Significant textual alterations are unacceptable at proof stage without the written approval of the Editor, and they are likely to result in the delay of publication.

The corresponding author will receive an e-mail alert containing a link to a secure web site. A working e-mail address must therefore be provided for the corresponding author. In the absence of the corresponding author, please arrange for a colleague to access the e-mail to retrieve the proofs.

Please note that you have final responsibility for what is stated in the proofs of your manuscript. However, the proofs are checked thoroughly by the BJD editorial team and if we do not receive corrections after several automated reminders to the email address supplied for the corresponding author then we will assume that we have your approval for publication.

Early View

BJD is covered by the Publisher's Early View service. Early View articles are complete and final. They have been fully reviewed, revised and edited for publication, and the authors' final corrections have been incorporated. Because they are in final form, no changes can be made subsequent to Early View publication. Early View articles can be cited and tracked by DOI.

OnlineOpen

OnlineOpen is available to authors of primary research articles who wish to make their article available to non-subscribers on publication, or whose funding agency requires grantees to archive the final version of their article. With OnlineOpen the author, the author's funding agency, or the author's institution pays a fee to ensure that the article is made available to non-subscribers upon publication via Wiley InterScience, as well as deposited in the funding agency's preferred archive. For the full list of terms and conditions, [click here](#)

Prior to acceptance, there is no requirement to inform the Editorial Office that you intend to publish your paper OnlineOpen if you do not wish to. All OnlineOpen articles are treated in the same way as any other article. They go through the Journal's standard peer-review process and will be accepted or rejected based on their own merit.

Any authors wishing to send their paper OnlineOpen will be required to complete the payment form: [Online Open Form](#)

Author Services

Author Services enables authors to track their article - once it has been accepted - through the production process to publication online and in print. Authors can check the status of their articles online and choose to receive automated e-mails at key stages of production. The author will receive an e-mail with a unique link that enables them to register and have their article automatically added to the system. Please ensure that a complete e-mail address is provided when submitting the manuscript. Visit <http://authorservices.wiley.com/bauthor> for more details on online production tracking and for a wealth of resources including FAQs and tips on article preparation, submission and more.

Offprints

Free access to the final PDF offprint of your article will be available via Author Services only. Please therefore sign up for Author Services if you would like to access your PDF offprint and enjoy the many other benefits the service offers.

Author material archive policy

Please note that unless specifically requested, the Publisher will dispose of all submitted hardcopy or electronic material 2 months after publication. If you require the return of any material submitted, please inform the Editorial Office or Production Editor as soon as possible if you have not yet done so.

[1] Original genetics articles should report mutation screens in large populations, new phenotype-genotype correlations identified in large case series, new genetic mechanisms or original mutations in a novel gene.

[2] Concise communications in genetics should report a single case mutation presented with substantial functional data. Single case reports caused by a novel mutation should be submitted as Correspondence.

[Top Arrow]

A.3. Instructions to authors from Behaviour Research and Therapy

Behaviour Research and Therapy

Guide for Authors

An International Multi-Disciplinary Journal

For full instructions, please visit <http://ees.elsevier.com/brat>

Aims and Scope

Behaviour Research and Therapy encompasses all of what is commonly referred to as cognitive behaviour therapy (CBT). The major focus is on the following: experimental analyses of psychopathological processes linked to prevention and treatment; the development and evaluation of empirically-supported interventions; predictors, moderators and mechanisms of behaviour change; and dissemination of evidence-based treatments to general clinical practice. In addition to traditional clinical disorders, the scope of the journal also includes behavioural medicine. The journal will not consider manuscripts dealing primarily with measurement, psychometric analyses, and personality assessment.

The Editor and Associate Editors will make an initial determination of whether or not submissions fall within the scope of the journal and are of sufficient merit and importance to warrant full review.

Submission to the journal prior to acceptance Authors should submit their articles electronically via the Elsevier Editorial System (EES) page of this journal External link <http://ees.elsevier.com/brat>. The system automatically converts source files to a single Adobe Acrobat PDF version of the article, which is used in the peer-review process. Please note that even though manuscript source files are converted to PDF at submission for the review process, these source files are needed for further processing after acceptance. All correspondence, including notification of the Editor's decision and requests for revision, takes place by e-mail and via the Author's homepage, removing the need for a hard-copy paper trail.

Any questions regarding your submission should be addressed to the Editor in Chief, Professor G. T. Wilson, Psychological Clinic at Gordon Road, Rutgers, The State University of New Jersey, 41C Gordon Road, Piscataway, New Jersey, 08854-8067, USA. Email: brat@rci.rutgers.edu.

Submission of an article implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, without the written consent of the Publisher.

Presentation of manuscript Please write your text in good English (American or British usage is accepted, but not a mixture of these). Italics are not to be used for

expressions of Latin origin, for example, *in vivo*, *et al.*, *per se*. Use decimal points (not commas); use a space for thousands (10 000 and above). Print the entire manuscript on one side of the paper only, using double spacing and wide (3 cm) margins. (Avoid full justification, i.e., do not use a constant right-hand margin.) Ensure that each new paragraph is clearly indicated. Present tables and figure legends on separate pages at the end of the manuscript. If possible, consult a recent issue of the journal to become familiar with layout and conventions. Number all pages consecutively.

Provide the following data on the title page (in the order given).

Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.

Author names and affiliations. Where the family name may be ambiguous (e.g., a double name), please indicate this clearly. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name, and, if available, the e-mail address of each author.

Corresponding author. Clearly indicate who is willing to handle correspondence at all stages of refereeing and publication, also post-publication. Ensure that telephone and fax numbers (with country and area code) are provided in addition to the e-mail address and the complete postal address.

Present/permanent address. If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Abstract. A concise and factual abstract is required (maximum length 200 words). The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separate from the article, so it must be able to stand alone. References should therefore be avoided, but if essential, they must be cited in full, without reference to the reference list.

Keywords. Immediately after the abstract, provide a maximum of 6 keywords, to be chosen from the APA list of index descriptors. These keywords will be used for indexing purposes.

Abbreviations. Define abbreviations that are not standard in this field at their first occurrence in the article: in the abstract but also in the main text after it. Ensure consistency of abbreviations throughout the article.

N.B. Acknowledgements. Collate acknowledgements in a separate section at the end of the article and do not, therefore, include them on the title page, as a footnote to the title or otherwise.

Shorter CommunicationsThis option is designed to allow publication of research reports that are not suitable for publication as regular articles. Shorter Communications are appropriate for articles with a specialized focus or of particular didactic value. Manuscripts should be between 3000 - 5000 words, and must not exceed the upper word limit. This limit includes the abstract, text, and references, but not the title pages, tables and figures.

Arrangement of the article Divide your article into clearly defined sections with the use of headings (non-numbered). Any subsection may be given a brief heading. Each heading should appear on its own separate line. Use these headings for internal cross-referencing: do not just refer to 'the text'.

Appendices. If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: (Eq. A.1), (Eq. A.2), etc.; in a subsequent appendix, (Eq. B.1) and so forth.

Acknowledgements. Place acknowledgements, including information on grants received, before the references, in a separate section, and not as a footnote on the title page.

Figure legends, tables, figures, schemes. Present these, in this order, at the end of the article. They are described in more detail below. High-resolution graphics files must always be provided separate from the main text file (see Preparation of illustrations).

Specific remarks**Tables.** Number tables consecutively in accordance with their appearance in the text. Place footnotes to tables below the table body and indicate them with superscript lowercase letters. Avoid vertical rules. Be sparing in the use of tables and ensure that the data presented in tables do not duplicate results described elsewhere in the article.

Preparation of supplementary data. Elsevier accepts supplementary material to support and enhance your scientific research. Supplementary files offer the author additional possibilities to publish supporting applications, movies, animation sequences, high-resolution images, background datasets, sound clips and more. Supplementary files supplied will be published online alongside the electronic version of your article in Elsevier Web products, including ScienceDirect. External link <http://www.sciencedirect.com>. In order to ensure that your submitted material is directly usable, please ensure that data is provided in one of our recommended file formats. Authors should submit the material in electronic format together with the article and supply a concise and descriptive caption for each file. For more detailed instructions please visit our artwork instruction pages at External link <http://www.elsevier.com/artworkinstructions>.

References Responsibility for the accuracy of bibliographic citations lies entirely with the authors

Citations in the text: Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications should not be in the reference list, but may be mentioned in the text. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Citing and listing of web references. As a minimum, the full URL should be given. Any further information, if known (author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Text: Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Fifth Edition, ISBN 1-55798-790-4, copies of which may be ordered from <http://www.apa.org/books/4200061.html> or APA Order Dept., P.O.B. 2710, Hyattsville, MD 20784, USA or APA, 3 Henrietta Street, London, WC3E 8LU, UK. Details concerning this referencing style can also be found at <http://humanities.byu.edu/linguistics/Henrichsen/APA/APA01.html>.

List: References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters "a", "b", "c", etc., placed after the year of publication.

Examples: Reference to a journal publication: Van der Geer, J., Hanraads, J. A. J., & Lupton R. A. (2000). The art of writing a scientific article. *Journal of Scientific Communications*, 163, 51-59.

Reference to a book: Strunk, W., Jr., & White, E. B. (1979). *The elements of style*. (3rd ed.). New York: Macmillan, (Chapter 4).

Reference to a chapter in an edited book: Mettam, G. R., & Adams, L. B. (1994). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281-304). New York: E-Publishing Inc.

Note that journal names are not to be abbreviated.

Preparation of illustrations

Submitting your artwork in an electronic format helps us to produce your work to the best possible standards, ensuring accuracy, clarity and a high level of detail.

General points

- Always supply high-quality printouts of your artwork, in case conversion of the electronic artwork is problematic.
- Make sure you use uniform lettering and sizing of your original artwork.
- Save text in illustrations as "graphics" or enclose the font.
- Only use the following fonts in your illustrations: Arial, Courier, Helvetica, Times, Symbol.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files, and supply a separate listing of the files and the software used.
- Provide all illustrations as separate files and as hardcopy printouts on separate sheets.
- Provide captions to illustrations separately.
- Produce images near to the desired size of the printed version.

For more detailed instructions please visit our artwork instruction pages at External link <http://www.elsevier.com/artworkinstructions>. You are urged to visit this site; some excerpts from the detailed information are given here.

Formats Regardless of the application used, when your electronic artwork is finalised, please "save as" or convert the images to one of the following formats (Note the resolution requirements for line drawings, halftones, and line/halftone combinations given below.):

EPS: Vector drawings. Embed the font or save the text as "graphics".

TIFF: Colour or greyscale photographs (halftones): always use a minimum of 300 dpi.

TIFF: Bitmapped line drawings: use a minimum of 1000 dpi.

TIFF: Combinations bitmapped line/half-tone (colour or greyscale): a minimum of 500 dpi is required.

DOC, XLS or PPT: If your electronic artwork is created in any of these Microsoft Office applications please supply "as is".

Line drawings Supply high-quality printouts on white paper produced with black ink. The lettering and symbols, as well as other details, should have proportionate dimensions, so as not to become illegible or unclear after possible reduction; in general, the figures should be designed for a reduction factor of two to three. The degree of reduction will be determined by the Publisher. Illustrations will not be enlarged. Consider the page format of the journal when designing the illustrations. Photocopies are not suitable for reproduction. Do not use any type of shading on computer-generated illustrations.

Photographs (halftones) Please supply original photographs for reproduction, printed on glossy paper, very sharp and with good contrast. Remove non-essential areas of a photograph. Do not mount photographs unless they form part of a composite figure. Where necessary, insert a scale bar in the illustration (not below it), as opposed to giving a magnification factor in the legend. Note that photocopies of photographs are not acceptable.

Copyright Upon acceptance of an article, authors will be asked to sign a 'Journal Publishing Agreement' (for more information on this and copyright see External link <http://www.elsevier.com/copyright>). Acceptance of the agreement will ensure the widest possible dissemination of information. An e-mail (or letter) will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases: contact Elsevier's Rights Department, Oxford, UK: phone (+44) 1865 843830, fax (+44) 1865 853333, e-mail permissions@elsevier.com. Requests may also be completed online via the Elsevier homepage (External link <http://www.elsevier.com/locate/permissions>).

Proofs When your manuscript is received by the Publisher it is considered to be in its final form. Proofs are not to be regarded as 'drafts'. One set of page proofs will be sent to the corresponding author, to be checked for typesetting/editing. No changes in, or additions to, the accepted (and subsequently edited) manuscript will be allowed at this stage. Proofreading is solely your responsibility. The Publisher reserves the right to proceed with publication if corrections are not communicated. Return corrections within 3 days of receipt of the proofs. Should there be no corrections, please confirm this.

Offprints Twenty-five offprints will be supplied free of charge. Additional offprints and copies of the issue can be ordered at a specially reduced rate using the order form sent to the corresponding author after the manuscript has been accepted. Orders for reprints (produced after publication of an article) will incur a 50% surcharge.

Elsevier NIH Policy Statement

As a service to our authors, Elsevier will deposit to PubMed Central (PMC) author manuscripts on behalf of Elsevier authors reporting NIH funded research. This service is a continuation of Elsevier's 2005 agreement with the NIH when the NIH introduced their voluntary 'Public Access Policy'. Please see the full details at: <http://www.elsevier.com/wps/find/authorsview.authors/nihauthorrequest> (this site also includes details on all other funding body agreements).

Elsevier facilitates author response to the NIH voluntary posting request (referred to as the NIH "Public Access Policy", see External link <http://www.nih.gov/about/publicaccess/index.htm>) by posting the peer-reviewed author's manuscript directly to PubMed Central on request from the author, 12 months after formal publication. Upon notification from Elsevier of acceptance, we will ask you to confirm via e-mail (by e-mailing us at NIHauthorrequest@elsevier.com) that your work has received NIH funding and that you intend to respond to the NIH policy request, along with your NIH award number to facilitate processing. Upon such confirmation, Elsevier will submit to PubMed Central on your behalf a version of your manuscript that will include peer-review comments, for posting 12 months after formal publication. This will ensure that you will have responded fully to the NIH request policy. There will be no need for you to post your manuscript directly with PubMed Central, and any such posting is prohibited.

B.1. Letter of approval from Leeds West NHS Research Ethics Committee



National Research Ethics Service

Leeds (West) Research Ethics Committee

Room 22
Floor CD, Block 40
King Edward Home
Leeds General Infirmary
Leeds
LS1 3EX

Telephone: 0113 3926788
Facsimile: 0113 3926788

12 October 2009

Miss Anastasia C Lavda
Trainee Clinical Psychologist
Sheffield Health and Social Care NHS Foundation Trust
Clinical Psychology Unit
The University of Sheffield
Western Bank, Sheffield
S10 2TN

Dear Miss Lavda

Study Title: Do people with skin conditions show attentional biases for social threat and appearance related information?
REC reference number: 09/H1307/76
Protocol number: 4

Thank you for your letter of 21 September 2009, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Vice-Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

For NHS research sites only, management permission for research ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research

This Research Ethics Committee is an advisory committee to Yorkshire and The Humber Strategic Health Authority
The National Research Ethics Service (NRES) represents the NRES Directorate within
the National Patient Safety Agency and Research Ethics Committees in England

governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>. Where the only involvement of the NHS organisation is as a Participant Identification Centre, management permission for research is not required but the R&D office should be notified of the study. Guidance should be sought from the R&D office where necessary.

Sponsors are not required to notify the Committee of approvals from host organisations.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Confirmation of Approval Letter		13 July 2009
Participant Information Sheet: Attached to Advert	4	13 July 2009
Advertisement	4	13 July 2009
Questionnaire: Social Avoidance and Distress		
Questionnaire: Fear of Negative Evaluation Scale		
Questionnaire: Derriford Appearance Scale		
Questionnaire: ISS		
Questionnaire: Rosenberg Self Esteem Scale		
Peer Review		22 December 2009
Letter from Sponsor		12 May 2009
Protocol	4	13 July 2009
Investigator CV		
REC application		13 July 2009
Word Stimuli		
Questionnaire: Measures of Silence, Valence, perceived severity and Perceived noticeability		
Questionnaire: STAI		
Participant Information Sheet	5	21 September 2009
Participant Consent Form	5	21 September 2009
GP/Consultant Information Sheets	Appendix 11	21 September 2009
Appendix 7 - Debrief		21 September 2009
Insurance Certificate and Email		21 September 2009
Response to Request for Further Information		21 September 2009

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Now that you have completed the application process please visit the National Research Ethics Service website > After Review

This Research Ethics Committee is an advisory committee to Yorkshire and The Humber Strategic Health Authority
The National Research Ethics Service (NRES) represents the NRES Directorate within
the National Patient Safety Agency and Research Ethics Committees in England

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document "*After ethical review – guidance for researchers*" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk.

09/H1307/76

Please quote this number on all correspondence

Yours sincerely



Mr Jon Silcock
Chair

Email: laura.milnes@leedsth.nhs.uk

Enclosures: "After ethical review – guidance for researchers"

Copy to: *The University of Sheffield*

RESEARCH IN HUMAN SUBJECTS OTHER THAN CLINICAL TRIALS OF INVESTIGATIONAL MEDICINAL PRODUCTS

After ethical review – guidance for sponsors and investigators

This document sets out important guidance for sponsors and investigators on the conduct and management of research with a favourable opinion from a NHS Research Ethics Committee. Please read the guidance carefully. A failure to follow the guidance could lead to the committee reviewing its opinion on the research.

1. Further communications with the Research Ethics Committee
 - 1.1 Further communications during the research with the Research Ethics Committee that gave the favourable ethical opinion (hereafter referred to in this document as “the Committee”) are the personal responsibility of the Chief Investigator.
2. Commencement of the research
 - 2.1 It is assumed that the research will commence within 12 months of the date of the favourable ethical opinion.
 - 2.2 In the case of research requiring site-specific assessment (SSA) the research must not commence at any site until the Committee has notified the Chief Investigator that the favourable ethical opinion is extended to the site.
 - 2.3 The research must not commence at any site until the local Principal Investigator (PI) or research collaborator has obtained management permission or approval from the organisation with responsibility for the research participants at the site.
 - 2.4 Should the research not commence within 12 months, the Chief Investigator should give a written explanation for the delay. It is open to the Committee to allow a further period of 12 months within which the research must commence.
 - 2.5 Should the research not commence within 24 months, the favourable opinion may be suspended and the application would need to be re-submitted for ethical review.

3. Duration of ethical approval

- 3.1 The favourable opinion for the research generally applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, the Committee should be notified.
- 3.2 Where the research involves the use of "relevant material" for the purposes of the Human Tissue Act 2004, authority to hold the material under the terms of the ethical approval applies until the end of the period declared in the application and approved by the Committee.

4. Progress reports

- 4.1 Research Ethics Committees are expected to keep a favourable opinion under review in the light of progress reports and any developments in the study. The Chief Investigator should submit a progress report to the Committee 12 months after the date on which the favourable opinion was given. Annual progress reports should be submitted thereafter.
- 4.2 Progress reports should be in the format prescribed by NRES and published on the website (see www.nres.npsa.nhs.uk/applicants/after-ethical-review/).
- 4.3 The Chief Investigator may be requested to attend a meeting of the Committee or Sub-Committee to discuss the progress of the research.

5. Amendments

- 5.1 If it is proposed to make a substantial amendment to the research, the Chief Investigator should submit a notice of amendment to the Committee.
- 5.2 A substantial amendment is any amendment to the terms of the application for ethical review, or to the protocol or other supporting documentation approved by the Committee, that is likely to affect to a significant degree:
- (a) the safety or physical or mental integrity of the trial participants
 - (b) the scientific value of the trial
 - (c) the conduct or management of the trial.
- 5.3 Notices of amendment should be in the format prescribed by NRES and published on the website, and should be personally signed by the Chief Investigator. The agreement of the sponsor should be sought before submitting the notice of amendment.
- 5.4 A substantial amendment should not be implemented until a favourable ethical opinion has been given by the Committee, unless the changes to the research are urgent safety measures (see section 7). The Committee is required to give an opinion within 35 days of the date of receiving a valid notice of amendment.
- 5.5 Amendments that are not substantial amendments ("minor amendments") may be made at any time and do not need to be notified to the Committee.

6. Changes to sites (*studies requiring site-specific assessment only*)
- 6.1 Where it is proposed to include a new site in the research, there is no requirement to submit a notice of amendment form to the Committee. The SSI Form together with the local Principal Investigator's CV should be submitted to the relevant local REC for site-specific assessment (SSA).
- 6.2 Similarly, where it is proposed to make significant changes in the management of a site (in particular, the appointment of a new PI), a notice of amendment form is not required. A revised SSI form for the site (together with the CV for the new PI if applicable) should be submitted to the relevant local REC for SSA.
- 6.3 The relevant local REC will notify the Committee whether there is any objection to the new site or Principal Investigator. The Committee will notify the Chief Investigator of its opinion within 35 days of receipt of the valid application for SSA.
- 6.4 For studies designated by the Committee as exempt from SSA, there is no requirement to notify the Committee of the inclusion of new sites.
7. Urgent safety measures
- 7.1 The sponsor or the Chief Investigator, or the local Principal Investigator at a trial site, may take appropriate urgent safety measures in order to protect research participants against any immediate hazard to their health or safety.
- 7.2 The Committee must be notified within three days that such measures have been taken, the reasons why and the plan for further action.
8. Serious Adverse Events
- 8.1 A Serious Adverse Event (SAE) is an untoward occurrence that:
- (a) results in death
 - (b) is life-threatening
 - (c) requires hospitalisation or prolongation of existing hospitalisation
 - (d) results in persistent or significant disability or incapacity
 - (e) consists of a congenital anomaly or birth defect
 - (f) is otherwise considered medically significant by the investigator.
- 8.2 A SAE occurring to a research participant should be reported to the Committee where in the opinion of the Chief Investigator the event was related to administration of any of the research procedures, and was an unexpected occurrence.
- 8.3 Reports of SAEs should be provided to the Committee within 15 days of the Chief Investigator becoming aware of the event, in the format prescribed by NRES and published on the website.

- 8.4 The Chief Investigator may be requested to attend a meeting of the Committee or Sub-Committee to discuss any concerns about the health or safety of research subjects.
- 8.5 Reports should not be sent to other RECs in the case of multi-site studies.
9. Conclusion or early termination of the research
- 9.1 The Chief Investigator should notify the Committee in writing that the research has ended within 90 days of its conclusion. The conclusion of the research is defined as the final date or event specified in the protocol, not the completion of data analysis or publication of the results.
- 9.2 If the research is terminated early, the Chief Investigator should notify the Committee within 15 days of the date of termination. An explanation of the reasons for early termination should be given.
- 9.3 Reports of conclusion or early termination should be submitted in the form prescribed by NRES and published on the website.
10. Final report
- 10.1 A summary of the final report on the research should be provided to the Committee within 12 months of the conclusion of the study. This should include information on whether the study achieved its objectives, the main findings, and arrangements for publication or dissemination of the research including any feedback to participants.
11. Review of ethical opinion
- 11.1 The Committee may review its opinion at any time in the light of any relevant information it receives.
- 11.2 The Chief Investigator may at any time request that the Committee reviews its opinion, or seek advice from the Committee on any ethical issue relating to the research.

B.2. Email of approval from Department of Psychology Ethics Sub-Committee



AC Lavda <pcp07acl@sheffield.ac.uk>

Re: Ethics of "Attentional biases for social threat and appearance threat"

p.sheeran@sheffield.ac.uk <paschal.sheeran@gmail.com>

25 March 2009 12:57

To: pcp07acl@sheffield.ac.uk

Cc: Tom Webb <t.webb@sheffield.ac.uk>, Andrew Thompson <a.r.thompson@sheffield.ac.uk>, Josie Levick <j.levick@sheffield.ac.uk>

Dear Stacey:

Thank you for your submission to the Department of Psychology Ethics Committee (DESC: "Do people with skin conditions show attentional biases for social threat and appearance threat information?").

I now have recommendations from three reviewers. We each agreed independently that the method and procedures in your study satisfy the ethics guidelines of the BPS.

I am therefore pleased to inform you that the ethics of the control condition your research (i.e., the student participants only) are approved.

Yours sincerely,
Paschal Sheeran
Chair, DESC

--

p.sheeran@sheffield.ac.uk
<http://sheeran-socialpsychology.org/>

B.3. Email of approval from Department of Psychology Ethics Sub-Committee to recruit people with skin conditions from the university



Fwd: Approval of your research proposal

1 message

Thomas Webb <T.Webb@sheffield.ac.uk>
To: pcp07acl@sheffield.ac.uk

Good news from ethics (below)...

Tom

----- Forwarded message from Psychology Research Ethics Application Management System <no_reply@PsychologyResearchEthicsApplicationManagementSystem> -----

Date: Thu, 25 Feb 2010 13:15:22 +0000

From: Psychology Research Ethics Application Management System <no_reply@PsychologyResearchEthicsApplicationManagementSystem>
Reply-To: Psychology Research Ethics Application Management System <no_reply@PsychologyResearchEthicsApplicationManagementSystem>
Subject: Approval of your research proposal
To: T.Webb@sheffield.ac.uk

Your submission to the Department of Psychology Ethics Sub-Committee (DESC) entitled "Do people with skin conditions show attentional biases for social threat and appearance threat information?" has now been reviewed. The committee believed that your methods and procedures conformed to University and BPS Guidelines.

I am therefore pleased to inform you that the ethics of your research are approved. You may now commence the empirical work.

Yours sincerely,

Prof Paschal Sheeran
Chair, DESC

----- End forwarded message -----

--
Thomas Webb, PhD
Department of Psychology
The University of Sheffield

B.4.Governance approval letter from Barnsley General District Hospital NHS Foundation Trust

Barnsley Hospital 
NHS Foundation Trust

Gawber Road
Barnsley
S75 2EP

Tel: 01226 730000
Fax: 01226 202859
Minicom: 01226 321014

Research and Development Directorate

Email: dawn.johnson@bhs.nhs.uk

Research Governance Office
Barnsley Hospital NHS Foundation Trust
Tel: 01226 730000
Extension: 2348
Fax: 01226 202109

18 December 2009

Anastasia Lavda
Trainee Clinical Psychologist
Clinical Psychology Unit
University of Sheffield
Western Bank
Sheffield
S10 2TN

Dear Ms Lavda

Do people with skin conditions show attentional biases for social threat and appearance related information?

Thank you for submitting the above project for approval by Barnsley Hospital NHS Foundation Trust. The project was considered by the Research Governance Committee of Barnsley Health and Social Care Research and Development Alliance at a meeting on 23 November 2009 and I am pleased to confirm that the committee agreed to approve the project.

In acting as Principal Investigator for Barnsley on this project, you must make yourself familiar with, observe and comply with:

- The informed consent and procedures approved by the Ethics Committee.
- The Department of Health Research Governance Framework and conduct your research in accordance with its principles.
- The Trust's Health and Safety policy.
- The Trust's procedure for the recording and reporting of adverse incident. In the event of an adverse incident the Ethics Committee and Research Governance Office must also be notified.
- The Trust's Equal Opportunities policy.
- The Trust's Information Security and Confidentiality policy.
- The Trust's Financial Regulations and procedures, if applicable.

Chairman: Stephen Whigg
Chief Executive: Sandra Taylor

ASSOCIATE TEACHING HOSPITAL



You must also:

- Immediately notify the Ethics Committee and the Research Governance Office of any changes in protocol or new information that would raise questions about the continued conduct of the research.
- Ensure that all data and documentation is available for auditing purposes.

Basic information on the project will be entered into the Trust's research database and may be submitted to the Department of Health. The research office may seek further information from time to time in order to fulfill the information requirements of the Trust or NHS Executive.

I should be grateful if you could provide a brief annual report on the progress of the research to the Research Office, including reference to any publications that have arisen from the research. This report should be submitted during March each year, so that pertinent information can be included in the Trust's Annual Research Report.

Yours sincerely



PP Prof S G Parker
Director of Research & Development

Cc: Dr R Sabroe, Dermatology

B.5.Governance approval letter from Rotherham General District Hospital

The Rotherham 
NHS Foundation Trust

Rotherham Hospital
Moorgate Road
Oakwood
Rotherham
S60 2UD

Telephone 01709 820000
www.therotherhamft.nhs.uk

RD: Project No. 09/08/13 - Please quote this number on all correspondence

9.03.10

Dr M Wood
Dept of Dermatology
Room DLC 01
Rotherham General Hospital
Moorgate Road
Rotherham

Dear Dr Wood

I am writing on behalf of the Research and Development lead, Miss D Patel to confirm that your research proposal 'Attentional biases in people with skin conditions' has been approved by the R&D department and may be conducted within the Trust, subject to the following conditions:

Conditions

- You do not deviate from or make changes to the protocol without prior written approval of the R & D Dept, except where this is necessary to eliminate immediate hazards to research participants or when the change involves only logistical or administrative aspects of the research. In such cases the REC and R&D Dept should be informed within seven days of the implementation of the change.
- You complete and return the standard progress report form on a six monthly basis from the date on this letter. This form should also be used to notify the R & D department when your research is completed. At the point of completion, please submit your findings, any publication or presentations of your findings.
- For monitoring purposes, you should maintain an up to date site file with all relevant information. This may be used for audit purposes in the future. Research documentation should be retained for fifteen years after the study has been completed.
- If you decide to terminate this research prematurely, you send a report to this office within 28 days, indicating the reason for the early termination.

Rotherham Research Alliance
Research & Development, DLE91, D Level, PGME corridor

Leads in Research & Development Miss D Patel & Jo Abbott
Research Coordinator Dr Angela Ross Direct Line 01709 307739/4177 Email angela.ross@rothgen.nhs.uk
In partnership with NHS Rotherham and Rotherham Community Health Services



- You advise this office of any unusual or unexpected results that raise questions about the safety of the research. Also, any adverse events experienced during the course of research projects must be reported using the online datix.

If you have any further queries do not hesitate to contact the Research office.

Yours sincerely

A handwritten signature in black ink, appearing to read 'A Ross', with a stylized flourish at the end.

Angela Ross
Research Coordinator

Enc Monitoring/Progress Report Form
Site file list

c.c. Stacy Lavda, Clinical Psychology Unit, University of Sheffield
Dr Thomas Webb, Dept of Psychology, University of Sheffield

Appendix C. Standard measures

Social Avoidance and Distress
Fear of Negative Evaluation
The Derriford Appearance Scale
Salience
Valence
Perceived severity
Perceived Noticeability
Spielberger State Trait Anxiety Inventory (STAI)

Note: All of the standard measures have been edited out of the e-thesis to comply with copyright requirements

D.1. Coding manual for the extraction of data for the meta-analysis

Manuscript details	
Study ID #	
Authors	
Year of publication	
Sample characteristics	
Sample size for the experimental group (N _E)	
Sample size for the control group (N _C)	
Sample type (randomized vs. other)	
Mean age of experimental group	
Mean age of control group	
Mean duration of illness experimental group	
Mean duration of illness control group	
Study characteristics	
Mode of delivery of intervention	
Recruitment strategy for treatment group	
Recruitment strategy for control group	
Time interval for follow up data (in days)	
Duration of therapeutic intervention (in days)	
Original comparison groups, which ones were selected and why	
Type of psychological intervention	
Type of skin condition	
Skin condition also involving physical discomfort (yes/no)	
Methodological characteristics	
Jadad score	
Dependent variables	
Effect sizes	
N _E	
N _C	
<u>Overall Effect Size</u> (Hedges g) and significance of effect size (p < .05, p < .01, p < .001, ns) for the difference between the conditions (ideally calculate from means/SDs, but otherwise convert summary statistic [e.g., p]. Use unadjusted values if both adjusted and unadjusted available, otherwise use covariate adjusted values, for each DV. Effect sizes represent success of the intervention over the control group, with positive direction of g defined by whether the intervention group improved over and above the control group.	
Is the value an average across multiple DVs (yes, no)	
Effect size for skin severity	
Effect size for itch/scratch	
Effect size for psychosocial factors	
Notes:	

D.2. Breakdown of scores of the Jadad quality scale for each study

Study	Randomisation	Randomisation described +adequate	Blind	Blinding described +adequate	Withdrawals described	Total
Brown & Bentley	1	1	1	0	1	4
De L. Horne et al	1	0	0	0	1	2
Ehlers et al	0	0	1	1	1	3
Evers et al	0	0	1	0	1	2
Gaston et al	1	0	1	0	1	3
Habib & Morrissey	1	0	1	1	0	3
Hughes et al	1	1	1	0	0	3
Kabat-Zinn et al	1	0	1	1	1	4
Keinan et al	1	1	0	0	0	2
Kelly et al	1	0	1	1	0	3
Linnet & Jemec	1	0	0	0	1	2
Melin et al	1	0	0	0	1	2
Noren & Melin	1	0	0	0	1	2
Papadopoulos et al (1994)	1	0	1	0	1	3
Papadopoulos et al (2004)	1	0	1	0	1	3
Price et al	1	0	-1	0	1	1
Van Os Medendorp	1	0	1	1	1	4
Vedhara et al	1	1	1	0	1	4
Wiholm et al	0	0	0	0	1	1
Zachariae et al	1	0	1	0	1	3

^a1 = yes, 0 = no, -1 = point deducted for inappropriate process

E.1. a. Advertising Leaflet

Would you be interested
to take part
in a psychology study on skin conditions?

If you are, please read the information sheet attached, which gives you more details about the study and how to participate.

Title of the project: What factors influence how people attend to information?

We would like to invite you to take part in a research study. Before you decide it is important for you to understand what the research will involve. Please take time to read the following information carefully. Take time to decide whether or not you wish to take part. You can keep this information sheet.

What is the purpose of the study?

This study is conducted as part of a clinical psychology doctoral thesis for the University of Sheffield. The study aims to find out if there are differences in the way that people with skin conditions and people without skin conditions attend to information, and whether this is influenced by feelings such as anxiety, self-esteem and shame. Previous research has shown that such feelings can have an effect on the way we attend to and interpret information.

What will be involved if I agree to take part in the study?

The whole study should take approximately 45 minutes to complete in one go.

When you arrive you will be asked to provide some basic information about yourself (age, gender and educational level). On the same form you will be asked whether you have a skin condition and to specify what it is. Following that you will be asked to fill out six questionnaires. Examples of questions in the questionnaires are: First questionnaire "I feel relaxed even in unfamiliar social situations" (True or False); second questionnaire "I rarely worry about seeming foolish to others" (True or False); third questionnaire "I become distressed when others stare" (True or False); fourth questionnaire "I see myself as being very small and insignificant" (Never, Seldom, Sometimes, Often, Almost Always); fifth questionnaire "I wish I could have more respect for myself" (Strongly Agree, Agree, Disagree, Strongly Disagree), and sixth questionnaire "I feel nervous" (Not at all, Somewhat, Moderately So, Very Much So).

Next, you will be asked to complete a computer task, which takes approximately 10 minutes. The computer task will be as follows; after a cross has appeared in the middle of the computer screen, two words will appear one on top of the other. Shortly after, the words will disappear and the letters E or F will appear in the place of one of the two words. You will respond to this letter as quickly as possible by indicating whether it is an E or an F. There will be allocated keys on the keyboard for you to make this response. Do not worry about having to remember these instructions as they will be repeated during the experiment.

Why have I been invited?

We are aiming to recruit a total of 160 people with and without skin conditions to take part in this study. The only conditions for participation is that everyone is over 18 years old and participants with skin conditions have been patients at the clinic for 6 months or more.

Do I have to take part?

This is up to you to decide. Please read the information sheet carefully and fill in the contact slip should you wish to be contacted for participation. On the day of the study we will ask you to sign a consent form that states that you have agreed to take part. There will be two copies of the consent form so that both you and the researcher can keep one.

P.T.O

Will the information obtained in the study be confidential?

Anything you say will be treated in confidence, no names will be mentioned in any reports of the study. Your name will not be written anywhere except on the consent form which will not be associated with your responses. You will be randomly assigned an experimental number to ensure your confidentiality.

Can I withdraw from the study at any time?

Yes. You are free to refuse to join the study and may withdraw at any time or choose not to answer certain questions, without having to give a reason. *This will not affect the healthcare you receive in any way.* If you decide to withdraw during the study your data can be destroyed. However as the data is anonymous we will not be able to destroy it if you withdraw consent at a later date.

What if I wish to complain about the way in which this study has been conducted?

If you have any cause to complain about any aspect of the way in which you have been approached or treated during the course of this study, the normal National Health Service complaints mechanisms are available to you and you are not compromised in any way because you have taken part in a research study.

If you have any complaints or concerns please contact the project co-ordinator: Dr Thomas Webb, Department of Psychology, University of Sheffield, Sheffield, S10 2NT. Otherwise you can use the normal hospital complaints procedure and contact the Patient Advice and Liaison Service at the Hospital

Otherwise you can use the normal University complaints procedure and contact the following person: Dr David Fletcher, Registrar and Secretary's Office, University of Sheffield, Firth Court, Western Bank, Sheffield S10 2NT

If you would like more information please contact me via the Research Support Officer (Christie Harrison) at the Clinical Psychology Unit of the University of Sheffield (please note that the Research Support Officer cannot answer any enquiries but will give me a message to call you back).

All research in the NHS is looked at by independent group of people, called a Research Ethics Committee to protect your safety, rights, wellbeing and dignity. This study has been reviewed and given favourable opinion by (*insert name*) Research Ethics Committee

Thank you

Stacey Lavda, Trainee Clinical Psychologist
Clinical Psychology Unit
The University of Sheffield
S10 2TN

Contact Slip

I would like to take part in your study titled ‘what factors influence how people attend to information’ and I would like you to contact me in order to book an appointment.

Name	
Contact details Phone number (+area code): Email/postal address:	
Preferred method of communication	
Preferred time of day for phone call	

Please hand this contact slip to the receptionist who will pass it to the researcher

Thank you

Stacey Lavda
Trainee Clinical Psychologist
Clinical Psychology Unit
The University of Sheffield

E.1.b. Email to recruit control participants

Hello,

My name is Stacey and I am a postgraduate at the Clinical Psychology Unit. I am conducting a study looking into differences in the way that people with skin conditions and people without skin conditions attend to information. I am emailing you to invite you to take part in this study. Participation involves one appointment that will last approximately 45 minutes and will take place at the psychology department. Taking part will involve answering some questionnaires and completing a short computer task.

I am particularly interested in recruiting people of different ages and educational backgrounds. You do not need to be a student to take part. At this stage I am only looking to recruit people **without** a skin condition (e.g. acne, eczema, vitiligo etc). Please do not respond to this ad if you do have a skin condition. I appreciate your understanding.

If you are interested in learning more about the study please do not hesitate to email me.

If you would like to take part please reply to this email and I will get in touch with you to book an appointment.

Thank you of reading this far and for your interest in my study.

Kind Regards

Stacey Lavda

Trainee Clinical Psychologist

Clinical Psychology Unit

The University of Sheffield

Sheffield

S10 2TN

E.1.c.i. Email to recruit skin condition sample from university

Hello,

I am looking for people who are interested to take part in a psychology study on skin conditions. Participation involves one appointment that will last approximately 45 minutes and will take place at the psychology department. Taking part will involve answering some questionnaires and completing a short computer task.

If you would like to take part, or have any questions, please reply to this email and I will get in touch with you to book an appointment.

Thank you for reading this far and for your interest in my study.

Kind Regards

Stacey Lavda

Trainee Clinical Psychologist

Clinical Psychology Unit

The University of Sheffield

Sheffield

S10 2TN

This study has been approved by the Psychology Department Research Ethics Committee

E.1.c.ii. Second Email to be sent after people have opted in

Dear xxx,

Thank you for your interest in my study. As you know from my previous email, this study is looking into differences in the way that people with and people without skin conditions attend to information. I am therefore looking to recruit people both with and without skin conditions. You are eligible to take part if (a) you do have a skin condition and you have had it for 6 months or longer (b) you don't have a skin condition. Please can you let me know therefore if you have a skin condition or not and if you do, whether you have had it for longer than 6 months. Please be assured that your information will be treated with the strictest confidentiality and respect.

Please could you also let me know which of these times is most convenient for you to come to the Psychology Department for the appointment: (insert dates/times). I will get back to you with the date/time that I have booked you in for.

If you have any questions please don't hesitate to email me.

This study has been approved by the Department of Psychology Ethics Committee.

Thank you very much

Stacey Lavda
Trainee Clinical Psychologist
Clinical Psychology Unit
The University of Sheffield
Sheffield
S10 2TN

E.2. Participant Information Sheets

E.2.a. Participant Information Sheet – NHS recruitment site

Title of the project: What factors influence how quickly people respond on computer tasks?

We would like to invite you to take part in a research study. Before you decide it is important for you to understand what the research will involve. Please take time to read the following information carefully before making a decision. Please ask me if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

The study aims to find out if there are differences in the way that people with skin conditions and people without skin conditions attend to information, and whether this is influenced by feelings such as anxiety, self-esteem and shame.

What will be involved if we agree to take part in the study?

The whole study should take approximately 45 minutes to complete.

When you arrive you will be asked to provide some basic information about yourself (age gender and educational level). On the same form you will be asked whether you have a skin condition and to specify what it is if you do. Following that you will be asked to fill out six questionnaires. Some questions in these questionnaires ask you to think about your feelings towards yourself or aspects of yourself. Examples of questions in the questionnaires are: First questionnaire “I feel relaxed even in unfamiliar social situations” (True or False); second questionnaire “I rarely worry about seeming foolish to others” (True or False); third questionnaire “I become distressed when others stare” (True or False); fourth questionnaire “I see myself as being very small and insignificant” (Never, Seldom, Sometimes, Often, Almost Always); fifth questionnaire “I wish I could have more respect for myself” (Strongly Agree, Agree, Disagree, Strongly Disagree), and sixth questionnaire “I feel nervous” (Not at all, Somewhat, Moderately So, Very Much So).

Next, you will be asked to complete a computer task, which takes approximately 10-15 minutes. In the computer task you will be asked to indicate which of two letters (E or F) has appeared on the screen following the presentation of a pair of words. Do not worry about having to remember these instructions as they will be repeated in more detail during the experiment.

Do I have to take part?

This is up to you to decide. Please read the information sheet carefully. You will be able to take this information sheet with you after the study. If you do agree to take part we will ask you to sign a consent form that states that you have agreed to take part. If you agree to take part in this study, we will need to send a letter to your GP notifying them that you have taken part in the study. This letter will only notify your GP of your participation and explain the nature of the study. The letter will not reveal any of your data or answers. Your consultant dermatologist will also be notified of your participation.

Can I withdraw from the study at any time?

Yes. You are free to refuse to join the study and may withdraw at any time or choose not to answer certain questions. You do not have to give a reason for any of the above. Withdrawing from the study will NOT affect the healthcare that you receive.

Will the information obtained in the study be confidential?

Anything you say will be treated in confidence, no names will be mentioned in any reports of the study. Your name will not be written anywhere except on the consent form, which will not be associated with your responses. You will be randomly assigned an experimental number to ensure your confidentiality. If you decide to withdraw from the study during the time that you are taking part, then we will be able to destroy your data. However, as your data will be anonymous, if you decide to withdraw consent after you have left the location of the study, we will not be able to identify which is your data in order to destroy it, and therefore your data will unavoidably still be used.

What will happen to my data?

Data will not be reported on an individual basis. Only group means will be reported in any published material. Only the researchers involved in this study will have access to your data, however research is often subject to audits and therefore regulatory bodies may access the data collected and the consent forms, for this purpose. The data, which will be anonymous, will be kept separate to the consent forms and therefore your name will not be associated with your responses. These persons also have a duty of confidentiality towards you.

What are the risks and benefits of taking part in this study?

Some of the questions in the questionnaires that you will be requested to complete may evoke negative feelings in certain people (example questions have been given above). You do not have to answer questions that you find too distressing. The benefits of this study will not be felt by you directly; however we are hoping to use the results to strengthen the knowledge base on psychological distress experienced by some people with skin conditions, with the aim to inform psychological therapies in this area.

What if I wish to complain about the way in which this study has been conducted?

If you have any cause to complain about any aspect of the way in which you have been approached or treated during the course of this study, the normal National Health Service complaints mechanisms are available to you and are not compromised in any way because you have taken part in a research study.

If you wish to contact the principle investigator, Stacey Lavda, regarding any complaints or concerns, please call Christie Harrison, Research Support Officer (0114 2226650) who will relay your message and I will call you back (please note that the Research Support Officer cannot answer any enquiries herself).

If you wish to contact the project co-ordinator, please contact Dr Thomas Webb, Department of Psychology, University of Sheffield, Sheffield, S10 2NT.

Otherwise you can use the normal hospital complaints procedure and contact the Patient Advice and Liaison Service at the Hospital

All research in the NHS is looked at by independent group of people, called a Research Ethics Committee to protect your safety, rights, wellbeing and dignity. This study has been reviewed and given favourable opinion by the Leeds West Research Ethics Committee

Thank you

Stacey Lavda
Trainee Clinical Psychologist
Clinical Psychology Unit
The University of Sheffield
S10 2TN

E.2.b. Participant information sheet – University recruitment site

Title of the project: What factors influence how quickly people respond on computer tasks?

We would like to invite you to take part in a research study. Before you decide it is important for you to understand what the research will involve. Please take time to read the following information carefully before making a decision. Please ask me if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

The study aims to find out if there are differences in the way that people with and without skin conditions attend to information, and whether this is influenced by feelings such as anxiety, self-esteem and shame.

What will be involved if we agree to take part in the study?

The whole study should take approximately 45 minutes to complete.

When you arrive you be asked to provide some basic information about yourself (age gender and educational level). On the same form you will be asked whether you have a skin condition and to specify what it is if you do. Following that you will be asked to fill out six questionnaires. Examples of questions in the questionnaires are: First questionnaire “I feel relaxed even in unfamiliar social situations” (True or False); second questionnaire “I rarely worry about seeming foolish to others” (True or False); third questionnaire “I become distressed when others stare” (True or False); fourth questionnaire “I see myself as being very small and insignificant” (Never, Seldom, Sometimes, Often, Almost Always); fifth questionnaire “I wish I could have more respect for myself” (Strongly Agree, Agree, Disagree, Strongly Disagree), and sixth questionnaire “I feel nervous” (Not at all, Somewhat, Moderately So, Very Much So).

Next, you will be asked to complete a computer task, which takes approximately 15 minutes. The computer task will be as follows; after a cross has appeared in the middle of the computer screen, two words will appear one on top of the other. Shortly after, the words will disappear and the letter E or F will appear in the place of one of the two words. You will respond to this letter as quickly as possible by indicating whether it is an E or an F. There will be allocated keys on the keyboard for you to make this response. Do not worry about having to remember these instructions as they will be repeated during the experiment.

Do I have to take part?

This is up to you to decide. Please read the information sheet carefully. You will be able to take this information sheet with you after the study. If you do agree to take part we will ask you to sign a consent form that states that you have agreed to take part.

Can I withdraw from the study at any time?

Yes. You are free to refuse to join the study and may withdraw at any time or choose not to answer certain questions. You do not have to give a reason for any of the above.

Will the information obtained in the study be confidential?

Anything you say will be treated in confidence, no names will be mentioned in any reports of the study. Your name will not be written anywhere except on the consent form and your name will not be associated with your responses. You will be randomly assigned an experimental number to ensure your confidentiality.

What will happen to my data?

Data will not be reported on an individual basis. Only group means will be reported in any published material. Only the researchers involved in this study will have access to your data, however research is often subject to audits and therefore regulatory bodies may access the data collected and the consent forms, for this purpose. The data, which will be anonymous, will be kept separate to the consent forms and therefore your name will not be associated with your responses. These persons also have a duty of confidentiality towards you.

What if I wish to complain about the way in which this study has been conducted?

If you wish to contact the principle investigator, Stacey Lavda, regarding any complaints or concerns, please call Christie Harrison, Research Support Officer (insert contact details) who will relay your message and I will call you back (please note that the Research Support Officer cannot answer any enquiries herself).

If you wish to contact the project co-ordinator, please contact Dr Thomas Webb, Department of Psychology, University of Sheffield, Sheffield, S10 2NT.

Otherwise you can use the normal university complaints procedure and contact the following person: Dr David Fletcher, Registrar and Secretary to the University of Sheffield, The University of Sheffield, Western Bank, Sheffield, S10 2TN, UK

This project has been approved by the Department of Psychology Ethics Committee

Thank you

Stacey Lavda

Trainee Clinical Psychologist

Clinical Psychology Unit

The University of Sheffield

S10 2TN

E.3. Consent Forms

E.3.a. Consent form – Skin condition group

Title of Project: What factors influence how quickly people respond on computer tasks?

Name of Researcher: Stacey Lavda

Please initial box

1. I confirm that I have read and understand the information sheet dated 12.10.2010 for the above project and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.
3. I understand that my responses will be anonymised before analysis. I give permission for members of the research team to have access to my anonymised responses.
4. I understand that if I withdraw consent after I have taken part in the study, my data cannot be destroyed as it will be anonymous.
5. I understand that a letter will be sent to my GP to inform them of my participation, and that no information about my responses will be included in this letter.
6. I understand that my consultant dermatologist will be informed of my participation
7. I understand that authorised person's (e.g. Research Support Officer, R&D audit) may access my data and my consent form for the purpose of audit
8. I agree to take part in the above research project.

Name of Participant Date Signature
(or legal representative)

Lead Researcher Date Signature

To be signed and dated in presence of the participant

Copies: Once this has been signed by all parties the participant should receive a copy of the signed and dated participant consent form, information sheet and any other written information provided to the participants. A copy for the signed and dated consent form should be placed in the project's main record (e.g. a site file), which must be kept in a secure location.

E.3.b. Consent Form – Control group

Title of Project: What Factors influence how quickly people respond on computer task

Please delete as necessary

1. Have you read the Participant Information Sheet?	YES/NO
2. Have you received enough information about the study?	YES/NO
3. Do you understand that you do not need to take part in the study and if you do enter you are free to withdraw:- * at any time * without having to give a reason for withdrawing * and without detriment to you?	YES/NO
4. Do you agree to take part in this study?	YES/NO

Name of participant: **Signed:** **Date:**

Name of researcher: **Signed:** **Date:**

E.4. Demographic characteristics form

Please fill in the following details about yourself:

Your Age:.....

Your Gender: Female / Male

How many years have you been in education?

Do you have a skin condition? If yes, please specify the condition:

.....
.....

E.5. Debrief letter

With this study we are investigating the way people with and without potentially disfiguring skin conditions attend to information.

For some people disfiguring conditions can lead to psychological distress and social anxiety can be a big part of this.

It has been shown in previous studies that people who experience social anxiety attend to information in a different way than people who do not experience social anxiety. This can manifest in terms of ‘hyper-awareness’ to threat. For example, in the same way that people who are afraid of spiders might spot one faster than people who are not, people who have social anxiety might become aware of socially threatening information faster and more frequently than others. It is also believed that this bias in attention can actually be part of what causes and what helps to maintain the social anxiety.

In this study we measured your reaction times when responding to letters (E and F) that appeared after different types of word stimuli, in order to assess if you were attending the threatening or the non-threatening word in the word pairs that were presented. This will show us whether there is a difference in how people who have and people who do not have a potentially disfiguring skin condition attend to threatening information and how this may be influenced by feelings of social anxiety, appearance concerns, shame, and self esteem (measured by the questionnaires). The reason we told you that you would be joining other participants to take part in a group discussion was so that we could activate the social anxiety in people who do experience it. This ensured that if biases in attention do exist they would be activated too.

With this study we are hoping to find out whether biases in attention exist in people with disfiguring skin conditions and if these biases are related to social anxiety. As methods exist that aim to reduce social anxiety by tackling the biases in attention, one of the hopes of this study is to find out whether people with disfiguring skin conditions would benefit from these techniques too.

We are grateful for your help. If you have any questions regarding the study please do not hesitate to contact the experimenter by email: pcp07acl@shef.ac.uk or post: Stacey Lavda, Clinical Psychology Unit, The University of Sheffield , S10 2NT

Overleaf we have listed some websites and books that you might find useful if you do have a dermatological condition that is disfiguring and you would like some more information or to get in touch with other people who have the same condition. This is not an exhaustive list.

If you have found anything in this study difficult or distressing you would be encouraged to contact your Dermatologist for further advice.

Thank you for your participation
Stacey Lavda, Trainee Clinical Psychologist

Websites related to dermatological and disfiguring conditions:

www.psoriasis-association.org.uk

www.birthmarksupportgroup.org.uk

www.eczema.org

www.eczemavoice.com

www.vitiligosociety.org.uk

www.vbfeurope.org (Vascular Birthmark Foundation)

<http://www.thehealingfoundation.org/home.htm>

www.changingfaces.org.uk

Self-help guide for social anxiety:

<http://www.nnt.nhs.uk/mh/leaflets/shy%20A5.pdf>

Book: Overcoming social anxiety and shyness: a self help guide using cognitive behavioural techniques

By: Gillian Butler

London: Robinson

Published in 1999

E.6. Exploratory Factor Analysis

Principal factor extraction was chosen as the most appropriate method of factor extraction, because its solution is based entirely on the shared variance of the variables, to the exclusion of error and unique variance that serve to “confuse the picture of underlying processes” (Tabachnick & Fidell, 1996, p.663). Oblique rotation was used because it would be reasonable to assume that the underlying processes are correlated. Delta was set to a value of 0 so as to preserve a non-orthogonal solution but without allowing for very highly correlated factors that could be indistinguishable (Tabachnick & Fidell, 1996). The principal factor extraction was conducted using SPSS 18 on the total scores of each variable for the sample of $N = 122$ participants. An initial factor analysis showed two distinct factors based on Kaiser’s, 1958, criterion of eigenvalues > 1 , that explained 61.65% of the variance in participants’ responses. Table A shows the variable loadings on the two factors, the amount of variance explained (R^2) and the internal consistency of each factor (α coefficient).

Factor 1 had high loadings from variables measuring appearance concerns (DAS-24), severity and noticeability of the feature of concern, and valence of appearance. Factor 2 had high loadings from the social anxiety measures (FNE and SAD), shame (ISS), self-esteem (RSES) and salience of appearance. These factors were not interpreted and labelled because of the difficulty in doing so given the combination of variables that loaded on each. The reliability of the factors was satisfactory ($M = 0.71$) and the factors were correlated at $r = -0.68$.

Table A1.

Principal axis factoring with direct quartimin rotation

Factor/ Variables	Factor 1	Factor 2
Severity	-0.74	
Noticeability	-0.74	
Valence (r)	0.67	
DAS-24 ^a	0.50	
FNE		0.94
RSES (r)		-0.84
ISS		0.83
SAD		0.63
Saliency		0.44
R^2	0.50	
α	0.67	
R^2		0.09
α		0.75

Note: Loadings < 0.3 are suppressed. (r): scale recoded prior to factor analysis

^a Complex item loading on both factors above 0.3

Hierarchical multiple regression using the factors. In order to examine how much of the variance in attentional bias scores was explained by the three factors over and above any predictive effect of the demographic characteristics (age and gender), a hierarchical multiple regression was carried out with the demographic variables entered in the first step and the factor scores in the second

step. This analysis was repeated for each word group. Results indicated that the demographic variables ($R^2(2, 119) < 0.03$, *ns*) and the three factors ($\Delta R^2(3, 116) < 0.04$, *ns*) did not significantly predict attentional responses to the negative evaluation, appearance, physical, positive and neutral words. Demographic variables accounted for 5.7% of the variance in attentional biases relating to the somatic sensations word group (log), $R^2(2, 119) = 0.06$, $p < 0.05$, with both age ($\beta = 0.18$, $p < 0.05$) and gender ($\beta = -0.18$, $p < 0.05$) contributing significantly to the variance. The two factors in the second step of the model, however, were not significant predictors, $\Delta R^2(3, 116) = 0.09$, *ns*.