Self-help targeting body image among adults living with dermatological conditions: An evaluation of a brief writing intervention

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Yellow sticker (SpLD)

Declaration

I, the author, confirm that the Thesis is my own work. I am aware of the University's

Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This

work has not been previously presented for an award at this, or any other, university.

Structure and wordcount

Part 1: Systematic review

Wordcount: 5492 (excluding tables and references)

Wordcount: 9844 (including tables and references)

Part 2: Empirical study

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Total word count

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Overall Abstract

Given the potential for conditions that affect appearance to affect psychosocial wellbeing, there is a need for evidence-based interventions for this population. Objective severity is a poor predictor of distress associated with living with a visible difference, compared to societal and individual differences. Psychologically informed self-help interventions may offer a readily accessible and flexible form of support. This thesis therefore seeks to: (1) better understand the current state of research on self-help interventions targeting distress associated with having a visibly different appearance; and (2) test the acceptability and effectiveness of a specific self-help writing intervention.

The first part of this thesis comprises of a systematic review of self-help interventions. This review offers an update to a similar review conducted in 2013, which explored the acceptability, usability, and effectiveness of psychologically informed self-help interventions developed for populations with conditions that affect external appearance. The current review identified 13 papers, which used a diverse range of methodologies to examine the acceptability, usability, and/or effectiveness of specific self-help interventions in this population. Based on ratings on quality appraisal tools, the quality of qualitative papers examining the acceptability and informing development were generally high, whereas the quality of randomised studies was generally poor. However, appraisals should be considered in the context of pilot and feasibility studies. Common limitations related to high attrition, particularly in intervention arms of studies. Self-help materials were generally rated positively. However, positive feedback did not necessarily translate to greater uptake, adherence, or effectiveness. While there was some limited evidence for compassion-based

interventions increasing self-compassion, there was a lack of consistent evidence for effects on alternative measures of distress.

The second part of this thesis reports the findings of a Randomised Controlled Trial, comparing a one-week functionality-focused writing intervention, to a control (creative writing). Of 451 adults with a dermatological condition randomised, 155 completed at least one post-intervention measure. For participants with relatively low and mid-range positive body image baseline scores, there was evidence of a positive effect of the intervention on measures of body appreciation and functionality appreciation. Effects were mostly maintained at one-month follow up and in intention-to-treat analysis, with smaller effect sizes. However, when compared to the control, there was no evidence of an effect of the intervention on measures of appearance anxiety, skin shame and dermatology quality-of-life. Feedback was generally positive. However, like many of the papers included within the systematic review, this study had high rates of attrition, limiting the ability to draw conclusions around the effectiveness of the intervention based on allocation rather than completion.

Acknowledgements

Contents

Tables

Figures

Part 1: Systematic review

A systematic review examining the acceptability,

usability, and effectiveness of self-help interventions

for adults living with a visible difference: an update.

A systematic review examining the acceptability, usability, and effectiveness of self-help interventions for adults living with a visible difference: an update.

Abstract

Objectives: A systematic review was undertaken to identify, appraise and summarise the current (>2013) literature examining the acceptability, usability, and effectiveness of pure self-help interventions targeting distress associated with living with a visible difference, as an adult.

Methods: Thirteen articles met the inclusion criteria. Most were described as pilot or feasibility studies ($n = 8$). Studies employed a diverse range of methods to assess the acceptability, usability, and potential effectiveness. Studies most frequently tested the interventions in populations with visible skin conditions and most commonly examined self-help resources based on third-wave approaches.

Results: Feedback was largely positive for specific self-help interventions, with participants reportedly valuing flexibility and privacy. However, attrition was high, and few studies received high ratings on quality assessment tools. While compassion-based interventions appeared to increase self-compassion, there was a lack of conclusive evidence to suggest broader benefits of the self-help interventions on distress-based measures within populations with visible differences.

Conclusions: Since the last review in 2013, there has been greater focus on earlier phases of self-help development. However, this has not yet translated into high quality trials testing the effectiveness of self-help interventions for adults living with a range of visible differences.

Practitioner points

- While self-help can offer privacy and accessibility, considerations are needed for engagement and safeguarding.

- Positive feedback on interventions does not necessarily translate to effectiveness or greater usage.

- There was some limited evidence for compassion-based interventions increasing self-compassion in populations with visible differences.

- There was a lack of evidence for the effect of specific self-help interventions on other measures of wellbeing associated with living with a visible difference.

Limitations

- Included studies employed a wide variety of designs, making it difficult to make direct comparison or synthesise data as part of a meta-analysis.

- Trials within this review were deemed to have a high risk of bias, making it difficult to establish the effectiveness of self-help intervention in populations with visible differences.

A systematic review examining the acceptability, usability, and effectiveness of self-help interventions for adults living with a visible difference: an update.

Introduction

Visible differences

Over 1.3 million individuals living within the UK are estimated to have a significant visible difference that comes under the Equality Act 2010 under the term 'disfigurement' (Changing Faces, 2017). Visible differences encompass a wide range of congenital and acquired conditions that affect an individual's outward physical appearance. Common causes of visible differences include craniofacial conditions (e.g. cleft lip, Treacher Collins syndrome), injuries (e.g. burns), disease (e.g. dermatological conditions), and treatment side effects (e.g. surgical scars, chemotherapy induced alopecia). The course and visibility of such conditions can vary massively. A condition is typically considered more visible if it affects an individual's face, hair, neck, or hands, compared to conditions that are more easily concealed through clothing (e.g. mastectomy scars).

Psychosocial impact

Individuals with a wide range of conditions commonly describe adverse psychosocial effects of looking visibly different in societies that place value on external appearance (All Party Parliamentary Group on Skin [APPGS], 2013; Changing Faces, 2017). Furthermore, personal accounts highlight the reality of societal and interpersonal rejection, which can take the form of intrusive reactions like staring, bullying, avoidance of contact, and discrimination across

a range of settings, including employment and romantic relationships (British Skin Foundation, 2015; Reynolds & Harris, 2020). Correspondingly, experimental studies indicate that people can possess negative assumptions and implicit biases against visible differences (Grandfield et al., 2005; Stone & Wright, 2013). Subsequently, it is unsurprising that individuals with visible differences report feelings of shame, elevated rates of impaired quality-of-life, low mood, appearance concern and anxiety, particularly around social situations (Changing Faces, 2017; Rumsey et al., 2004).

There is considerable individual variation in psychosocial outcomes, and it is important to recognise that many people living with appearance-affecting conditions report coping well and living fulfilling lives (Egan et al., 2011; Versnel et al., 2012). Furthermore, clinician rated severity correlates poorly with appearance-related distress (Versnel et al., 2012). Instead, psychosocial variables including self-rated severity appear to be stronger predictors of distress (Magin et al., 2011; Rumsey, 2018). Thompson and Kent (2001) propose a biopsychosocial model of distress within adults living with a visible difference, theorising that exposure to appearance-related societal norms and repeated experiences of societal rejection can be internalised resulting in a discrepancy between an individual's 'actual self' (possessing a condition that affects appearance) and 'ideal self', resulting in feelings of shame, social isolation and appearance-related distress. Furthermore, cognitive (e.g. anticipating rejection, appearance comparison) and behavioural (e.g. concealing visible difference, avoidance) factors are theorised to play a cyclical role in maintaining such distress, whilst social support and acceptance from others are theorised to mitigate distress (Thompson & Kent, 2001). This is consistent with cross-sectional, qualitative and experimental research, which

indicates that avoidance and concealment are common coping strategies, and cognitive processes (e.g. appearance salience) mediate the relationship between physical condition and distress (Moss et al., 2014; Prior & Khadaroo, 2015; Zucchelli et al., 2020).

Interventions

Whilst medical and concealment-based (e.g. wig use in alopecia or camouflage makeup for skin disease/scarring) interventions can reduce intrusive reactions experienced by individuals with a visible difference (Marron et al., 2013), there is also evidence that appearance-related anxiety persists (Thompson & Kent, 2001; Montgomery et al., 2017). Subsequently, there is a clear need for psychologically informed and evidence-based interventions for individuals experiencing distress associated with possessing a visibly different appearance. Accounts from health professionals, patient-led organisations, and individuals living with a wide range of conditions support the need for accessible and effective interventions as a key research priority (APPGS, 2013; Changing Faces, 2017; Clarke et al., 2014; Thompson et al., 2020).

Rumsey and Harcourt (2012) propose a six-level model of appearance-related interventions: (1) societal level interventions; (2) condition-specific educational materials and targeted interventions for schools and professionals; (3) stand-alone psychological self-help interventions; (4) guided self-help with a trained professional; (5) 1-2-1 therapeutic interventions with a professional; and (6) more complex interventions led by specialist professionals.

Self-help

Self-help can be conceptualised in different ways. Within this review self-help is conceptualised as the provision of a stand-alone intervention, in the form of different media formats (e.g. book, website, leaflet), which are designed to facilitate change, and are delivered by the individual accessing them, with no or minimal input from a professional or practitioner (Gould & Clum, 1993). Psychologically informed self-help interventions are a key component of mental healthcare provision within the UK, and are incorporated into guidelines for anxiety, depression, and long-term conditions (National Institute for Health and Care Excellence [NICE], 2009a, 2009b, 2013). Whilst not a panacea, self-help interventions have the advantage of being readily accessible and cost-effective. This appears particularly valuable within the context of growing waiting lists and remote care during the current Coronavirus pandemic. Furthermore, self-help interventions may bypass some of the barriers to implementing psychosocial interventions within physical healthcare contexts like dermatology clinics (APPGS, 2013; Thompson, 2014).

A systematic review specifically looking at self-help interventions for individuals with a range of visible differences was published eight years ago (Muftin & Thompson, 2013). This review highlighted 'tentative' potential benefits of self-help interventions for individuals living with a visible difference. However, Muftin and Thompson, (2013), concluded that, in line with Medical Research Council (MRC) guidelines for complex interventions (Craig et al., 2008), there was a need for further empirical research reporting on the development, acceptability, and usability of self-help interventions with populations with visible differences. Later reviews and meta-analyses have produced mixed outcomes,

reporting either no effect or small-medium effect sizes for psychological interventions targeted at young people with visible differences (Jenkinson et al., 2015) and disorder specific interventions (Richardson et al., 2019; Zill et al., 2019). However, no further reviews have specifically looked at self-help interventions, or collated these studies across a range of visible differences in an adult population.

To our knowledge there have been no further reviews systematically examining the current state of self-help intervention research in adult populations living with a range of visible differences. We therefore sought to: Systematically identify, appraise, and summarise recent (≥ 2013 onwards) studies evaluating the effectiveness, usability and acceptability of self-help interventions targeting psychosocial wellbeing associated with living with a visible difference.

Method

The protocol for this review is informed by Centre for Reviews and Dissemination (2009) guidance on undertaking systematic reviews in relation to health and healthcare, and was preregistered with the International Prospective Register of Systematic Reviews ([PROSPERO], ID: CRD42021247020).

Study selection

Search terms related to 'visible difference', 'self-help' interventions and psychosocial outcomes (see Appendix A1 for a full list of terms) were used to systematically search five databases: Web of Science, PsychInfo, Scopus, CINAHL and the Cochrane database. Search terms were based on terms used within previous reviews and incorporate both broader and more specific terms (Muftin & Thompson, 2013; Norman & Moss, 2015). Citations of previous

reviews, as well as citations and reference lists for included papers, were searched to identify any additional relevant papers. Given this is an update to a previous review, searches were limited to June 2013 onward, and the same criteria of English language and peer-reviewed articles were also applied.

Inclusion criteria

Peer-reviewed articles were included in the review if they evaluated the acceptability, usability and/or effectiveness of a self-help intervention(s) within an adult (≥age 16) population with a visible difference. For coherence, this review only included 'pure' self-help, which was defined as a standalone intervention with no or minimal input from a professional or instructor (e.g. technical or initial instruction only). Self-help interventions were required to be psychologically informed and target psychosocial distress associated with living with a visibly different appearance. Consequently, studies focused on non-medical interventions or physical symptom (e.g. pain, dysphagia) management alone were not included.

For the purpose of this review, visible differences included a range of congenital and acquired conditions that affect the physical appearance of skin, hair, face, neck, hands or stature. Where studies included individuals with, as well as without, a visible difference (e.g. family, professionals), the outcomes specific to the participants with a visible difference, needed to be clearly outlined. Due to theoretical differences, studies focused on weight, disordered eating, or body dysmorphic disorder (BDD), not in the context of another health condition that affects appearance, were also excluded. Given the focus of this review on different stages of the development of complex interventions as per

MRC guidance (Craig et al., 2008), qualitative and quantitative studies were eligible for inclusion.

Procedure

Output, including article authors, title, key words, and abstracts for each article identified in the searches were downloaded into Endnote. Duplicates were then removed within EndNote. The titles and abstracts were then screened against the inclusion and exclusion criteria outlined above. Full texts of the remaining articles were then obtained and screened using the same criteria. Where it was unclear whether an article met the inclusion criteria, a consensus was sought with the supervisory team. Figure 1.1 illustrates the number of studies excluded at each stage, as well as the rationale for full-text articles being excluded. Of 8120 articles screened at the title/abstract level and 100 screened at the full-text level, 13 were deemed to meet the inclusion criteria and therefore included in the analysis.

Data from the 13 included papers is summarised in Table 1.1. Given the inclusions of papers with a wide range of study designs the review findings are presented as a narrative synthesis.

Quality appraisal

In line with guidance for the appraisal of medical and intervention studies, studies were systemically appraised for internal validity/reporting using reputable quality assessment tools (Ma et al., 2020). Studies predominantly adopting qualitative methodologies were appraised using the Critical Appraisal Skills Programme (2018) tool for qualitative studies. The quality appraisal tool most closely matching each quantitative paper's design was selected from the National Institutes of Health's (NIH) quality appraisal tools (NIH, 2014). In order

to ensure the literature has been appraised in accordance with the guidelines, 20% of the papers, stratified by methodology, were second coded by an independent researcher, and discrepancies in rating were discussed to reach a consensus. Where the rating was changed the corresponding items on other studies were reviewed.

Figure 1.1. PRISMA diagram illustrating study selection process
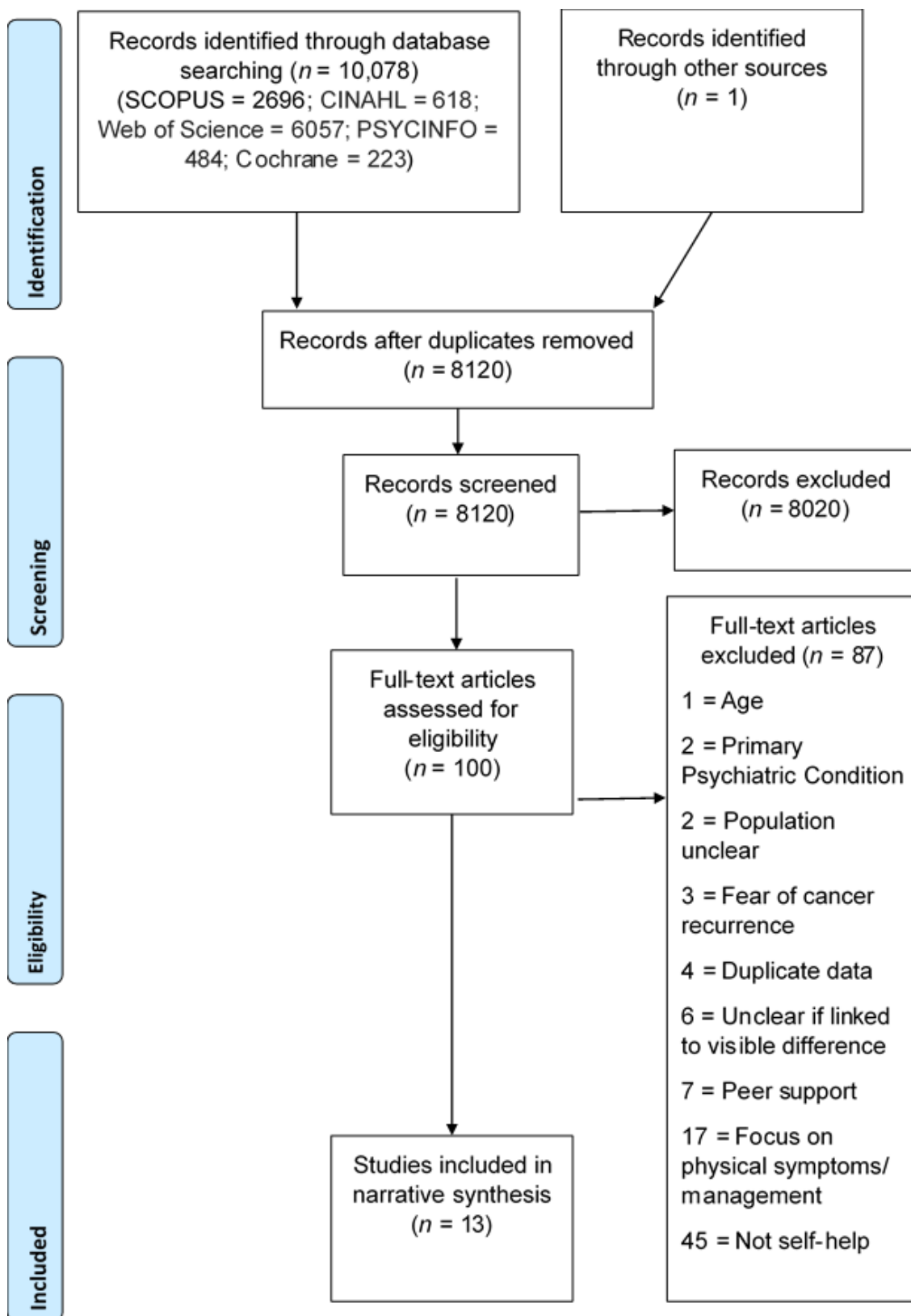
Table 1.1. Characteristics and findings for included studies.

Author (year)	Design	Intervention (duration)	Participants (*n* allocated to conditions)	Outcome measures	Findings
Zucchelli et al. (2021)	Qualitative: Participatory & 'think aloud'	Acceptance and Commitment Therapy-informed mHealth app (4 sessions).	Various visible differences (*n* = 6); Clinicians (*n* =8)	Verbatim feedback	7 themes: (1) advantages; (2) not a substitute for 1-2-1 support; (3) safeguards; (4) human features; (5) facilitating change; (6) flexibility; (7) learning.
Pasterfield et al. (2019)	Qualitative: 'Think aloud'	Cognitive Behavioural Therapy (CBT) and social skills training-informed print booklet (duration not specified).	Users of skin-camouflage with various visible differences (*n* = 6), camouflage practitioners (*n* = 3)	Verbatim feedback	Generally positive feedback on the content and usefulness. Considerations regarding support from professional, clarity of instructions and wording of responses to intrusive reactions (too confrontational).
Krasuska et al. (2018)	Mixed methods: Acceptability (qualitative) & pre-post	Compassion-focused booklet with audio file (4-weeks).	Various skin conditions & insecure attachment: feedback (*n* = 5).	Feedback; Shame (OAS); Self-criticism (FSCRS); Appearance	Feedback: participants reported finding the materials easy to understand and helpful, one reported difficult emotions arising. Usage varied from twice weekly to daily.

Author (year)	Design	Intervention (duration)	Participants (n allocated to conditions)	Outcome measures	Findings
				concern (DAS-24).	Mixed outcomes, across participants, including clinical improvement, clinical deterioration, and no change.
Van Cranenburgh et al. (2015)	Feasibility & acceptability (observational)	Psychoeducational website with 6 modules (8-weeks)	Various skin conditions (n =105), dermatologists (n = 6).	SKINDEX-29 (pre), website user metrics, Study specific feedback questionnaire.	Health providers reported recruitment and use of the website in routine practice to be feasible, acceptable, and useful. Patients reported relatively low relevance of the intervention and limits to the feasibility of using it in daily life. Older age and lower education predicted greater frequency of website use, with older age alone predicting longer use.
Van Cranenburgh et al. (2016)	Feasibility (observational)	As above, psychoeducational website with 8 modules (8-weeks)	Various skin conditions (n = 45); Various professionals (n = 16)	Study specific questionnaire and website metrics.	Most health providers rated the intervention as useful (73%) and reported intentions to use it in practice (87%), though 33% found registering patients burdensome. Patient rated feasibility in daily life and relevance as

Author (year)	Design	Intervention (duration)	Participants (*n* allocated to conditions)	Outcome measures	Findings
					low. Completion of modules beyond the introduction was low.
Poole et al. (2013)	Pilot (pre-post)	10 module self-management programme, including body image and coping (10-weeks)	Systemic sclerosis with moderate-severe pain and low self-efficacy (*n* = 21)	Self-efficacy (CD- SE); HEIq; Patient Activation (PAM); Depression (CES-D); Health HAQ; Pain [VAS]; Study-specific questionnaire.	Medium-sized significant effects on health education, patient activation and fatigue and depression. Small non-significant effects on disability, pain, and self-reported health. High satisfaction with the clarity and usability of the website and discussion forum and modules.
Melissant et al. (2021)	Pilot study (pre-post)	'MyCB' expressive writing followed by compassionate writing, digital/paper copy (30 minutes).	Head and neck cancer survivors (*n* = 87).	Reach; Body image (BIS); Body appreciation (BAS), self-compassion (SCS-sf); anxiety/depressi	Reach: 15% of eligible and 33% of responding participants completed the intervention; 59% selected booklet over weblink. Lower education level, greater social eating problems and fewer wound healing problems predicted higher levels of completion. Efficacy: 10% reported clinical change (baseline to follow up),

Author (year)	Design	Intervention (duration)	Participants (*n* allocated to conditions)	Outcome measures	Findings
				on (HADS); Quality-of-life (EORTC QLQ-C30); Sexual functioning (FSFI-6/IIEF-5).	significant increase in self-compassion (baseline to 1-month follow up), but no other significant changes on outcome measures. Evaluation: Mixed feedback: Overall rating 7.2/10 (*SD* = 1.2).
Shah et al. (2014)	Randomised feasibility trial	CBT-informed booklet for social anxiety, with and without implementation intentions (8-weeks).	Vitiligo. Self-help (*n* = 25); Self-help+ implementation intentions (*n* = 24); Treatment-as-usual (TAU: *n* = 26).	Social anxiety (Brief-FNE); HADS; DAS-24; DLQI.	The self-help+ implementation group showed greater clinical and reliable improvements on social anxiety, but not depression nor appearance concern. 71% reported finding the leaflets helpful, 14% did not find it helpful. More participants in the implementation intentions group used the leaflets daily.
Hudson et al. (2020)	Randomised feasibility trial	Compassion-focused booklet and audio files sent by email.	Various skin conditions. Booklet + audio (*n* = 85) TAU (*n* = 91).	Feasibility: Dropout (≤30%), Mindfulness practice frequency; Stress (PSS);	Drop out was 69.4% (intervention group) and 33% (control group). Median practice days = 9. Greater mindfulness practice was associated with greater improvements in anxiety and quality-of-life. Significant moderate effect of group on self-compassion, stress, anxiety,

Author (year)	Design	Intervention (duration)	Participants (*n* allocated to conditions)	Outcome measures	Findings
				HADS: DLQI; SCS-SF.	depression and DLQI, which dropped to small in intention-to-treat analyses.
Sherman et al. (2019)	Pilot RCT	'MyCB' (≤30 minutes).	Various skin conditions & ≥1 negative related event. MyCB (*n* = 25); Expressive writing (*n* = 25)	SCS-sf; Affect (PANAS) Body Image (BIDQ); perceived severity.	Significant medium size effect of MyCB intervention on self-compassion, and negative affect, but not positive affect.
Borimnejad et al. (2015)	RCT	Expressive writing (20 minutes daily over 4-weeks).	Vitiligo patients with clinical levels of distress. Expressive writing + phototherapy (*n* = 40), phototherapy only (*n* = 38)	General Health Questionnaire (GHQ-28)	Both groups reported a small significant reduction in distress over time. Between group comparisons were non-significant.

Author (year)	Design	Intervention (duration)	Participants (n allocated to conditions)	Outcome measures	Findings
Khanna et al. 2019	RCT	Self-management website with 15 modules, including body image (16-weeks).	Scleroderma patients. Website (n = 134); Self-management book (n = 133).	Self-efficacy (PROMIS-29); depression (PhQ8); PAM; Quality-of-life (EQ-5D); Body image (BASQ); Study specific questionnaire.	No significant differences between the groups on overall outcome measures. Positive feedback on the website. Body image module was viewed by 96.9% of participants and 72.1% rated it as helpful. Mean time spent on each module: 58.21 minutes.
D'Alton et al. (2019)	Multi-arm RCT	MBSCT-self-help meditations (8-weeks)	Psoriasis, no mental health difficulties. MBSCT-self-help (n = 22); MBSCT (n =25); MBCT (n =25); Treatment as usual (n =22).	HADS; Worry (PSWQ); Mindfulness (FFMQ); Fears of Compassion (FCS); Quality-of-life (WHOQOL-BREF); DLQI Psoriasis severity (PASI).	Participants receiving self-help and TAU were more likely to drop out compared to participants in either facilitated group interventions. Participants across the three intervention arms rated the study highly. However, there were no significant between group differences post-intervention or at either follow up for physical, psychological outcomes, including measures of mindfulness and self-compassion.

Other as Shamer Scale (OAS: Goss et al., 1994); Forms of Self-Criticising/Attacking & Self-Reassuring Scale (FSCRS: Baião et al., 2015); Derriford Appearance Scale (DAS-24: Carr et al., 2005); SKINDEX-29 (Chen et al., 1996); Chronic disease self-efficacy scale (Chronic disease-SE: Lorig et al., 1996); Health Education Impact Questionnaire (HEIq: Osbourne et al., 2007); Patient Activation Measure (PAM: Hibberd et al., 2004); Center for Epideriologic Studies Depression Scale (CES-D: Radlof, 1977); Health Assessment Questionnaire (HAQ: Fries et al., 1980); Body Image Scale (BIS: Hopwood et al., 2001); Body Appreciation Scale (BAS: Tylka & Wood-Barcalow, 2015); Self-compassion scale-short form (SCS-sf: Costa et al., 2016) Hospital Anxiety and Depression Scale (HADS: Zigmond & Snaith, 1983); European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire: Aaronson et al., 1993); Female Sexual Function Index/International Index of Erectile Function (FSFI-6/IIEF-5: Rosen et al., 1999); Brief Fear of Negative Evaluation (brief-FNE: Leary, 1983); Dermatology Quality of Life Index (DLQI: Finlay & Khan, 1994); Perceived Stress Scale (PSS: Cohen & Williamson, 1988); Positive and Negative Affect Schedule (PANAS: Crawford & Henry, 2004); Body Image Disturbance Questionnaire (BIDQ: Cash et al., 2004); General Health Questionnaire (GHQ-28: Goldberg, 1978); PROMIS Self-efficacy for Managing Chronic Conditions (PROMIS-29: Gruber-Baldini et al., 2017); Patient Health Questionnaire (PhQ8: Kwakkenbos et al., 2017); EuroQoL (EQ-5D: Balestroni & Bertolotti, 2012); Brief Satisfaction with Appearance Questionnaire (BSAQ: Jewett et al., 2010); Penn State Worry Questionnaire (PSWQ: Meyer et al., 1990); Five Facet Mindfulness Questionnaire (FFMQ: Baer et al., 2006); Fears of Compassion Scales (FCS: Gilbert et al., 2011); World Health Organisation Quality of Life (WHOQOL-BREF: WHOQOL Group, 1998); Psoriasis Area and Severity Index (PASI: Fredriksson & Pettersson, 1978).

Results

Study characteristics

Studies employed a wide range of designs to inform and evaluate self-help interventions for populations with distress associated with living with a visible difference. Of the 13 studies, eight were identified as pilot or feasibility studies (Hudson et al., 2020; Krasuska et al., 2018; Melissant et al., 2021; Poole et al., 2013; Shah et al., 2014; Sherman et al., 2019; Van Cranenburgh et al., 2015; 2016); a further two acceptability studies adopted qualitative designs (Pasterfield et al., 2019; Zucchelli et al., 2021); and three were described as RCTs (Borimnejad et al., 2015; D'Alton et al., 2019; Khanna et al., 2019). Two papers were direct extensions of included pilot/feasibility studies. Van Cranenburgh et al (2016) revised and re-examined the design and feasibility of a website following indicators of low feasibility (Van Cranenburgh et al, 2015). Khanna et al. (2019) conducted a RCT following piloting of a self-management program (Poole et al., 2014).

In total 1015 individuals with visible differences were included across all 13 studies. A further 33 clinicians were included in separate analysis across four studies (Pasterfield et al., 2019; Van Cranenburgh et al., 2015; 2016; Zucchelli et al., 2021). Reporting of demographic characteristics was inconsistent. Studies generally recruited more female, as opposed to male, participants. In seven studies, females accounted for two-thirds or more of the sample (Borimnejad et al., 2015; Hudson et al., 2020; Khanna et al., 2019; Pasterfield et al., 2019; Poole et al., 2013; Sherman et al., 2019; Zucchelli et al., 2021); male participants only accounted for more than two-thirds of the sample in one study (Melissant et al., 2021) and; two studies did not report participant

gender (Shah et al., 2014; Van Cranenburgh et al., 2016). Seven studies did not

describe the ethnicities of participants (Borimnejad et al., 2015; D'Alton et al;

2019; Krasuska et al., 2018; Melissant et al., 2021; Shah et al., 2014; Sherman

et al., 2019; Van Cranenburgh et al., 2016). Where studies provided information

on participant ethnicity, participants were predominantly described as white,

with the percentage of white participants ranging between 77.8% (Hudson et al.,

2020) and 100% (Zucchelli et al., 2021).

Among included studies, the majority of interventions targeted distress

associated with visible skin conditions. Two qualitative studies included

participants with a broader range of visible differences, including skin and

craniofacial conditions (Pasterfield et al., 2019; Zucchelli et al., 2021). Two

studies focused on systemic sclerosis (Poole et al., 2013; Khanna et al., 2019)

and one study focused on head-and-neck cancers (Melissant et al., 2021).

Several studies had further prerequisites for participation. These included

clinical levels of distress (Hudson et al., 2020; Poole et al., 2013; Van

Cranenburgh et al.; 2015), non-clinical levels of distress (D'Alton et al., 2019),

insecure attachment (Krasuska et al., 2018), and one or more negative

psychosocial event(s) linked to their skin appearance (Sherman et al., 2019).

Samples were recruited via a range of platforms including clinician referrals,

previous studies, media platforms, and student populations.

Self-help interventions were underpinned by a range of theories

including: CBT (Pasterfield et al., 2019; Shah et al., 2014); ACT (Zucchelli et al.,

2021); compassion-based approaches (Hudson et al., 2020; Krasuska et al.,

2018; Melissant et al., 2021; Sherman et al., 2019); mindfulness (D'Alton et al.,

2019) expressive writing (Borimnejad et al., 2015; Sherman et al., 2019) and

self-management/psychoeducation (Poole et al., 2013; Khanna et al., 2019;

Van Cranenburgh et al., 2015; 2016). Interventions were delivered in the format of mobile applications (Zucchelli et al., 2021), webpages/programs (Poole et al., 2013; Khanna et al., 2019; Van Cranenburgh et al., 2015; 2016); digital or print booklets with or without audio files (D'Alton et al., 2019; Hudson et al., 2020; Krasuska et al., 2018; Pasterfield et al., 2019; Shah et al., 2014); and writing tasks, (Borimnejad et al., 2015; Melissant et al., 2021; Sherman et al., 2019).

Quality appraisal

A summary of quality assessments can be found in Tables 1.2-1.5. Across studies, a common limitation was the high dropout of participants at follow up. It is important to note that two of the included papers were published as short reports and subsequently contain limited details of the studies and received poor quality appraisal ratings (Krasuska et al., 2018; Van Cranenburgh et al., 2016). Both papers were included as they provided additional context and outcomes relevant to the other included papers.

Based on the appraisal tools, the quality of papers was mixed, and generally at high risk of bias. This was commonly linked to high rates of attrition, above the 20% threshold specified by the quality appraisal tool. Papers typically reported greater dropout in intervention conditions. In addition to affecting power, it raises questions about whether dropout was truly random or whether participants dropped out due to improvement or deterioration, limiting the strength of conclusions. However, it is important to note that two pilot studies explicitly used attrition as measure of feasibility/reach (Hudson et al., 2020; Melissant et al., 2021). Other common issues related to studies not being preregistered, making it difficult to assess whether feasibility trials were conducted as part of pre-specified plans for intervention-development.

Overall, papers provided clear descriptions and rationales for the aims, populations, and interventions. Randomisation, when used, was implemented appropriately and was mostly effective. Given the nature of interventions, blinding of participants to the intervention was not possible in most studies, particularly where treatment-as-usual (TAU) was employed as a control. Only one study (Sherman et al., 2019) reported blinding participants, employing an active control condition, matched on time and number of prompts.

The two studies that employed qualitative methodologies to examine the acceptability and inform the development of the intervention had higher ratings on the quality appraisal tools, employing appropriate designs and collection measures, differentiating between expert-by-experience and professional perspectives on the interventions. However, neither report whether subsequent alterations were reviewed by participants. Use of qualitative feedback via free-text boxes/open questions were rarely employed alongside quantitative designs and would add additional understanding of participant experiences of the intervention and/or studies to contextualise findings/dropout.

Table 1.2. Quality Appraisals for each item on the CASP (2018) Qualitative checklist (Appendix 1B).

Author (Year)	1 Aims	2 Qualitative	3 Design	4 Recruitment	5 Data collection	6 Reflexivity	7 Ethics	8 Data analysis	9 Findings	10 Impact	Rating
Zucchelli et al. (2021)	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	Good
Pasterfield et al. (2019)	🟩	🟩	🟩	🟩	🟩	🟨	🟩	🟩	🟨	🟩	Good
Krasuska et al. (2018)	🟩	🟩	🟨	🟩	🟥	🟥	🟩	🟨	🟩	🟥	Poor (short report)

Note: Green = Yes; Yellow = Cannot tell; Red = No.

Table 1.3. Quality Appraisals for each item on the NIH (2018) case series checklist (Appendix 1C).

Author (Year)	1 Aims	2 Population	3 Consecutive	4 Comparative	5 Intervention	6 Measure	7 Follow up	8 Analysis	9 Results	Rating
Van Cranenburgh et al. (2015)	Green	Green	Green	Green	Red	Green	Green	Green	Green	Good
Van Cranenburgh et al. (2016)	Red	Red	Green	Yellow	Green	Red	Green	Red	Red	Poor (short report)

Note: Green = Yes; Yellow = Cannot tell; Red = No.

Table 1.4. Quality Appraisals for each item on the NIH (2018) pre-post checklist (Appendix 1D).

Author (Year)	1 Aims	2 Selection criteria	3 Representative	4 Enrolment	5 Sample size	6 Intervention	7 Measure	8 Blinding	9 Follow up	10 Analysis	11 Measures	12 Group/individual	Rating
Melissant et al. (2021)	Green	Green	Green	Red	Red	Green	Green	Red	Red	Green	Green	Yellow	Fair
Poole et al. (2013)	Green	Red	Green	Red	Red	Green	Green	Red	Green	Green	Green	Yellow	Fair

Table 1.5. Quality Appraisals for each item on the NIH (2018) randomised studies checklist (Appendix 1E).

	1 Title	2 Randomisation	3 Randomisation	4 Participant blinding	5 Outcome blinding	6 Baseline differences	7 Dropout	8 Dropout (equal)	9 Adherence	10 No other interventions	11 Outcome measures	12 Power	13 Prespecified outcomes	14 ITT analysis	Overall
Shah et al. (2014)	Red	Green	Green	Red	Red	Green	Green	Red	Green	Green	Green	Red	Green	Green	Poor
Hudson et al. (2020)	Green	Green	Green	Red	Red	Green	Red	Red	Red	Green	Green	Green	Red	Green	Poor
Sherman et al. (2019)	Green	Green	Red	Green	Green	Red	Green	Green	Yellow	Green	Green	Red	Green	Green	Poor
Borimnejad et al. (2015)	Green	Yellow	Yellow	Red	Red	Green	Red	Red	Yellow	Green	Green	Red	Green	Red	Poor
Khanna et al. (2019)	Green	Green	Green	Red	Red	Green	Green	Green	Green	Yellow	Green	Green	Red	Red	Poor
D'Alton et al. (2019)	Green	Green	Green	Red	Red	Green	Green	Red	Green	Green	Green	Red	Green	Green	Poor

Note: Green = Yes; Yellow = Cannot tell; Red = No.

Acceptability and usability

Eleven studies (Borimnejad et al., 2015; Sherman et al., 2019), reported at least one outcome related to the usability and/or acceptability of the self-help interventions they employed.

Based on qualitative accounts, participants with visible differences and practitioners valued the accessibility and privacy offered by self-help interventions (Krasuska et al., 2018; Paterfield et al., 2019; Zucchelli et al., 2021). However, studies indicated that safeguards (e.g. access/signposting to further emotional support) are needed to ensure that self-help interventions are acceptable for this population (Krasuska et al., 2018; Paterfield et al., 2019; Zucchelli et al., 2021). Furthermore, findings from qualitative studies suggest acceptability and engagement could also be improved by the addition of examples, reminders/prompts for users, and offering flexibility in how self-help materials can be used. However, only one study reported participants' preferences for the medium of self-help delivery, with 59% of participants requesting a print, as opposed to digital, copy of the intervention materials (Melissant et al., 2021).

Feedback

Participant feedback on specific self-help interventions was predominantly positive (D'Alton et al., 2019; Khanna et al., 2019; Krasuska et al., 2018; Melissant at al., 20.21; Paterfield et al., 2019; Poole et al., 2013; Shah et al., 2014; Van Cranenburgh et al., 2015; 2016; Zucchelli et al., 2021). Participants in six studies predominantly described the materials and techniques as 'clear' and 'helpful' (D'Alton et al., 2019; Khanna et al., 2019; Krasuska et al., 2018; Melissant at al., 2021; Poole et al., 2013; Shah et al.,

2014). However, feedback also indicated that some participants found the interventions less relevant, and there appeared to be differences between professional and patient ratings (Paterfield et al., 2019; Van Cranenburgh et al., 2015; 2016). For instance, whilst professionals consistently rated a psychoeducation website helpful and reported that use in their routine practice was feasible, the relevance, as rated by dermatology patients was relatively low, even after redeveloping the website based on professional and expert-by-experience feedback (Van Cranenburgh et al., 2015; 2016). Furthermore, 12% of participants with head-and-neck cancers described finding the compassion-based writing task 'bothersome' (Melissant at al., 2021).

Usage/adherence

Frequency and/or duration of intervention use were typically used to monitor adherence (D'Alton et al., 2019; Hudson et al., 2020; Khanna et al., 2019; Krasuska et al., 2018; Melissant at al., 2021; Shah et al., 2014; Van Cranenburgh et al., 2015; 2016). Participant usage varied within and across interventions. Of the three studies evaluating writing tasks, Melissant et al. (2021) provided the only data on time spent writing. Most participants reported either spending 15-30 (49%) or 30-60 minutes (30%) on the '30 minute' writing exercise, indicating reasonable adherence (Melissant et al., 2021). However, no studies checked adherence on writing content, limiting conclusions around whether participants adhered fully to the instructions.

Across several studies, the majority of responders self-reported practicing/using the interventions half the days or more per week (D'Alton et al., 2019; Hudson et al., 2020; Krasuska et al., 2018). However, this fell below the predetermined threshold for adherence set in one study, with only 15.8% of

participants as opposed to ≥67.5% practicing on 11/12 days (Hudson et al., 2020). Furthermore. No other studies provided a pre-specified level of acceptable adherence.

Whilst most studies relied on self-report, two studies utilised website metrics to assess intervention use (Van Cranenburgh et al., 2015; 2016). Overall, 74.6% of participants who provided feedback on a six-module psychoeducational website felt their daily activities hindered their use of the intervention. The authors interpreted this as the intervention not being feasible in patients' daily lives (Van Cranenburgh et al., 2015). This interpretation was relatively consistent with website data which indicated participants accessed the site between one and 10 times (M = 3.2, SD = 2.2) for an average of 12:47 (SD = 8:39) minutes each time (Van Cranenburgh et al., 2015). Adherence remained low for the modified version of the website with only one of the 35 participants that logged onto the website completing all modules over eight-weeks (Van Cranenburgh et al., 2015). This suggests the website was no more acceptable or feasible, though there was no analysis of why completion was low. In contrast, Khanna et al. (2019) reported more promising adherence to a self-management website with 97% of participants visiting the body image module and on average spending over an hour on the module.

Several studies investigated associations with self-help usage. In individual studies, frequency of use was higher in participants allocated to self-help plus implementation intention (Shah et al., 2014), and participants with lower education levels and older age (Van Cranenburgh et al., 2015). However, frequency of practice did not differ when comparing participants allocated to self-help rather than facilitated groups (D'Alton et al., 2019). Hudson et al.

(2020) also reported a small positive effect of frequency of practice on improved quality-of-life and anxiety post-intervention.

Attrition

Dropout post-allocation ranged from 0% (Sherman et al., 2019) to 97.8% (Van Cranenburgh et al., 2016). In several studies, attrition rates were higher among participants randomised to self-help compared to TAU (Borimnejad et al., 2015; Hudson et al., 2020) or group interventions (D'Alton et al., 2019). Regarding associations with dropout, head-and-neck cancer survivors with lower education levels, poorer wound healing, greater social eating difficulties and greater appearance-related distress, who had completed a cross-sectional survey, were more likely to agree to participate in a trial of a compassion-based writing intervention (Melissant et al., 2021). However, Hudson et al. (2020) found no associations between demographic or dermatological characteristics and dropout. Overall, attrition was generally high in cross-sectional studies, indicating that aspects of the self-help interventions may not be feasible and acceptable for many participants.

Effectiveness

Appearance concerns

Based on calculations of reliable change, effects of the self-help interventions on measures of body image were non-significant across all five studies that included a validated measure of body image or appearance concern (Khanna et al., 2019; Krasuska et al., 2018; Melissant at al., 2021; Shah et al., 2014; Sherman et al., 2019). Furthermore, Krasuska et al. (2018) and Melissant et al (2021) calculated clinical change for participants, with one (of five), and nine (of 89) participants meeting the criteria for clinical change on

measures of appearance concern, respectively. To summarise, these studies show that self-help interventions, targeting distress associated with living with a visible difference, do not appear to improve body image.

Anxiety

Three studies found no significant effect of self-help intervention on anxiety based on the HADS (D'Alton et al., 2019; Melissant et al., 2021; Shah et al., 2014). However, on the same measure, Hudson et al. (2020) reported significant medium-sized and small-sized effects of a self-compassion booklet on anxiety, based on completer and intention-to-treat analyses, respectively. D'Alton et al. (2019) included an additional measure of worry, though there were no significant differences between participants assigned to any of the facilitated mindfulness groups, self-help or TAU conditions. Shah et al. (2014) included the only measure of social anxiety. A significantly greater percentage of participants with vitiligo receiving a CBT-informed self-help booklet plus implementation intentions (24%) compared to participants, receiving the CBT-booklet alone (8%) or TAU (0%) met the criteria for clinical and reliable change in social anxiety (Shah et al., 2014). To summarise, it appears that there is a lack of consistent evidence regarding whether the interventions improve anxiety.

Depression

Seven studies included a measure of mood (D'Alton et al., 2019; Hudson et al., 2020; Khanna et al., 2019; Melissant et al., 2021; Poole et al., 2013; Shah et al., 2014; Sharman et al., 2019). Two pilot/feasibility studies reported moderate-sized reductions in depression scores for participants (Hudson et al., 2020; Poole 2013). The effect remained significant but reduced from medium to small for participants with dermatological conditions assigned to a self-

compassion booklet with audio files when ITT analysis was used (Hudson et al., 2020). The effect of a self-management website for adults with scleroderma was not significant in the subsequent RCT, although a different measure of depression was used and the control was a self-management book (Khanna et al., 2019). Sharman et al. (2019) reported a medium-sized improvement in state negative, but not positive, affect immediately following completion of a compassion-based writing task. The remaining three studies all reported no significant effect of self-help interventions on depression scores (D'Alton et al., 2019; Melissant et al., 2021; Shah et al., 2014). To summarise, the studies detailed here provide mixed but limited evidence for self-help interventions reducing depression/low mood.

Quality-of-life

The included studies generally did not support an effect of self-help interventions on health-related quality-of-life (Borimnejad et al., 2015; D'Alton et al., 2019; Khanna et al., 2019; Melissant et al., 2021; Poole et al., 2013). However, Hudson et al. (2020) reported significant medium-sized and small-sized effects of a self-compassion booklet on improved dermatology-specific quality-of-life, based on completer and intention-to-treat analyses, respectively. Khanna et al. (2019) proposed that the small non-significant effect of an online self-management website on health-related quality-of-life may become significant with adequate power. However, the effect of the website on quality-of-life was not significant in the subsequent RCT, when compared to a self-management book (Khanna et al., 2019).

Mechanisms

Several studies measured outcomes related to the proposed mechanisms of change. Of the five studies that evaluated compassion-informed self-help interventions, four included a measure of self-compassion (D'Alton et al., 2019; Hudson et al., 2020; Melissant et al., 2021; Sherman et al., 2019). Three studies, including two evaluating the same compassion-based writing intervention, reported medium-sized effects of the intervention on self-compassion post-intervention (Hudson et al., 2020; Melissant et al., 2021; Sherman et al., 2019), which was maintained at one-month follow-up (Melissant et al., 2021). However, change in self-compassion was not associated with changes in body-image distress (Melissant et al., 2021). In contrast, D'Alton et al. (2019) found no effect of compassion and mindfulness-based groups or self-help on neither self-compassion nor mindfulness when compared to TAU. Krasuska et al. (2018) used measures of self-criticism and shame, concepts which are proposed to be closely related to self-compassion (Gilbert & Miles, 2014). Of five participants, two participants met the criteria for reliable improvement and a further two met the criteria for reliable deterioration on shame (Krasuska et al., 2018). Furthermore, only two participants met the criteria for reliable change on one of three self-criticism subscales (Krasuska et al., 2018).

Based on a small pilot study of a self-management website, there were significant moderate effects on two measures of theorised mechanisms of change: health-related knowledge/skills, and confidence in managing a chronic condition (Poole et al., 2014). There was also a small but non-significant ($d = .46$, $p = .08$) effect on self-efficacy. However, in the subsequent RCT, hypothesised differences between participants allocated to the modified

website, compared to a self-management book, were non-significant for measures of the same mechanisms (Khanna et al., 2019). It is possible the difference in effects related to use of an active control, less stringent inclusion criteria, changes in the measures used or the follow up period (16 instead of 8-weeks).

Overall, generally positive feedback and attempts to ensure the acceptability and feasibility of interventions did not necessarily lead to change in psychosocial outcomes. The studies detailed here provide some limited evidence that these self-help interventions do not appear to improve body image in populations with a visible difference. Furthermore, the majority of studies reported no effects for the interventions on anxiety or quality-of-life. However, findings related to depression were more mixed, and there was some limited evidence that interventions targeting self-compassion increase self-compassion.

Discussion

This review sought to systemically assess the current nature of research surrounding self-help interventions for adults living with a visible difference, by updating a previous review (Muftin & Thompson, 2013). A total of 13 papers were included in the current review, compared to 11 in the previous review.

There appeared to be differences in the designs employed by included studies within the reviews. Within the previous review, Muftin and Thompson (2013) concluded that there was a need for researchers to adhere to MRC (2008) recommendations through greater attention to the assessment of acceptability and feasibility of self-help interventions. Within the current review, the majority of studies ($n = 10$) were conducted as acceptability, or

feasibility/pilot studies, compared to the minority in the previous review ($n = 4$). This indicates that since the previous review there has been greater consideration for earlier phases of intervention development and assessment of self-help interventions within populations with visible differences. However, not all feasibility and pilot studies contained a reference to a pre-registered protocol, making it difficult to determine whether the studies had been originally set up as full RCTs. Furthermore, the lack of adequately powered RCTs makes it difficult to draw conclusions about the effectiveness of interventions.

In line with recommendations from the previous review, most studies provided a clear theoretical rationale for the choice and design of the intervention materials. However, where studies adopted a broader framework of self-management, the specific body image components were less clearly defined. Furthermore, since the last review there appeared to be a shift away from CBT-informed interventions towards more third-wave interventions. There was also greater consideration for theorised mechanisms, with several studies including measures for the proposed mechanisms of change. Whilst there was inconsistent evidence for a psychoeducational website enhancing health education, self-efficacy and confidence in self-managing health, there were more consistent positive outcomes related to self-compassion for interventions underpinned by compassion-focused therapy. However, despite moderate associations between self-compassion and mental health outcomes (MacBeth & Gumley, 2012), related improvements in psychosocial outcomes were not reported in included studies.

In line with the previous review, attrition remained relatively high. The high dropout rates are consistent with the broader literature on self-help-based interventions, with lower levels of attrition reported for professional-led interventions compared to internet-based or pure self-help interventions (Meyerowitz-Katz et al., 2020, Van Ballegooijen et al., 2014). Indeed, the only study comparing professional-led groups to self-help, reported greater attrition among participants in the self-help group. Previous research has implicated a small number of health-related and agency-related predictors of attrition in self-help interventions (Gerhty et al., 2010). Within included studies in this review, there were few significant predictors of attrition beyond condition allocation, though in two studies participants with lower education reported improved adherence/attrition rates.

Muftin and Thompson (2013) concluded that there was tentative support for self-help in the management of anxiety and limited but promising findings for other psychosocial outcomes. Within this review, there was a lack of consistent evidence to support effects of the interventions on anxiety. It is surprising that only one study used a measure of social anxiety (e.g. FNE), given social anxiety, as opposed to other forms of anxiety, is theorised to be more closely related to distress among visibly different populations (Thompson & Kent, 2001). Where measured, there was a significant greater reduction in social anxiety for participants allocated to the intervention (Shah et al., 2014). Future research would therefore benefit from the inclusion of social anxiety measures. Similar to the previous review there was some very limited but more promising findings around mood, but not quality-of-life. However, there was no evidence of a positive effect of self-help interventions on body image, which is disappointing given body image is identified as an important area for interventions in this

36

population (Ahmed et al., 2018; Fauerbach et al., 2007; Rumsey & Harcourt., 2004).

This review carries several limitations. A meta-analysis was not conducted given the lack of consistency in outcomes and study designs. It is therefore not currently possible to draw firm conclusions regarding the presence and directions of an effect of specific self-help interventions on psychosocial distress associated with having a visibly different appearance. This is further limited by high risks of bias in studies estimating effectiveness. However, the inclusion of studies at different phases of intervention designs is also a strength of the review, providing an overview of the current nature of studies investigating self-help interventions for adults living with visible differences. Furthermore, MRC (2008) guidelines highlight the importance of paying attention to earlier phases of intervention development, which is often overlooked in systematic reviews and meta-analyses. Another limitation of this study is the change of quality appraisal tools. The protocol originally included the use of the Cochrane risk of bias tool, which is recommended for the appraisal of RCTs (Ma et al., 2020). This decision was taken based on the wide range of study designs identified in the review process. NIH quality appraisals tools were therefore used to provide more design-specific appraisals.

Conclusion and implications

Overall, while there is some evidence that self-help can be acceptable to adults with visible differences, there remains very limited evidence to support the effectiveness of these interventions. In line with the previous review, there remains a need for high quality qualitative, quantitative, and mixed methods research evaluating the acceptability and usability of materials, as well as high

quality RCTs. Given the lack of conclusive evidence for self-help interventions in this population, it appears important for services, organisations and practitioners disseminating self-help interventions to evaluate and report on the acceptability, usability, and effectiveness through practice-based evidence.

References

Aaronson, N. K., Ahmedzai, S., Bergman, B., Bullinger, M., Cull, A., Duez, N. J., ... & Takeda, F. (1993). The European Organization for Research and Treatment of Cancer QLQ-C30: a quality-of-life instrument for use in international clinical trials in oncology. *Journal of the National Cancer Institute*, *85*(5), 365-376. https://doi.org/10.1093/jnci/85.5.365

Ahmed, A., Steed, L., Burden-Teh, E., Shah, R., Sanyal, S., Tour, S., ... & Bewley, A. P. (2018). Identifying key components for a psychological intervention for people with vitiligo–a quantitative and qualitative study in the United Kingdom using web-based questionnaires of people with vitiligo and healthcare professionals. *Journal of the European Academy of Dermatology and Venereology*, *32*(12), 2275-2283. https://doi.org/10.1111/jdv.15168

All Party Parliamentary Group on Skin. (2013). *The psychological and social impact of skin diseases on people's lives: updated 2013 edition*. London, UK: All Party Parliamentary Group on Skin. https://www.appgs.co.uk/publication/view/the-psychological-and-social-impact-of-skin-diseases-on-peoples-lives-final-report-2013/

Baião, R., Gilbert, P., McEwan, K., & Carvalho, S. (2015). Forms of self-criticising/attacking & self-reassuring scale: Psychometric properties and normative study. *Psychology and Psychotherapy: Theory, Research and Practice, 88*(4), 438-452. https://doi.org/10.1111/papt.12049

Baer, R., Smith, G., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1)*,* 27–45. https://doi.org/10.1177/1073191105283504

Booth, A., Sutton, A., & Papaioannou, D. (2016). *Systematic approaches to a successful literature review*. Sage.

Borimnejad, L., Mortazavi, H., Aghazadeh, N., & Halaji, Z. (2015). The effect of expressive writing on psychological distress in patients with vitiligo: A randomized clinical trial. *Journal of Client-Centered Nursing Care, 1*(1), 3-8. https://doi.org/10.32598/jccnc.1.1.3

British Skin Foundation (2015). *Over half of acne sufferers experience verbal abuse from friends & family due to their condition* [Press release]. http://www.britishskinfoundation.org.uk/LinkClick.aspx?fileticket=i2bE2n4 c8m0%3d&tabid=172

Carr, T., Moss, T., & Harris, D. (2005). The DAS24: 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*(2), 285-298. https://doi.org/10.1348/135910705X27613

Cash, T. F., Phillips, K. A., Santos, M. T., & Hrabosky, J. I. (2004). Measuring "negative body image": Validation of the body image disturbance questionnaire in a nonclinical population. *Body Image, 1*(4), 363–372. https://doi.org/10.1016/j.bodyim.2004.10.001

Centre for Reviews and Dissemination (2009). *Systematic reviews: CRD's guidance for undertaking reviews in health care*. Centre for Reviews and

Dissemination.

https://www.york.ac.uk/crd/SysRev/!SSL!/WebHelp/SysRev3.htm

Clarke, A., Thompson, A. R., Jenkinson, E., Rumsey, N., & Newell, R. (2014). *CBT for appearance anxiety: psychosocial interventions for anxiety due to visible difference*. Wiley Blackwell.

Cohen, S., & Williamson, G., (1988). Psychological stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont Symposium on Applied Social Psychology* (pp. 31–67). Sage.

Costa, J., Marôco, J., Pinto-Gouveia, J., Ferreira, C., & Castilho, P. (2016). Validation of the psychometric properties of the Self-Compassion Scale. Testing the factorial validity and factorial invariance of the measure among borderline personality disorder, anxiety disorder, eating disorder and general populations. *Clinical Psychology & Psychotherapy*, *23*(5), 460-468. https://doi.org/10.1002/cpp.1974

Craig, P., Dieppe, P., Macintyre, S., Michie, A., Nazareth, I. & Petticrew, M. (2008). Developing and evaluating complex interventions: the new Medical Research Council guidance. *The British Medical Journal, 337*(7676)*,* 979-983. http://dx.doi.org/10.1136/bmj.a1655

Craig, P., Dieppe, P., Macintyre, S., Michie, S., Nazareth, I., & Petticrew, M. (2013). Developing and evaluating complex interventions: The new Medical Research Council guidance. *International Journal of Nursing Studies*, *50*(5), 587-592. https://doi.org/10.1016/j.ijnurstu.2012.09.010

Crawford, J. R., & Henry, J. D. (2004). The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *43*(3), 245-265. https://doi.org/10.1348/0144665031752934

Critical Appraisal Skills Programme (2018). *CASP Qualitative Checklist*. https://casp-uk.net/wp-content/uploads/2018/01/CASP-Qualitative-Checklist-2018.pdf

D'Alton, P., Kinsella, L., Walsh, O., Sweeney, C., Timoney, I., Lynch, M., ... & Kirby, B. (2019). Mindfulness-based interventions for psoriasis: A randomized controlled trial. *Mindfulness*, *10*(2), 288-300. https://doi.org/10.1007/s12671-018-0973-5

Egan, K., Harcourt, D., Rumsey, N., & Appearance Research Collaboration. (2011). A qualitative study of the experiences of people who identify themselves as having adjusted positively to a visible difference. *Journal of Health Psychology, 16*(5), 739-749. https://doi.org/10.1177/1359105310390246

Fauerbach, J. A., Pruzinsky, T., & Saxe, G. N. (2007). Psychological health and function after burn injury: setting research priorities. *Journal of Burn Care & Research*, *28*(4), 587-592. https://doi.org/10.1097/BCR.0B013E318093E470

Finlay, A. Y., & Khan, G. K. (1994). Dermatology Life Quality Index (DLQI): A simple practical measure for routine clinical use. *Clinical and Experimental Dermatology, 19*(3)*,* 210–216. https://doi.org/10.1111/j.1365-2230.1994.tb01167.x

Fredriksson, T., & Pettersson, U. (1978). Severe psoriasis-oral therapy with a new retinoid. *Dermatologica, 157*(4), 238–244. https://doi.org/10.1159/000250839

Fries, J. F., Spitz, P., Kraines, R. G., & Holman, H. R. (1980). Measurement of patient outcome in arthritis. *Arthritis & Rheumatism*, *23*(2), 137-145. https://doi.org/10.1002/art.1780230202

Geraghty, A. W., Wood, A. M., & Hyland, M. E. (2010). Attrition from self-directed interventions: investigating the relationship between psychological predictors, intervention content and dropout from a body dissatisfaction intervention. *Social Science & Medicine*, *7*(1), 30–37. https://doi.org/10.1016/j.socscimed.2010.03.007

Gilbert, P., McEwan, K., Matos, M., & Rivis, A. (2011). Fears of compassion: development of three self-report measures. *Psychology and Psychotherapy: Theory, Research and Practice, 84*(3), 239–255. https://doi.org/10.1348/147608310X526511

Gilbert, P., & Miles, J. (2014). *Body Shame: Conceptualisation, Research and Treatment*. Routledge.

Goss, K., Gilbert, P., & Allan, S. (1994). An exploration of shame measures: The other as Shamer scale. *Personality and Individual Differences*, *17*(5), 713-717. https://doi.org/10.1016/0191-8869(94)90149-X

Gould, R. A., & Clum, G. A. (1993). A meta-analysis of self-help treatment approaches. *Clinical Psychology Review, 13*(2), 169-186. https://doi.org/10.1016/0272-7358(93)90039-O

Gruber-Baldini, A. L., Velozo, C., Romero, S., & Shulman, L. M. (2017).

> Validation of the PROMIS® measures of self-efficacy for managing

> chronic conditions. *Quality of Life Research*, *26*(7), 1915-1924.

> https://doi.org/10.1007/s11136-017-1527-3

Hibbard, J. H., Mahoney, E. R., Stockard, J., & Tusler, M. (2005). Development

> and testing of a short form of the patient activation measure. *Health*

> *Services Research*, *40*(6), 1918-1930. https://doi.org/10.1111/j.1475-

> 6773.2005.00438.x

Hibbard, J. H., Stockard, J., Mahoney, E. R., & Tusler, M. (2004). Development

> of the Patient Activation Measure (PAM): conceptualizing and measuring

> activation in patients and consumers. *Health Services Research*, *39*(4),

> 1005-1026. https://doi.org/10.1111/j.1475-6773.2004.00269.x

Hopwood, P., Fletcher, I., Lee, A., & Al Ghazal, S. (2001). A body image scale

> for use with cancer patients. *European Journal of Cancer*, *37*(2), 189-

> 197. https://doi.org/10.1016/S0959-8049(00)00353-1

Hudson, M. P., Thompson, A. R., & Emerson, L. M. (2020). Compassion-

> focused self-help for psychological distress associated with skin

> conditions: A randomized feasibility trial. *Psychology & Health*, *35*(9),

> 1095-1114. https://doi.org/10.1080/08870446.2019.1707829

Isidori, A., Pozza, C., Esposito, K., Ciotola, M., Giugliano, D., Morano, S., ... &

> Jannini, E. A. (2006). Development and validation of a 6-item version of

> the female sexual function index (FSFI) as a diagnostic tool for female

> sexual dysfunction. *Journal of Endocrinological Investigation*, *7*(3). 1139–

> 1146. https://doi.org/10.1111/j.1743-6109.2009.01635.x

Jenkinson, E., Williamson, H., Byron-Daniel, J., & Moss, T. P. (2015). Systematic review: psychosocial interventions for children and young people with visible differences resulting from appearance altering conditions, injury, or treatment effects. *Journal of Paediatric Psychology*, *40*(10), 1017-1033. https://doi.org/10.1093/jpepsy/jsv048

Kent, G. (2000). Understanding the experiences of people with disfigurements: an integration of four models of social and psychological functioning. *Psychology, Health & Medicine, 5*(2), 117–129. https://doi.org/10.1080/713690187

Kent, G. (2002). Testing a model of disfigurement: effects of a skin camouflage service on well-being and appearance anxiety. *Psychology and Health*, *17*(3), 377-386. https://doi.org/10.1080/08870440290029601

Khanna, D., Serrano, J., Berrocal, V. J., Silver, R. M., Cuencas, P., Newbill, S. L., ... & Poole, J. L. (2019). Randomized controlled trial to evaluate an internet-based self-management program in systemic sclerosis. *Arthritis Care & Research*, *71*(3), 435-447. https://doi.org/10.1002/acr.23595

Krasuska, M., Millings, A., Lavda, A. C., & Thompson, A. R. (2018). Compassion-focused self-help for skin conditions in individuals with insecure attachment: a pilot evaluation of acceptability and potential effectiveness. *The British Journal of Dermatology*, *178*(2), e122–e123. https://doi.org/10.1111/bjd.15934

Kwakkenbos, L., Thombs, B. D., Khanna, D., Carrier, M. E., Baron, M., Furst, D. E., ... & Bartlett, S. J. (2017). Performance of the patient-reported outcomes measurement information System-29 in scleroderma: a scleroderma patient-centered intervention network cohort

study. *Rheumatology*, *56*(8), 1302-1311.

https://doi.org/10.1093/rheumatology/kex055

Leary, M. R. (1983). A brief version of the Fear of Negative Evaluation

Scale. *Personality and Social Psychology Bulletin*, *9*(3), 371-375.

https://doi.org/10.1177/0146167283093007

Lorig, K. R., Ritter, P. L., Laurent, D. D., & Plant, K. (2008). The internet-based

arthritis self-management program: a one-year randomized trial for

patients with arthritis or fibromyalgia. *Arthritis Care & Research: Official*

Journal of the American College of Rheumatology, *59*(7), 1009-1017.

https://doi.org/10.1002/art.23817

Ma, L. L., Wang, Y. Y., Yang, Z. H., Huang, D., Weng, H., & Zeng, X. T. (2020).

Methodological quality (risk of bias) assessment tools for primary and

secondary medical studies: what are they and which is better? *Military*

Medical Research, *7*(1), 1-11. https://doi.org/10.1186/s40779-020-00238-

8

MacBeth, A., & Gumley, A. (2012). Exploring compassion: a meta-analysis of

the association between self-compassion and psychopathology. *Clinical*

Psychology Review, *32*(6), 545–552.

https://doi.org/10.1016/j.cpr.2012.06.003

Magin, P. J., Pond, C. D., Smith, W. T., Watson, A. B., & Goode, S. M. (2011)

Correlation and agreement of self-assessed and objective skin disease

severity in a cross-sectional study of patients with acne, psoriasis, and

atopic eczema. *International Journal of Dermatology, 50*(12), 1486-1490.

https://doi.org/10.1111/j.1365-4632.2011.04883.x

Marron, S. E., Tomas-Aragones, L., & Boira, S. (2013). Anxiety, depression, quality of life and patient satisfaction in acne patients treated with oral isotretinoin. *Acta Dermato-Venereologica, 93*(6), 701-706. https://doi.org/10.2340/00015555-1638

Melissant, H. C., Jansen, F., Eerenstein, S. E., Cuijpers, P., Lissenberg-Witte, B. I., Sherman, K. A., ... & Verdonck-de Leeuw, I. M. (2021). A structured expressive writing activity targeting body image-related distress among head and neck cancer survivors: who do we reach and what are the effects? *Supportive Care in Cancer, 36*(19), 1-14. https://doi.org/10.1007/s00520-021-06114-y

Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy, 28*(6), 487–495. https://doi.org/10.1016/0005-7967(90)90135-6

Meyerowitz-Katz, G., Ravi, S., Arnolda, L., Feng, X., Maberly, G., & Astell-Burt, T. (2020). Rates of attrition and dropout in app-based interventions for chronic disease: Systematic review and meta-analysis. *Journal of Medical Internet Research, 22*(9), e20283. https://doi.org/10.2196/20283

Montgomery, K., White, C., & Thompson, A. (2017). A mixed methods survey of social anxiety, anxiety, depression and wig use in alopecia. *BMJ open, 7*(4), e015468. http://doi.org/10.1136/bmjopen-2016-015468

Moss, T. P., Lawson, V., & White, P. (2014). Salience and Valence of Appearance in a population with a visible difference of appearance: Direct and moderated relationships with self-consciousness, anxiety and

depression. *PloS One, 9*(2), 1-8.

https://doi.org/10.1371/journal.pone.0088435

Muftin, Z., & Thompson, A. R. (2013). A systematic review of self-help for

disfigurement: Effectiveness, usability, and acceptability. *Body Image,*

10(4), 442-450. https://doi.org/10.1016/j.bodyim.2013.07.005

National Institute for Health and Care Excellence (2009a). *Depression in adults*

with a chronic physical health problem: recognition and management

(NICE guideline CG91). https://www.nice.org.uk/guidance/cg91

National Institute for Health and Care Excellence (2009b). *Depression in adults:*

recognition and management (NICE guideline CG90).

https://www.nice.org.uk/guidance/cg90/chapter/1-Guidance#care-of-all-

people-with-depression

National Institute for Health and Care Excellence (2013). *Social anxiety*

disorder: recognition, assessment and treatment (Clinical guideline

CG159).

https://www.nice.org.uk/guidance/cg159/chapter/recommendations#speci

fic-phobias

National Institutes of Health (2014). *Study quality assessment tools.*

https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools

Norman, A., & Moss, T. P. (2015). Psychosocial interventions for adults with

visible differences: a systematic review. *PeerJ*, *3*, e870.

https://doi.org/10.7717/peerj.870

O'Cathain, A., Croot, L., Duncan, E., Rousseau, N., Sworn, K., Turner, K. M., ...

& Hoddinott, P. (2019). Guidance on how to develop complex

interventions to improve health and healthcare. *BMJ Open*, *9*(8),

e029954. https://doi.org/ 10.1136/bmjopen-2019-029954

Oliver, M. (2013). The social model of disability: Thirty years on. *Disability &*

Society, *28*(7), 1024-1026.

https://doi.org/10.1080/09687599.2013.818773

Osborne, R. H., Elsworth, G. R., & Whitfield, K. (2007). The Health Education

Impact Questionnaire (heiQ): an outcomes and evaluation measure for

patient education and self-management interventions for people with

chronic conditions. *Patient Education and Counseling*, *66*(2), 192-201.

https://doi.org/10.1016/j.pec.2006.12.002

Partridge J, & Julian D., (2017) *'The Face Equality Campaign – The evidence:*

The incidence and prevalence of disfigurement'. Changing Faces.

London. https://www.changingfaces.org.uk/wp-

content/uploads/2016/03/FE-Campaign-Epidemiology-2-pages.pdf

Pasterfield, M., Clarke, S.A. and Thompson, A.R., 2019. The development of a

self-help intervention to build social confidence in people living with

visible skin conditions or scars: a think-aloud study. *Scars, Burns &*

Healing, 5. https://doi.org/10.1177/2059513118822954

Poole, J. L., Mendelson, C., Skipper, B., & Khanna, D. (2014). Taking charge of

systemic sclerosis: a pilot study to assess the effectiveness of an internet

self-management program. *Arthritis Care & Research*, *66*(5), 778-782.

https://doi.org/10.1002/acr.22192

Prior, J., & Khadaroo, A. (2015). 'I sort of balance it out'. Living with facial acne

    in emerging adulthood. *Journal of Health Psychology, 20*(9), 1154-1165.

    https://doi.org/10.1177/1359105313509842

Gruber-Baldini, A. L., Velozo, C., Romero, S., & Shulman, L. M. (2017).

    Validation of the PROMIS® measures of self-efficacy for managing

    chronic conditions. *Quality of Life Research, 26*(7), 1915-1924.

    https://doi.org/10.1007/s11136-017-1527-3

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for

    research in the general population. *Applied Psychological*

    Measurement, 1, 385-401. https://doi.org/10.1177/014662167700100306

Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and

    factorial validation of the short form of the self-compassion scale. *Clinical*

    Psychology & Psychotherapy, 18(3), 250–255.

    https://doi.org/10.1002/cpp.702

Reynolds, L. M., & Harris, L. (2021). Stigma in the face of cancer disfigurement:

    A systematic review and research agenda. *European Journal of Cancer*

    Care, 30(1), e13327. https://doi.org/10.1111/ecc.13327

Richardson, A. E., Broadbent, E., & Morton, R. P. (2019). A systematic review

    of psychological interventions for patients with head and neck

    cancer. *Supportive Care in Cancer: Official Journal of the Multinational*

    Association of Supportive Care in Cancer, 27(6), 2007-2021.

    https://link.springer.com/article/10.1007/s00520-019-04768-3

Rosen, R. C., Cappelleri, J. C., Smith, M. D., Lipsky, J., & Pena, B. M. (1999).

    Development and evaluation of an abridged, 5-item version of the

International Index of Erectile Function (IIEF-5) as a diagnostic tool for erectile dysfunction. *International Journal of Impotence Research*, *11*(6), 319-326. https://doi.org/10.1038/sj.ijir.3900472

Rumsey, N. (2018). Psychosocial adjustment to skin conditions resulting in visible difference (disfigurement): What do we know? Why don't we know more? How shall we move forward?. *International Journal of Women's Dermatology*, *4*(1), 2-7. https://doi.org/10.1016/j.ijwd.2017.09.005Rumsey, 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*(5), 443-453. https://doi.org/10.1111/j.1365-2648.2004.03227.x

Rumsey, N., & Harcourt, D. (2004). Body image and disfigurement: issues and interventions. *Body Image*, *1*(1), 83-97. https://doi.org/10.1016/S1740-1445(03)00005-6

Rumsey N., & Harcourt D. (2012). The psychology of appearance: The future? In Rumsey N. Harcourt D. (Eds), *The Oxford Handbook of the Psychology of Appearance*. (pp. 679-692). Oxford University Press.

Shah, R., Hunt, J., Webb, T. L., & Thompson, A. R. (2014). Starting to develop self-help for social anxiety associated with vitiligo: using clinical significance to measure the potential effectiveness of enhanced psychological self-help. *British Journal of Dermatology*, *171*(2), 332-337. https://doi.org/10.1111/bjd.12990

Sherman, K. A., Roper, T., & Kilby, C. J. (2019). Enhancing self-compassion in individuals with visible skin conditions: randomised pilot of the 'My

Changed Body' Self-compassion Writing Intervention. *Health Psychology and Behavioral Medicine*, *7*(1), 62-77. https://doi.org/10.1080/21642850.2019.1587298

Thompson, A. R. (2014). Treatment challenges: getting psychodermatology into the clinic. *Dermatological Nursing, 13*(4), 26-31. https://www.ingentaconnect.com/content/bdng/dn/2014/00000013/00000004/art00003

Thompson, A. R., Guterres, S., & Bewley, A. P. (2020). Psychodermatological research priorities identified by Priority Setting Partnerships. *Clinical and Experimental Dermatology*, *45*(8), 1106-1108. https://doi.org/10.1111/ced.14447

Thompson, A., & Kent, G. (2001). Adjusting to disfigurement: processes involved in dealing with being visibly different. *Clinical Psychology Review, 21*(5), 663-682. https://doi.org/10.1016/S0272-7358(00)00056-8

Tylka TL, Wood-Barcalow NL (2015) The Body Appreciation Scale-2: item refinement and psychometric evaluation. *Body Image 12*, 53–67. https://doi.org/10.1016/j.bodyim.2014.09.006

Van Ballegooijen, W., Cuijpers, P., Van Straten, A., Karyotaki, E., Andersson, G., Smit, J. H., & Riper, H. (2014). Adherence to Internet-based and face-to-face cognitive behavioural therapy for depression: a meta-analysis. *PloS One*, *9*(7), e100674. https://doi.org/10.1371/journal.pone.0100674

Van Cranenburgh, O. D., Smets, E., De Rie, M. A., Sprangers, M. A., & De Korte, J. (2015). A Web-based, educational, quality-of-life intervention for

patients with a chronic skin disease: feasibility and acceptance in routine

dermatological practice. *Acta Dermato-Venereologica*, *95*(1), 51-56.

https://doi.org/10.2340/00015555-1872

Van Cranenburgh, O. D., Ter Stege, J. A., de Rie, M. A., Smets, E., Sprangers,

M. A., & de Korte, J. (2016). Implementation of web-based education for

patients with chronic skin disease. *Acta Dermato-Venereologica*, *96*(6),

812-813. https://doi.org/10.2340/00015555-2365

Versnel, S. L., Plomp, R. G., Passchier, J., Duivenvoorden, H. J., & Mathijssen,

I. M. (2012). Long-term psychological functioning of adults with severe

congenital facial disfigurement. *Plastic and Reconstructive

Surgery*, *129*(1), 110-117.

https://doi.org/10.1097/PRS.0b013e3182361f64

WHOQOL Group. (1998). Development of the World Health Organization

WHOQOL-BREF quality of life assessment. *Psychological Medicine,

28*(3), 551–558. https://doi.org/10.1017/S0033291798006667

Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression

Scale. *Acta Psychiatrica Scandinavica, 67*(6), 361–370.

https://doi.org/10.1111/j.1600-0447.1983.tb09716.x

Zill, J. M., Christalle, E., Tillenburg, N., Mrowietz, U., Augustin, M., Härter, M., &

Dirmaier, J. (2019). Effects of psychosocial interventions on patient-

reported outcomes in patients with psoriasis: a systematic review and

meta-analysis. *British Journal of Dermatology*, *181*(5), 939-945.

https://doi.org/10.1111/bjd.17272

Zucchelli, F., Donnelly, O., Rush, E., Smith, H., Williamson, H., & VTCT
Foundation Research Team. (2021). Designing an mHealth intervention
for people with visible differences based on Acceptance and
Commitment Therapy: Participatory study gaining stakeholders'
input. *JMIR Formative Research*, *5*(3), e26355.
https://doi.org/10.2196/26355

Zucchelli, F., White, P., & Williamson, H. (2020). Experiential avoidance and
cognitive fusion mediate the relationship between body evaluation and
unhelpful body image coping strategies in individuals with visible
differences. *Body Image*, *32*, 121-127.
https://doi.org/10.1016/j.bodyim.2019.12.002

Appendices

(Part 1)

Appendix 1A: Search terms.

	Alternative terms
Population	"abnormal appearance" OR "acne" OR "alter* appearance" OR "appearance* concern*" OR "appearance* problem*" OR "albinism*" OR "albino" OR "alopecia" OR "affect* appearance" OR "appearance* alter*" OR "Amputat*" OR "birthmark*" OR "burns" OR "cleft*" OR "craniofacial*" OR "cranio-facial*" OR "deform*" OR "derm*" OR "disfigur*" OR "Dystonia" OR "Dupuytren" OR "dwarf*" OR "eczema" OR "Epidermolysis Bullosa" OR "Exophthalm*" OR "fac* difference*" OR "facial injur*" OR "facial palsy" OR OR "head and neck cancer*" OR "Hemangioma*" OR "Hidradenitis suppurativa" OR "hirsutism" OR "ichthyosis" OR "neurofibromatosis*" OR "melanoma*" OR "mouth* abnormal*" OR "mouth* cancer*" OR "oral* cancer*" OR "plastic surg*" OR "port wine stain*" OR "prosthes*" OR "Palatoschisis" OR "psoriasis" OR "psoriatic" OR "rosacea" OR "scars" Or "scarr*" OR "skin disease*" OR "skin condition*" OR "skin disorder*" OR "strabismus" OR "thyroid eye disease" OR "Torticollis" OR "unusual appearance" OR "visibl* differ*" OR "vitiligo"
Intervention	"bibliotherapy" OR "eHealth" OR "mHealth" OR "mobile health" OR "self-help" OR "self help" OR "CBT" OR "support group*" OR "psychoeducation*" OR "psycho education" OR "cCBT" OR "psychotherap*" OR ("beahvio*" OR "cognitive*" OR "psycho*" OR "social*" OR "mindful*" OR "compassion*" OR "accept*" OR "digital" OR "internet*" OR "web*" OR "writing" OR "computer*") NEAR/3 ("therap*" OR "intervention*" OR "support*" OR "training" OR "education*" OR "program*" OR "treatment*")

	Alternative terms
Outcome	"adjustment*" OR "acceptance*" OR "acceptability" OR "coping*" OR "distress*" OR "qol" OR "hrqol" OR "quality-of-life" OR "quality of life" OR "anxiety" OR "depression" OR "self-esteem" OR "self-concept" OR "self esteem" OR "body image" OR "appearance* concern*" OR "appearance* satisfaction" OR "appearance* dissatisfaction" OR "psycho*" OR "mental health"

Appendix 1B: Critical appraisal of qualitative studies

Item	Quality Criterion	Yes	No	Can't tell
1	Was there a clear statement of the aims?			
2	Is a qualitative method appropriate?			
3	Did the research design appropriate to address the aims of the research?			
4	Was the recruitment strategy appropriate to the aims of the research?			
5	Was data collected in a way that addressed the research issue?			
6	Has the relationship between the research and participant been adequately considered?			
7	Have ethical issue been taken into consideration?			
8	Was the analysis sufficiently rigorous?			
9	Is there a clear statement of findings?			
10	How valuable is the research? (Is there a clear statement of implications?)			

Appendix 1C: NIH Quality Assessment Tool for Case Series Studies

Criteria	Yes	No	Can't tell
1. Was the study question or objective clearly stated?			
2. Was the study population clearly and fully described, including a case definition?			
3. Were the cases consecutive?			
4. Were the subjects comparable?			
5. Was the intervention clearly described?			
6. Were the outcome measures clearly defined, valid, reliable, and implemented consistently across all study participants?			
7. Was the length of follow-up adequate?			
8. Were the statistical methods well-described?			
9. Were the results well-described?			

Appendix 1D: NIH Quality Assessment Tool for Before-After (Pre-Post) Studies with No Control Group

Criteria	Yes	No	Can't tell
1. Was the study question or objective clearly stated?			
2. Were eligibility/selection criteria for the study population prespecified and clearly described?			
3. Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest?			
4. Were all eligible participants that met the prespecified entry criteria enrolled?			
5. Was the sample size sufficiently large to provide confidence in the findings?			
6. Was the test/service/intervention clearly described and delivered consistently across the study population?			
7. Were the outcome measures prespecified, clearly defined, valid, reliable, and assessed consistently across all study participants?			

Criteria	Yes	No	Can't tell
8. Were the people assessing the outcomes blinded to the participants' exposures/interventions?			
9. Was the loss to follow-up after baseline 20% or less? Were those lost to follow-up accounted for in the analysis?			
10. Did the statistical methods examine changes in outcome measures from before to after the intervention? Were statistical tests done that provided p values for the pre-to-post changes?			
11. Were outcome measures of interest taken multiple times before the intervention and multiple times after the intervention (i.e., did they use an interrupted time-series design)?			
12. If the intervention was conducted at a group level (e.g., a whole hospital, a community, etc.) did the statistical analysis take into account the use of individual-level data to determine effects at the group level?			

Appendix 1E: Quality Assessment of Controlled Intervention Studies

Criteria	Yes	No	Can't tell
1. Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT?			
2. Was the method of randomization adequate (i.e., use of randomly generated assignment)?			
3. Was the treatment allocation concealed (so that assignments could not be predicted)?			
4. Were study participants and providers blinded to treatment group assignment?			
5. Were the people assessing the outcomes blinded to the participants' group assignments?			
6. Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?			
7. Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?			
8. Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?			

Criteria	Yes	No	Can't tell
9. Was there high adherence to the intervention protocols for each treatment group?			
10. Were other interventions avoided or similar in the groups (e.g., similar background treatments)?			
11. Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?			
12. Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?			
13. Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?			
14. Were all randomized participants analyzed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?			

Part 2: Empirical study

Can a brief online writing intervention improve body image in adults living with dermatological conditions?

A Randomised Controlled Trial

Can a brief online writing intervention improve body image in adults living with dermatological conditions? A Randomised Controlled Trial

Abstract

Objectives: Dermatological conditions can affect how individuals feel about their bodies. This research therefore seeks to evaluate the potential for a brief writing intervention, focused on body functionality, to improve body image in adults living with a range of dermatological conditions.

Methods: Four-hundred-and-fifty-one adults living with a dermatological condition were randomised to either three functionality-based writing tasks or three creative writing tasks (control). Of these, 155 participants completed pre- and post-intervention measures of body appreciation, functionality appreciation, appearance anxiety, skin-related shame, and skin-related quality-of-life.

Results: For participants with relatively low or mid-range scores on baseline body appreciation and functionality appreciation, there were medium-to-large effects of the intervention. Effects were smaller, with all but-one remaining significant at one-month follow up and in intention-to-treat analyses. No effects of the intervention were found for measures of appearance anxiety, skin-related shame, and skin-related quality-of-life.

Conclusions: These findings suggest that a one-week writing intervention has the potential to improve positive aspects of body image, but not appearance- and skin-related distress in adults living with a dermatological condition. However, these findings should be considered in the context of high attrition across both the intervention and control conditions.

65

Practitioner points

- Completing a one-week functionality-based writing intervention has the potential to improve aspects of positive body image in individuals living with a dermatological condition, who do not already have relatively high levels of body appreciation and functionality appreciation.

- The effect of the writing intervention was sustained at one-month follow up, though with smaller effects.

- Completing 'Expand Your Horizons' did not appear to affect appearance anxiety or measures of skin-specific shame or quality-of-life.

- Whilst the intervention appears acceptable to individuals completing the intervention, the high attrition rate indicates that writing as a pure form of self-help is not universally acceptable.

Limitations

- High attrition limits our ability to draw conclusion around the effectiveness of the intervention.

- Given the relatively small number of participants with relatively low and high baseline levels of positive body image, and few significant interaction terms, caution is needed when drawing conclusions about the effect of the intervention on these participants.

- Participants self-reported their dermatological condition, it is therefore possible that participants had subclinical symptoms and/or incorrectly reported their diagnosis.

- Data was collected during a pandemic, and some participants reported that their anxiety and distress was lower than usual due to lower levels of social contact and the ability to conceal their skin condition using masks.

66

Can a brief online writing intervention improve body image in adults living with dermatological conditions? A Randomised Controlled Trial

Introduction

Dermatological conditions include a range of disorders and diseases that affect the functioning of the hair, skin and/or nails. UK Population health surveys indicate approximately 54% of the adult population have a skin condition each year (All Party Parliamentary Group on Skin [APPGS], 2013; Schofield et al., 2009).

Psychosocial impact

Existing research has identified the potential wide-ranging impact of skin conditions. In a global burden of disease study, skin diseases collectively accounted for the fourth greatest non-fatal burden of disease, with dermatitis, acne, urticaria and psoriasis among the most burdensome (Hay et al., 2014). Epidemiological studies report elevated levels of mental health difficulties, including depression, anxiety, and Body Dysmorphic Disorder (BDD) in populations with chronic skin conditions compared to the general population (APPGS, 2013). For example, BDD, where individuals experience high levels of preoccupation and distress around a perceived flaw in their appearance, were estimated to have prevalence rates of 11.3% in dermatological populations as opposed to 1.9% in the general population (Veale et al., 2016).

Visible difference and body image

Given the skin is the body's largest organ, skin conditions have the potential to affect appearance. Visible skin conditions are predominantly defined as conditions that affect the appearance of the skin in areas difficult to cover

with clothing, such as the face, neck, and hands (Kent, 2002; Porter & Beuf, 1991) and are a leading cause of visible difference (Partridge & Julian, 2007). It is therefore unsurprising dermatological conditions have the potential to influence how individuals relate to and evaluate their bodies. For example, qualitative and survey studies highlight the challenges skin conditions can pose to aspects of body and skin satisfaction, which are often associated with a desire to conceal the visible sign of the condition and avoid situations where their skin condition may be exposed (Bowe et al., 2011; Fox et al., 2007; Papadopoulos et al., 1999). Furthermore, within the qualitative literature, appearance-related concerns have been consistently cited as a central aspect of living with a dermatological condition (Fox et al., 2007; Magin et al., 2006a; Magin et al., 2009a; Johnston et al., 2017).

Psychosocial interventions

Treatments for dermatological conditions primarily focus on physical signs and symptoms. Such treatments are often considered burdensome for the patient, with topical treatment regimens being time-consuming, expensive, and unpleasant in smell and texture, as well as increasing the risk of burn injuries (Schofield et al., 2009). While effective medical treatments can improve psychosocial wellbeing, reports from the APPGS (2003, 2013) emphasise the need to increase research and awareness of the impacts of living with dermatological conditions and the need to improve both psychological and medical treatment.

Self-help interventions have the potential to provide flexible and discrete access to psychological interventions (Zucchelli et al., 2021). However, existing evidence for specific self-help interventions targeting body image in adults living

with a dermatological condition and/or visible differences is currently limited (Bessell & Moss, 2007; Lavda et al., 2012; Muftin & Thompson, 2013). Furthermore, a meta-analysis estimated medium-sized effects of psychological interventions on skin-disease severity, psychosocial measures, and itch-scratch cycles (Lavda et al., 2012). However, reviews highlight limitations of the existing research, including a lack of Randomised Controlled Trials (RCTs), lack of detail in reporting attrition, data analyses, and potential mechanisms of effects (Bessell & Moss, 2007; Lavda et al., 2012; Muftin, & Thompson, 2013). Subsequently, there is a call for research using RCTs to evaluate the effectiveness and feasibility of theory-driven interventions to improve psychosocial wellbeing (Bessell & Moss, 2007; Lavda et al., 2012; Muftin & Thompson, 2013).

Expand your Horizon

One intervention with promising results in improving body image in female populations with high levels of body dissatisfaction and student samples, is 'Expand Your Horizon' (EYH: Alleva et al., 2015a; Alleva, Diedrichs, Halliwell, Martijn et al., 2018). Compared to controls, participants completing EYH reported increased levels of body satisfaction (Alleva et al., 2015a; Alleva, Diedrichs, Halliwell, Martijn et al., 2018), body appreciation (Alleva et al., 2015a; Alleva, Diedrichs, Halliwell, Martijn et al., 2018), body functionality (Alleva et al., 2015a; Alleva, Diedrichs, Halliwell, Martijn et al., 2018), body complexity (Alleva, Diedrichs, Halliwell, Martijn et al., 2018) and lower levels of self-objectification (Alleva et al., 2015a). Effects were maintained at one-week (Alleva et al., 2015a; Alleva, Diedrichs, Halliwell, Martijn et al., 2018) and one-month follow up (Alleva, Diedrichs, Halliwell, Martijn et al., 2018). Findings were

replicated in a RCT evaluating the effectiveness of the intervention adapted for

a clinical population with rheumatoid arthritis, with the additional finding that

depression, but not anxiety, significantly improved in the intervention group

(Alleva, Diedrichs, Halliwell, Peters et al., 2018).

EYH can be delivered online and comprises of three writing exercises

completed over the course of one-week; encouraging participants to focus on

their body-functionality instead of their physical appearance (Alleva et al.,

2015a). EYH is based on principles of positive psychology whereby positive

body image is not primarily the level of dissatisfaction and/or satisfaction, but is

holistic and incorporates acceptance, appreciation of diversity and functionality

(Tylka & Wood-Barcalow, 2015). There is been a growing area of research

examining body functionality as modifiable aspect of positive body image. Body

functionality encompasses multiple domains, such as internal processes,

health, self-care, senses, communication, creativity, and physical activities

(Alleva et al., 2014). Alleva et al. (2014) argues that by training individuals to

shift their focus from appearance to functionality, individuals can develop a

more positive relationship with their body. This shift can also be understood with

self-objectification theory, which posits that women, in particular, are socialised

from an early age to view their bodies 'from the outside', as objects to be looked

at (Fredrickson & Roberts, 1997), and focusing on functionality allows women,

including women with disabilities, to develop healthier relationships with their

bodies (Alleva et al., 2014; Thomas et al., 2019).

The primary aim of this study was to test whether, compared to a control,

a brief functionality writing intervention could improve positive body image in

individuals living with dermatological conditions, as measured by body and

functionality appreciation. We hypothesised participants completing the functionality intervention, compared to participants completing a control writing task, would report significantly higher levels of positive body image on post-intervention and follow up measures of functionality and body appreciation.

A secondary aim was to test whether the writing intervention could improve levels of psychological wellbeing on measures of skin-related shame, appearance anxiety, and quality-of-life. We hypothesised participants completing the functionality intervention, compared with participants completing the control tasks, would report lower levels of appearance anxiety, skin-related shame, and impaired quality-of-life.

A final aim was to assess the acceptability and feasibility of the study and intervention. We hypothesised attrition would be similar between both conditions, participants' writing would largely conform to instructions, and there would be no significant differences between the length of time spent on the writing activities for participants in the intervention and control condition. We also hypothesised feedback would be predominantly positive.

Method

This study adopted a parallel RCT design to assess the effectiveness of an online brief writing intervention EYH, compared to a control, on body image in a population with dermatological conditions. The study protocol was pre-registered on ClinicalTrials.gov (reference number: NCT04445974). Ethical approval was granted by the University of Sheffield ethics committee (reference number: 032128; Appendix 2A).

Participants

Inclusion criteria

      Eligible participants were age 18 or above, who self-reported having a dermatological condition that affects their body image. Dermatological conditions include health conditions that affect the hair, skin and/or nails, but excluded individuals who had experienced dermatological changes due to traumatic injuries (e.g. burns). Participants were required to have sufficient English to complete the measures and writing exercises. Individuals were excluded if they did not consent to randomisation, completing three writing tasks or participating in the study.

Power analysis

      An a-priori power analysis, based on an ANCOVA, for the primary outcome (body appreciation) was conducted using G*Power (Faul et al., 2007) to estimate the sample size required to achieve 80% power with a significance level of .05. Based on previous RCTs of EYH a medium-sized effect was assumed (see Guest et al., 2019 for a systematic review of positive body image interventions). Therefore, assuming a medium effect size of $f = .25$, the total sample size required was 128 (Appendix 2B).

Recruitment

      Participants were recruited between December 2020 and June 2021 from a community sample. The study was advertised across various platforms including: University staff and student volunteers lists, social media/forums, charities (e.g. Alopecia UK; British Skin Foundation, Verity UK), and mailing lists of individuals who had previously participated in similar research. Completing participants were offered entry into a prize draw to win a £50 voucher.

Intervention

Participants allocated to the intervention received EYH (Alleva et al., 2015a). EYH comprises of three writing exercises, typically completed over six-days. Participants are asked to write for 15-minutes each time, focusing on specific functions (e.g. functions related to communication and senses) that their body performs and why these functions are important (e.g. enjoyment from listening to music). The intervention is intended to help individuals practice thinking about what their body does for them, rather than what it looks like or cannot do. Intervention materials were adapted for a mixed-gender population with various dermatological conditions, in consultation with three paid experts by experience, the author of the intervention, and the supervisory team. The adapted intervention materials can be found in Appendix 2C. The control instructions can be found in Appendix 2D.

Procedure

All components of the study were conducted online via Qualtrics (Qualtrics, Provo, UT) to aid the blinding process.

At timepoint 1 (T1), prospective participants self-identifying as having a dermatological condition that affects their body image were provided with information outlining the inclusion criteria, the broad purpose of the study, and what participation would involve (see Appendix 2E for the information sheet). Participants were asked to confirm whether they had read the information and consented to: (1) participating in the study; (2) completing three 15-minute writing tasks over one-week; (3) being randomised to either the intervention or the control. Participants were also asked whether they had a dermatological condition affecting their body image.

Participants were then asked to complete the demographic measures and provide information on their dermatological condition(s). Participants then completed counterbalanced measures relating to body image, and skin-related shame and quality-of-life. The online system then randomly allocated participants, at a ratio of 1:1, to either EYH or a sham control (creative writing). Participants were not told whether they had been assigned to the intervention or control until the end of the one-month follow up. Participants could unblind themselves by requesting the debrief information. Participants were then asked to complete the first writing task, before rating their state appearance satisfaction, skin satisfaction and functionality satisfaction, and providing an email to receive the links to the remaining exercises.

Two days (timepoint 2, [T2]) later, participants were sent an automated email with a link to the second writing exercise. Participant were asked to complete the writing exercise, and re-rate the state measures.

A further two days later (timepoint 3 [T3]), participants were asked to complete the final writing task, before repeating counterbalanced measures given at baseline. Participants in both conditions were then asked to provide feedback, using study-specific questionnaires (Appendix 2F).

One-month after completing the final writing task (timepoint 4 [T4]) participants received a link to the final set of counterbalanced body image, and skin-related questionnaires. Following completion of the questionnaires, participants were shown the debrief information (Appendix 2G) and unblinded. Participants were able to download a copy of the intervention materials.

If participants did not complete part of the study, they received an additional reminder email. At the end of each survey participants were given the

opportunity to provide feedback on the study and report any difficulties they experienced during the study.

Measures

Information on the measures presented to participants are provided below. Cronbach's alphas ($α$) were calculated using survey data to assess the internal consistencies of measures within this study. All scales showed good-to-excellent internal reliability ($α≥.85$)

Demographics

Participants provided information about their gender, age, ethnicity, educational level and employment status (Appendix 2H).

Skin-health variables

Participants also provided information on their dermatological condition(s). This included duration, location, diagnosis, visibility and perceived severity (see Appendix 2J). Participants were also asked if they had any other diagnosed health conditions, and whether they were receiving any psychological/psychopharmaceutical interventions (see Appendix 2I).

Body appreciation

The Body Appreciation Scale-2 (BAS-2: Tylka & Wood-Barcalow, 2015), was used to measure trait levels of body appreciation (Appendix 2J). Each of the 10 items (e.g. 'I appreciate the different and unique characteristics of my body') are rated on a scale of 1 (never) to 5 (always). Average score is calculated by adding each item and dividing by 10. Average scores range between 1 and 5 with higher numbers indicating higher levels of body appreciation. The scale had excellent internal reliability ($α = .94$), and has

established construct, concurrent validity, and three-week test-retest reliability (Tylka & Wood-Barcalow, 2015). In previous trials of EYH the BAS-2 has been responsive to change (Alleva et al., 2015a; Alleva, Diedrichs, Halliwell, Martijn et al., 2018).

Functionality appreciation

The Functionality Appreciation Scale (FAS: Alleva et al., 2017), comprising of seven questions, was used to assess participants' trait levels of appreciation for their bodies' functionality (Appendix 2K). Each item (e.g. 'I am grateful that my body enables me to engage in activities that I enjoy or find important.') is rated on a scale from 1 (strongly disagree) to 5 (strongly agree). Average score is calculated by adding each item and dividing by 7. Average scores range between 1 and 5, with higher numbers indicating higher levels of function appreciation. The scale had excellent internal reliability within this study (α = .90), and has established construct, concurrent validity, and three-week test-retest reliability (Alleva et al., 2015a). In previous trials of EYH the FAS has been responsive to change (Alleva et al., 2015a; Alleva, Diedrichs, Halliwell, Martijn et al., 2018).

Appearance Anxiety

The Appearance Anxiety Index (AAI: Veale et al., 2014) was used to measure appearance anxiety (Appendix 2L). The AAI contains 10 (α = .86) questions focused on cognitive and behavioural components of appearance-related anxiety, including avoidance (e.g. 'I try to camouflage or alter aspects of my appearance') and threat monitoring (e.g. 'I check my appearance e.g. in mirrors, by touching with my fingers, or by taking photos of myself'). Each item is scored on a five-point Likert scale from 0 (not at all) to 4 (all the time). Total

scores can range from 0 to 40, with higher scores indicating greater levels of appearance-related anxiety. The AAI is responsive to change from interventions and scores of 20 or above indicate clinical levels of appearance anxiety (Mastro et al., 2016).

Skin shame

The Skin Shame Scale (SSS: Scott, 2004) was used to measure levels of skin-specific shame (Appendix 2M). The SSS contains 24 items (e.g. 'I avoid intimate contact because of my skin'), which are rated on a scale from 1 (never) to 5 (always). Total scores can range from 24 to 120, with higher scores indicating greater levels of shame. The SSS had excellent internal consistency within this study (α =.90), and has good construct validity (Scott, 2004; Montgomery et al., 2016).

Quality-of-life

The Dermatology Quality of Life Index (DLQI: Finlay & Khan, 1994) was used to measure the impact of skin-conditions on participants' quality-of-life (Appendix 2N). The DLQI contains 10 questions (e.g. 'Over the last week how embarrassed or self-conscious have you been because of your skin') scored on a Likert scale from 0 (not at all/not relevant) to 3 (very much). Total scores range from 0 to 30, with lower scores indicating greater skin-specific quality-of-life. Scores are categorised into 'no impact' (0-1), 'small impact' (2-5), 'moderate impact' (6-10), 'very large' (11-20), 'extremely large' (21-30). Internal consistency within this study was good (α = .85) and the scale is reported to have good test-retest reliability and construct validity (Basra et al., 2008). A change in score of 4 or more indicates clinical and reliable change (Basra et al., 2015).

State Measures

After each writing exercise, participants were asked to rate their state appearance satisfaction, skin-appearance satisfaction and body-functionality satisfaction, on a 100-point visual analogue scale (Appendix 2O). Visual analogue scales are commonly used within experimental research to measure state changes in body image (Groesz et al., 2002).

Acceptability and Feasibility

Reviews of intervention studies aimed at populations with a visible difference highlight the need to include assessments of the acceptability of interventions (Muftin, & Thompson, 2013). Given EYH has not been trialled in a population with dermatological conditions, we nested components of a feasibility/pilot trial within the RCT. This included feedback on the intervention, adherence and manipulation checks, and attrition rates.

Attrition

Attrition was monitored at T1, T2, T3 and T4, and used as an indicator of acceptability and feasibility.

Adherence/manipulation checks.

Adherence was assessed through self-report and Qualtrics metrics. This included reviewing the content and duration of participants' writing. Descriptive data on how long participants spent completing each writing task was estimated in three ways: (1) self-report time spent on each task; (2) time spent on the writing task page, as recorded by Qualtrics; and (3) word count.

The first author reviewed the content of each writing exercise and rated on a three-point scale whether the content of participants' writing conformed to

the given instructions; no relevant content was scored as 0, if instructions were partially followed, they were scored as 1, and if instructions were fully followed they scored a 2. This scale was devised in conjunction with supervisors to identify inappropriate responses. Previous studies evaluating the intervention have reported minimal information on assessments of adherence.

State measures (Appendix 2O) were also used to provide a manipulation check of whether state functionality was higher immediately after completing the functionality tasks, compared with participants completing creativity tasks. Participants were also asked to complete state measures of skin and body satisfaction to compare whether these also differed immediately after completing the exercises.

Evaluation

Following writing task three, participants were asked to provide feedback via a study-specific questionnaire about their experience of the intervention using five-point Likert scale, and a free-text box to add any further comments (Appendix 2G). Feedback questions were discussed within the research team and reviewed by experts by experience.

Analytic strategy

Data was analysed using SPSS v.26 (IBM, Armonk, NY: IBM Corp). Checks for normality using visual methods (histograms) and absolute measures of skewness and kurtosis indicated outcome measures were approximately normally distributed. Outcome data from the DLQI were non-normally distributed, therefore, independent samples t-tests were used to test group differences post-intervention (T3-T1) and at follow up (T4-T1).

To assess whether randomisation of allocation to groups (intervention vs control) was effective, t-tests, chi-squared tests and ANOVAs were used, as appropriate, to compare participant characteristics, including demographics, dermatological history, and baseline scores on the outcome measures. T-tests, chi-squared tests and ANOVAs were also used to identify potential patterns in dropout.

To check whether the writing task manipulation was effective, t-tests were used to compare state functionality appreciation immediately after each writing task. Between group differences on state measures were compared for each timepoint.

Effectiveness of the intervention for completers was tested using a series of between-group ANCOVAs, with group (functionality v control) as the independent variable, post-intervention scores on the BAS-2, FAS, AAI, and SSS as the dependent variable, and baseline scores on the corresponding measure as the covariate. For primary outcome measures (BAS-2 and FAS), ANCOVAs were rerun with intention-to-treat (ITT) analyses using the last-observation-carried-forwards method for missing data. Initial assumption checks for the ANCOVAs indicated the assumptions of homogeneity of regression slopes may have been violated. Visual inspection of scatter plots indicated the strength of effects of the intervention and control on T3 and T4 may differ at different levels of the covariate (baseline scores). Consequently, interaction terms were included in ANCOVA models and incorporated moderation analysis. ANCOVAs were run with the corresponding baseline (T1) score as the covariate at three levels: (1) one-standard deviation below the mean; (2) the mean; and (3) one-standard deviation above the mean, to differentiate effects for

participants with relatively low, mid-range, and high baseline scores, respectively. Sidak's correction was used to correct for multiple comparisons.

The number of participants meeting the criteria for clinical change on measures of appearance anxiety and skin-specific quality-of-life were calculated for each group.

Figure 2.1. Consort diagram summarising participant flow and attrition across the study.

CONSORT
TRANSPARENT REPORTING of TRIALS

CONSORT 2010 Flow Diagram

Enrollment

Assessed for eligibility ($n = 521$)

Excluded ($n = 70$)
♦ Not meeting inclusion criteria ($n = 23$)
♦ Did not complete questionnaires ($n = 47$)

Randomised ($n = 451$)

Allocation

Allocated to intervention ($n = 228$)
♦ Received allocated intervention ($n = 134$)
  - Completed task 1 ($n = 134$)
  - Completed task 2 ($n = 81$)
  - Completed task 3 ($n = 72$)
♦ Did not receive allocated intervention ($n = 94$)

Allocated to control ($n = 223$)
♦ Received allocated control ($n = 127$)
  - Completed task 1 ($n = 127$)
  - Completed task 2 ($n = 87$)
  - Completed task 3 ($n = 79$)
♦ Did not receive allocated control tasks (n = 96)

Follow-Up

Lost to follow-up (no T3 measure, $n = 156$)
Lost to follow-up (no T4 measure, $n = 157$)
Lost to follow-up (no T3 or T4 measure, $n = 153$)

Lost to follow-up (no T3 measure, $n = 144$)
Lost to follow-up (no T4 measure, $n = 149$)
Lost to follow-up (no T3 or T4 measure, $n = 143$)

Analysis

Analysed (intervention group)
♦ ITT ($n = 228$)
♦ Per-protocol (T3, $n = 72$; T4, $n = 71$)

Analysed (control group)
♦ ITT ($n = 223$)
♦ Per-protocol (T3, $n = 79$; T4, $n = 74$)

Results

Sample

A total of 451 participants were randomised to the intervention ($n = 228$) and control ($n = 223$) conditions. Of these, 155 participants (34.4%) provided at least one follow up measure. Within the intervention, 72 participants (31.6%) completed a post intervention questionnaire, and 71 (31.1%) completed a follow up measure one-month later, whereas within the control 79 (35.4%) participants completed the post-intervention and 74 (33.2%) completed a one-month follow up questionnaire. Figure 2.1. shows participant flow through the study and attrition across different points within the study.

Attrition analysis

Comparisons across both conditions, indicated completers and non-completers had similar demographic characteristics, aside from employment status, where participants in paid employment were less likely to complete a follow up measure [$X^2(1, N = 446) = 6.7, p = .01, \varphi = -.12$]. Participants without a formal diagnosis [$X^2(1, N = 446) = 5.9, p = .015, \varphi = .11$], and lower severity ratings [$t(347.5) = 3.4, p = .001, d = .33$], were more likely to complete the study. Furthermore, there was a moderate-sized association between skin condition type and dropout [$X^2(9, N = 451) = 41.9, p < .001, \varphi = .31$], with participants with acne or rosacea significantly more likely to complete at least one follow up outcome. No other health or dermatological variables differed significantly between completers and non-completers. Furthermore, skin condition, employment status and diagnostic status were not significantly associated with the two key outcome variables: post-intervention body appreciation and functionality.

On baseline outcome measures, non-completers reported significantly higher scores on self-rated severity, appearance anxiety, shame, and impaired quality-of-life, as well as lower ratings of body and functionality appreciation (see Table 2.1). However, dropout was comparable across both conditions, and there were no significant differences in the number of non-completers between the intervention and control conditions [X^2(1, N = 451) = 0.44, p = .51, φ =.03].

Table 2.1: Baseline scores for participants completing the study compared to participants who dropped out of the study without providing any post-intervention measures.

	Completers (*n* = 155)	Non-completers (*n* = 296)	Statistics
BAS-2	*M* = 2.8 (*SD* = 0.74)	*M* = 2.6 (*SD* = 0.81	*t*(449) = -2.8, *p* = .005
FAS	*M* = 3.7 (*SD* = .77)	*M* = 3.5 (*SD* = .85)	*t*(449) = -.2.2, *p* = .03
AAI	*M* = 20.2 (*SD* = 8.3)	*M* = 23.0 (*SD* = 7.8)	*t*(449) = 3.5, *p* = .001
SSS	*M* = 80.3 (*SD* = 13.8)	*M* = 84.6 (*SD* = 13.5)	*t*(449) = 3.2, *p* = .002
DLQI	*Mdn* = 8; *IQR* = 9	*Mdn* = 12; *IQR* = 12	*U* = 72186, *p* < .001

Baseline/randomisation checks

Characteristics of participants in the intervention and control are presented in Tables 2.2-2.4. Checks indicated randomisation was successful. Intervention and control groups did not significantly differ on key demographic and clinical variables or baseline measures.

Table 2.2: Participant demographics

Demographics	Participant characteristics	Intervention (*n* = 228)	Control (*n* = 223)	Statistics
Age (years)		*M* = 35.8, *SD* = 12.9, Range = 18-80	*M* = 34, *SD* = 11.1, Range = 18-76.	*t(441) = 1.54, p = .12*
Gender	Female	*n* = 198 (87.6%)	*n* = 195 (88.2%)	X^2(2, *N* = 447) = 0.047, *p* = .98,
	Male	*n* = 26 (11.5%)	*n* = 24 (10.9%)	
	Other	*n* = 2 (0.9%)	*n* = 2 (0.9)	
Ethnicity	White	*n* = 195 (85.5%)	*n* = 174 (76.3%)	X^2(5, *N* = 450) = 7.9, *p* = .16
	Asian	*n* = 18 (7.9%)	*n* = 26 (11.7%)	
	Mixed	*n* = 10 (4.4%)	*n* = 10 (4.5%)	
	Black	*n* = 5 (2.2%)	*n* = 9 (4.1%)	
	Arab		*n* = 2 (0.9%)	
	Latin American		*n* = 1 (0.5%)	
Paid work?	Yes	*n* = 148 (64.9%)	*n* = 148 (67.9%)	X^2(1, *N* = 446) = 0.044, *p* = .51,
Higher education?		*n* = 156 (65.8%)	*n* = 148, (67.3%)	X^2(1, *N* = 445) = 0.02, *p* = .64,

Table 2.3: Participant dermatological history.

Health	Intervention (*n* = 228)	Control (*n* = 223)	Statistics
Severity	*M* = 3.2, *SD* = 1.1	*M* = 3.2, *SD* = 1.1	*t(449) = -0.12, p = .87*
Duration (months)	*M* = 221.38 (18.4 years) *SD* = 165, *Range* = 7 months – 71.2 years	*M* = 227.6 (19 years), *SD* = 152, *Range* = 2 months- 60 years	*t(445) = -0.41, p = .68*
Diagnosis?	*n* = 212 (93%)	*n* = 209 (94.1%)	*X²*(1, *N* = 450) = .25, *p* = .62
Visible?	*n* = 213 (93.4%)	*n* = 204, (91.9%)	*X²*(1, *N* = 450) = 0.39, *p* = .53
Primary skin condition			
Acne	*n* = 28 (12.3%)	*n* = 35 (15.7%)	*X²(9, N = 451) = 9.4, p = .40*
Psoriasis	*n* = 22 (9.6%)	*n* = 21 (9.4%)	
Eczema	*n* = 63 (27.6%)	*n* = 71 (31.8%)	
Alopecia	*n* = 17 (7.5%)	*n* = 15 (6.7%)	
Vitiligo	*n* = 23 (10.1%)	*n* = 17 (7.6%)	
Rosacea	*n* = 10 (4.4%)	*n* = 3 (1.4%)	
HS	*n* = 9 (3.9%)	*n* = 14 (6.3%)	
Hirsutism	*n* = 23 (10.1%)	*n* = 25 (11.2%)	
Multiple	*n* = 14 (6.1%)	*n* = 9 (4%)	
Other	*n* = 19 (8.3%)	*n* = 13 (5.8%)	
Talking therapy	*n* = 19 (8.3%)	*n* = 24 (10.8%)	*X²(1, N = 451)* = 0.77, *p* = .38
Psychotropic medication	*n* = 13 (10.6%)	*n* = 8 (3.6%)	*X²(1, N = 451)* = *1.14, p = .29*

Table 2.4. Summary of baseline scores on outcome measures for participants in both conditions.

Measure	Intervention (*n* = 228)	Control (*n* = 223)	Statistics
BAS-2	*M* = 2.65, *SD* = 0.79	*M* = 2.62, *SD* = 0.80	$t(449) = 0.38$, $p = .7$
FAS	*M* = 3.55, *SD* = 0.80	*M* = 3.50, *SD* = 0.90	$t(449) = 0.9$, $p = .37$
AAI	*M* = 22.0, *SD* = 8.1	*M* = 22.0, *SD* = 8.0	$t(449) = 0.12$, $p = .90$
SSS	*M* = 83.2, *SD* = .14	*M* = 83.0, *SD* = 13.5	$t(449) = 0.17$, $p = .87$
DLQI	*Mdn* = 10; *IQR*: 13	Mdn = 11; IQR: 10	$U = 25102.5$, $p = .94$

Acceptability

Attrition

Attrition was high with 41.2% of participants allocated to the intervention and 43.0% of participants allocated to the control not completing the first writing task. Furthermore, 67.1% of participants allocated to the intervention and 64.4% allocated to the control did not complete at least one post-intervention measure.

Adherence

Of 155 participants who completed at least one post-intervention measure, five within the functionality condition and three in the creativity condition missed one of the three writing tasks.

Most participants in the intervention and control groups fully adhered to the writing instructions. Within the intervention group, 12 participants received a score of 0 ($n = 7$) or a 1 ($n = 9$) for at least one writing task. Scores below 2 were due to participants finding it difficult to think about positive aspects of their body's functions or providing no or limited responses (e.g. listing functions but not expanding on why they are important). Within the control group, 11 participants received a score of 0 ($n = 15$) or 1 ($n = 6$) due to no or limited content.

Average time spent writing and wordcounts for writing tasks are presented in Table 2.5. Mean scores (self-report) for participants within the intervention, but not the control, were below the 15-minutes participants were asked to spend on the tasks. Given Qualtrics data is above 15-minutes, it is possible some participants did not include time spent reading the instructions and reflecting on what they wanted to write. Differences between the two groups were compared using a series of independent samples t-tests. On self-reported time, participants in the creativity group, compared to participants in the functionality group, reported spending more time writing across the writing tasks. Differences were consistent with the timings recorded by the system for tasks one and two, but not the final writing task. There were several outliers within the functionality tasks, but the difference remained non-significant when analysed using a non-parametric test.

For the first writing task, differences in wordcount for the creativity and functionality groups were non-significant [$t(259)$ = -1.76, p = .080]. However, participants assigned to the creativity group compared to participants in the functionality group wrote significantly more words within the second [$t(165)$ = -2.33, p = .021] and third writing tasks [$t(149)$-2.09, p =.041].

Manipulation checks/state outcomes

A series of independent samples t-tests (Table 2.6) indicated the participants who completed the functionality tasks scored significantly higher than participants who completed the creativity tasks on state functionality appreciation at T1 [$t(259)$ = 4.35, p<.001, d = 0.54], T2 [$t(164)$ = 3.77, p<.001, d = 0.59], T3 [$t(149)$ = 3.65, p<.001, d = 0.59], as well as at T4, [$t(142)$ = 2.91, p=.004, d = 0.49]. There was a small marginally significant difference for skin satisfaction at one month follow up [$t(142)$ = 2.09, p=.038, d = 035]. However, no other differences were statistically significant. Furthermore, as reported in participant feedback (Table 2.7), 65 (90.3%) participants within the intervention reported either 'agreeing' or 'strongly agreeing' the writing tasks helped them focus on what their body can do rather than what it looks like. Marginally fewer participants in the control condition (n = 62, 78.5%) reported the writing tasks helped them focus on their creativity [$t(149)$ = 1.97, p = .050].

Table 2.5 Mean (SD) length of time and word count for each writing task for participants in the functionality and creative condition.

	Self-report time		System recorded time		Wordcount	
	Functionality	Creativity	Functionality	Creativity	Functionality	Creativity
T1	13.3 (4.7)***	17.2 (9.8)	15.6 (9.0)*	19.4 (15.2)	258 (144.8)	291 (165)
T2	14.4 (4.5)***	19.2 (10.0)	16.2 (5.7)**	20.3(10.5)	296 (174.3)*	371 (234)
T3	14.4 (4.6)**	17.6 (8.0)	20.35 (23.5)	20.9 (15.5)	364 (207.8)*	301 (160)

Table 2.6. Mean (SD) scores on state measures immediately following each writing task for participants in the functionality and creative condition.

	Body Functionality		Body satisfaction		Skin satisfaction	
	Functionality	Creativity	Functionality	Creativity	Functionality	Creativity
T1	69.4(22.5)***	56.6(24.9)	44.1(27.1)	39.8(25.7)	33.1(24.4)	31.3(23.6)
T2	71.3(19.7)***	59.1(22.9)	47.5(22.9)	46.3(23.6)	45.7(23.8)	42(23.5)
T3	73.5(21.3)***	60.4(22.8)	52.6(23.7)	48.8(24.6)	50.1(24.1)	46.7(25.9)
T4	72.9(21.4)***	61.6(24.9)	52.2(22.8)	44.3(25.0)	48.1(24.4)*	39.4(24.8)*

Feedback

In total, 151 participants provided feedback after the final writing task (T3). A summary of participants' responses are presented in Table 2.7. Most participants across both conditions reported finding the instructions for the writing tasks relatively easy to follow, with 63 participants in the intervention and 71 participants in the control condition 'agreeing' or 'strongly agreeing' with this statement. However, participants within the functionality group as opposed to the intervention group reported greater perceived improvement in how they felt about their skin, with a medium-sized effect. There were also large significant differences between groups on feedback items. Participants in the functionality group, as opposed to the intervention group, reported greater improvements in how they feel about their body, and were more likely to report planning to continue practicing what they learnt in the tasks, and recommending the writing tasks to a friend or family member with a dermatological condition.

Table 2.7. Summary of participants feedback on functionality/creativity tasks.

Question	Functionality (n = 72)	Creativity (n = 79)	Statistic
The writing tasks helped me to focus on [what my body is capable of rather than what my body looks like]/[my creativity].	4.4 (0.70)	4.1 (0.96)	*t(149) = 1.97, p = .050, d=.32*
The instructions for the writing tasks were easy to understand and follow.	4.2 (0.86)	4.43 (0.83)	*t(149) = -1.52, p = .13*
The writing task improved how I feel about my body.	3.8 (0.96)	2.73 (1.02)	*t(148) = 6.40, 1.52, <.001, d = 1.04*
The writing task improved how I feel about my skin condition.	3.2 (1.1)	2.52 (1.06)	*t(149) =3.89, p<.001, d =.63*
I plan to continue practicing what I have learn from this task.	3.8 (0.98)	2.91 (0.92)	*t(148) = 4.85, p<.001, d = .88*
I would recommend these writing tasks to a friend or family member with a skin condition.	3.93 (0.92)	2.91 (1.1)	*t(148) = 6.02, p<.001, d =1.00*

*Comparisons of means (SD) are presented for each five-point Likert scale asking about participants perceptions of the writing tasks.

Twenty-eight participants in the intervention and 23 participants in the control provided additional feedback. Within both conditions, several participants ($n = 4$) reported experiencing technical issues completing the study. Within the intervention, several reported the exercises feeling less relevant because of the lack of focus in the writing on skin conditions ($n = 2$) or due to wider contextual factors ($n = 4$, e.g. *"Living alone in [covid] times, some of the questions did not appear relevant to me"*). However, responses to open ended questions were predominantly positive ($n = 21$) from participants (e.g. *"This has been an eye opener and has made me think a lot more about other aspects of my body other than my skin. The human body does some amazing things")*.

Feedback from participants completing creativity tasks was mixed, with some participants commenting on how much they enjoyed taking part ($n = 9$, e.g. "Writing the stories made me feel good and happier.") Whilst other participants reported difficult ($n = 4$) or mixed feelings ($n = 2$) arising during the task (e.g. *"It made me feel sad about where my imagination has gone"*). Furthermore, 11 participants commented on the tasks not feeling relevant to coping with a dermatological condition. This indicates the blinding of participants was successful (e.g. "*I didn't quite understand the correlation between the writing task and my skin*"). However, it also raises questions about the acceptability of the sham control.

Effectiveness

Body appreciation

Results of the ANCOVAs comparing completers' post-intervention scores on the BAS-2, indicated there was a positive effect of the intervention on body appreciation. Participants completing functionality exercises, as opposed to

creativity exercises, reported significantly greater body appreciation post-intervention. Effect sizes were moderate for participants with relatively low [$F(1,147) = 14.36$, $p \leq .001$, $\eta p^2 = .089$]; and midrange [$F(1,147) = 17.55$, $p \leq .001$, $\eta p^2 = .11$], pre-intervention scores; and small for participants with relatively high initial scores [$F(1,147) = 4.54$, $p = .035$, $\eta p^2 = .030$]. At one-month follow up, the effect of the intervention remained significant, but reduced to small for participants who initially had low [$F(1,147) = 8.09$, $p = .005$, $\eta p^2 = .055$], or midrange [$F(1,147) = 7.47$, $p = .007$, $\eta p^2 = .051$], scores on the BAS-2, while between-group differences became non-significant for participants with relatively high initial scores [$F(1,147) = 0.92$, $p = .34$, $\eta p^2 = .007$]. However, the interaction term indicated the slope of the relationship between the covariate (pre-intervention BAS-2 score) and post-intervention BAS-2 score (dependent variable) did not significantly differ between the intervention and control group (independent variable) in the ANCOVA. Similarly, the interaction term indicated the relationship between pre-intervention BAS-2 score and follow up BAS-2 score did not significantly differ between condition arms.

In post-intervention ITT analyses (Table 2.9), participants randomised to functionality exercises, as opposed to creativity exercises, reported significantly greater body appreciation. Effect sizes were small for participants with relatively low [$F(1,447) = 5.92$, $p = .015$, $\eta p^2 = .013$]; midrange [$F(1,447) = 11.32$, $p = .001$, $\eta p^2 = .025$], and high [$F(1,447) = 5.43$, $p=.020$, $\eta p^2 =.012$] baseline scores. However, at one-month follow up, between-group differences became non-significant for participants with relatively low [$F(1,147) = 3.27$, $p = .071$, $\eta p^2 = .007$], and high [$F(1,447) = 1.32$, $p =.252$, $\eta p^2 = .003$] pre-intervention scores, but remained significant for participants with midrange scores [$F(1,147) = 4.35$,

$p = .038$, $\eta p^2 = .010$]. However, in ITT analysis, the interaction term indicated the slope of the relationship between the covariate (pre-intervention BAS-2 score) and post-intervention BAS-2 score (dependent variable) did not significantly differ between the intervention and control group (independent variable) in the ANCOVA. Similarly, the interaction term indicated the relationship between pre-intervention BAS-2 score and follow up BAS-2 score did not significantly differ between condition arms.

Table 2.8. Summary of completer analysis for body appreciation (BAS-2), including estimated marginal means and effects of the intervention at baseline values of BAS-2 one-standard deviation below the mean, the mean, and one-standard deviation above the mean, as well as the interaction effect (baseline BAS-2 and study arm) on BAS-2 at post-intervention (n = 151) and one-month follow up (n = 144).

Group	BAS-2 (pre)	BAS-2 (post-intervention)				Effect?		BAS-2 (follow up)				*Effect?*	
	M	*n*	*M*	*SE*	*CI*	*p*	ηp^2	*n*	*M*	*SE*	*CI*	*p*	ηp^2
Functionality	2.04	10	2.61	.069	2.47-2.74	≤.001	.089	10	2.63	.083	2.47-2.80	.005	.055
Creativity		14	2.25	.063	2.13-2.38			13	2.31	.079	2.15-2.46		
Functionality	2.78	52	3.19	.048	3.10-3.28	≤.001	.11	51	3.18	.058	3.07-3.30	.007	.051
Creativity		55	2.92	.045	2.83-3.00			52	2.96	.057	2.85-3.07		
Functionality	3.52	10	3.77	.067	3.64-3.91	.035	.030	10	3.76	.84	3.6-3.93	.34	.007
Creativity		10	3.58	.065	3.45-3.70			8	3.65	.083	3.49-3.81		

Interaction: $F(1, 147) = 1.36$, $p = .25$, $\eta p^2 = .009$ Interaction: $F(1, 140) = 1.65$, $p = .20$, $\eta p^2 = .012$

Table 2.9. Summary of ITT analysis for body appreciation (BAS-2), including estimated marginal means and effects of the intervention at baseline values of BAS-2 one-standard deviation below the mean, the mean, and one-standard deviation above the mean, as well as the interaction effect (baseline BAS-2 and study arm) on BAS-2 at post-intervention and one-month follow up (N = 451).

Group	BAS-2 (pre)	BAS-2 (post-intervention)				Effect?		BAS-2 (follow up)				Effect?	
	M	*N*	*M*	*SE*	*CI*	*P*	*ηp²*	*N*	*M*	*SE*	*CI*	*p*	*ηp²*
Functionality	*1.84*	41	2.00	.27	1.95-2.05	.015	0.13	41	2.00	.031	1.94-2.06	.071	.007
Creativity		36	1.91	.27	1.85-1.96			36	1.92	.031	1.86-1.98		
Functionality	*2.63*	155	2.77	.019	2.73-2.81	.001	.025	155	2.76	.022	2.72-2.81	.038	.010
Creativity		157	2.68	.019	2.64-2.72			157	2.70	.022	2.66-2.74		
Functionality	*3.42*	32	3.54	.026	3.48-3.59	.020	.012	32	3.52	.030	3.46-3.58	.252	.003
Creativity		30	3.48	0.27	3.39-3.50			30	3.47	.031	3.41-3.53		
		Interaction: $F(1, 447) = 0.006$, $p = .94$, $ηp² = <.001$						Interaction: $F(1, 447) = 0.22$, $p = .64$, $ηp² = <.001$					

Functionality appreciation

Results of the ANCOVAs comparing participants post-intervention scores on the FAS (Table 2.10), indicated there was an effect of the intervention on functionality appreciation, moderated by completers' baseline FAS scores. Participants in the intervention who started with low [$F(1,147) = 27.3$, $p <.001$, $\eta p^2 =.16$] or mid-range [$F(1,147) = 23.44$, $p <.001$], $\eta p^2 = .14$] scores on the FAS, scored significantly higher than participants with similar scores in the control group. However, for participants with initially high scores, between-group differences were non-significant [$F(1,147) = 2.74$, $p = .10$, $\eta p^2 = .018$]. At one-month follow up, between-group differences for initially low [$F(1,139)=12.9$, $p < .001$, $\eta p^2 = .085$], and midrange [$F(1,139) = 10.0$, $p = .002$, $\eta p^2 = .067$] scorers remained significant, but effect sizes reduced from large to medium. Differences remained non-significant for relatively high scorers [$F(1,139) = 0.74$, $p = .39$, $\eta p^2 = .005$]. Furthermore, the interaction term provided evidence of moderation, as the slope of the relationship between pre-intervention FAS score and post-intervention FAS score significantly differed between the intervention and control group in the ANCOVA. However, at follow up the interaction was marginally non-significant, indicating the relationship between pre-intervention FAS score and follow up FAS score did not significantly differ between condition arms.

Within ITT analyses (Table 2.11), effects of the intervention on functionality appreciation were significant, but small for participants with low baseline scores at T3 [$F(1,447) = 9.22$, $p = .003$, $\eta p^2 =.020$], and T4 [$F(1,447) = 4.12$, $p = .043$, $\eta p^2 =.009$]; and participants with midrange baseline scores at T3 [$F(1,447) = 11.62$, $p = .001$, $\eta p^2 = .025$] and T4 [$F(1,447) = 5.35$, $p = .021$, $\eta p^2 =.012$]. For relatively high baseline scorers on the FAS, there were no

significant effects of intervention allocation on functionality appreciation at T3 [$F(1,447) = 3.22$, $p = .074$, $\eta p^2 = .007$], or T4, [$F(1,447) = 1.55$, $p = .214$, $\eta p^2 = .003$]. However, in ITT analyses, the interaction term indicated the slope of the relationship between pre-intervention FAS score and post-intervention FAS score did not significantly differ between the intervention and control group in the ANCOVA. Similarly, the interaction term indicated the relationship between pre-intervention FAS score and follow up FAS score did not differ between condition arms.

Table 2.10. Summary of completer analysis for functionality appreciation (FAS), including estimated marginal means and effects of the intervention at baseline values of FAS one-standard deviation below the mean, the mean, and one-standard deviation above the mean, as well as the interaction effect (baseline FAS and study arm) on FAS at post-intervention (n = 151) and one-month follow up (n = 143).

Group	FAS (pre)	FAS Post-intervention				Effect?		FAS Follow up				*Effect?*	
	M	*N*	*M*	*SE*	*CI*	*p*	ηp^2	*n*	*M*	*SE*	*CI*	*p*	ηp^2
Functionality	2.93	9	3.77	.091	3.59-3.95	≤.001	.16	8	3.82	.100	3.62-4.02	≤.001	.085
Creativity		13	3.14	.078	2.98-3.29			11	3.34	.091	3.16-3.15		
Functionality	3.70	52	4.24	.55	4.13-4.35	≤.001	.14	52	4.16	.067	4.03-4.30	.002	.067
Creativity		51	3.87	.53	3.77-3.97			47	3.86	.067	3.74-3.99		
Functionality	4.47	11	4.60	.074	4.45-4.74	.10	.018	11	4.51	.095	4.32-4.69	.39	.005
Creativity		15	4.43	.072	4.28-4.57			14	4.39	.095	4.2-4.58		

Interaction: $F(1, 147) = 7.94$, $p = .006$, $\eta p^2 = .051$ Interaction: $F(1, 139) = 3.75$, $p = .055$, $\eta p^2 = .026$

Table 2.11. Summary of ITT analysis for functionality appreciation (FAS), including estimated marginal means and effects of the intervention at baseline values of FAS one-standard deviation below the mean, the mean, and one-standard deviation above the mean, as well as the interaction effect (baseline FAS and study arm) on FAS at post-intervention and one-month follow up (N = 451).

Group	FAS (pre)	FAS (post-intervention)			Effect?		FAS (follow up)				Effect?	
	M	*N*	*M*	*SE*	*CI*	*p*	*ηp²*	*n*	*M*	*SE*	*CI*	*p*	*ηp²*
Functionality	2.76	34	3.02	.035	2.95-3.09	.003	.020	34	3.00	.038	2.92-3.07	.043	.009
Creativity		41	2.86	.033	2.81-2.94			41	2.89	.36	2.82-2.96		
Functionality	3.58	157	3.76	.024	3.71-3.80	.001	.025	157	3.72	.026	3.67-3.77	.021	.012
Creativity		144	3.64	.024	3.59-3.69			144	3.64	.026	3.58-3.69		
Functionality	4.4	37	4.50	.043	4.43-4.56	.074	.007	37	4.45	.037	4.38-4.52	.214	.003
Creativity		38	4.41	.035	4.34-4.48			38	4.38	.038	4.31-4.46		

Interaction: $F(1, 447) = 0.78$, $p = .38$, $ηp² = .002$ Interaction: $F(1, 447) = 0.31$, $p = .58$, $ηp² = .001$

Skin shame and appearance anxiety

Results of the ANCOVAs (Table 2.12) comparing completers' post-intervention scores on the AAI indicated there were no significant effects of the intervention regardless of whether participants had low [$F(1,147) = 0.86$, $p = .36$, $\eta p^2 = .006$]; mid-range, [$F(1,147) = 1.76$, $p = .19$, $\eta p^2 = .012$]; or high [$F(1,147) = 0.88$, $p = .35$, $\eta p^2 = .006$], baseline score at T3. Similarly, at T4 there were no significant effects of the intervention for participants with low, [$F(1,140) = 4.12$, $p = .054$, $\eta p^2 = .029$]; mid-range [$F(1,140) = 3.11$, $p = .080$, $\eta p^2 = .022$]; and high [$F(1,140) = 0.88$, $p = .35$, $\eta p^2 = .006$], scores on the AAI. Furthermore, the interaction term indicated the slope of the relationship between pre-intervention AAI score and post-intervention AAI score did not significantly differ between the intervention and control group in the ANCOVA. Similarly, the interaction term indicated the relationship between pre-intervention AAI score and follow up AAI score did not significantly differ between condition arms.

Similarly, results of the ANCOVA (Table 2.13) comparing completers' post-intervention scores on the SSS indicated there were no significant effects of the intervention regardless of whether participants had low [$F(1,147) = 1.50$, $p = .22$, $\eta p^2 = .010$]; midrange, [$F(1,147) = 2.83$, $p = .095$, $\eta p^2 = .019$]; or high [$F(1,147) = 1.29$, $p = .26$, $\eta p^2 = .009$], baseline scores at T3. Furthermore, at T4 there were no significant effects for participants with low, [$F(1,139) = 0.59$, $p = .45$, $\eta p^2 = .004$]; mid-range [$F(1,139) = 3.13$, $p = .079$, $\eta p^2 = .022$]; and high [$F(1,139) = 2.96$, $p = .087$, $\eta p^2 = .021$], scores on the SSS. Furthermore, the interaction term indicated the slope of the relationship between pre-intervention SSS score and post-intervention SSS score did not significantly differ between the intervention and control group in the ANCOVA. Similarly, the interaction

term indicated the relationship between pre-intervention SSS score and follow up SSS score did not differ significantly between condition arms.

Table 2.12. Summary of completer analysis for appearance anxiety (AAI), including estimated marginal means and effects of the intervention at baseline values of AAI one-standard deviation below the mean, the mean, and one-standard deviation above the mean, as well as the interaction effect (baseline AAI and study arm) on AAI at post-intervention (n = 151) and one-month follow up (n = 144).

Group	AAI (pre)		AAI (post-intervention)			Effect?			AAI Follow up			Effect?	
	M	*N*	*M*	*SE*	*CI*	*p*	*ηp²*	*n*	*M*	*SE*	*CI*	*P*	*ηp²*
Functionality	11.9	11	10.0	0.96	8.1-11.9	.36	.006	10	9.1	1.09	7.0-11.3	.054	.029
Creativity		11	11.8	0.89	9.4-12.9			10	12.2	1.03	10.1-14.2		
Functionality	20.2	52	15.5	0.67	14.2-16.8	.19	.012	52	14.9	0.76	13.4-15.3	.080	.022
Creativity		52	16.7	0.64	15.5-18.0			50	16.8	0.75	15.3-18.3		
Functionality	28.5	9	21.1	1.92	19.1-23.2	.35	.006	9	21.1	1.15	18.8-23.4	.68	.001
Creativity		16	22.4	0.87	20.7-24.1			13	21.7	1.05	16.7-23.8		

Interaction: $F(1, 147) < .001$, $p = .99$, $ηp² < .001$ Interaction: $F(1, 140) = 1.21$, $p = .27$, $ηp² = .009$

Table 2.13. Summary of completer analysis for skin shame (SSS), including estimated marginal means and effects of the intervention at baseline values of SSS one-standard deviation below the mean, the mean, and one-standard deviation above the mean, as well as the interaction effect (baseline SSS and study arm) on SSS at post-intervention (n = 151) and one-month follow up (n = 143).

Group	SSS (pre)	SSS (post-intervention)				Effect?		SSS (follow up)				Effect?	
	M	*N*	*M*	*SE*	*CI*	*p*	ηp^2	*n*	*M*	*SE*	*CI*	*P*	ηp^2
Functionality	66.5	11	61.8	1.54	58.8-64.9	.22	.01	11	60.97	1.80	57.4-64.5	.45	.004
Creativity		13	64.3	1.35	61.6-66.9			10	62.87	1.70	59.5-66.2		
Functionality	80.3	50	73.4	1.03	71.3-75.4	.095	.019	48	72.0	1.22	69.6-74.4	.079	.022
Creativity		50	75.8	.99	73.8-77.7			47	75.1	1.21	72.7-77.5		
Functionality	94.1	11	84.9	1.48	82.0-87.8	.26	.009	11	82.5	1.74	79.0-85.9-	.087	.21
Creativity		16	87.2	1.39	84.5-89.9			16	86.6	1.66	83.3-89.9		
		Interaction: $F(1, 147) = 0.005$, $p = .95$, $\eta p^2 < .001$						Interaction: $F(1, 139) = 0.42$, $p = .52$, $\eta p^2 = .003$					

Clinical change

Among completers, 67.7% of participants scored above the threshold for moderately impaired dermatology-related quality-of-life, and 91.6% reported at least some impairment to their quality-of-life. Participants' changes in DLQI scores post-intervention (T3-T1), ranged between -7 and 12 (M=2.17, SD = 4.15) for participants completing functionality exercises and -10 and 10 (M = 1.38, SD = 3.68) for participants completing creativity tasks, and did not significantly differ between groups [$t(149)$ = 1.24, p = .22, d = 0.20]. At follow up (T4-T1) changes in DLQI ranged from -8 to 21 (M = 2.42, SD = 4.15) and -11 to 14 (M = 1.23, SD = 4.71), and did not significantly differ between groups [$t(149)$ = 1.51, p = .13, d = 0.25]. A change of 4 or more indicates clinical and reliable change on the DLQI. At T3, 24 (33.3%) participants in the intervention and 20 (25.3%) participants in the control showed clinical and reliable improvement, and 7 (9.72%) and 7 (8.86%) showed clinical and reliable deterioration, which did not differ significantly between groups [$X^2(2, N = 151)$ = 1.34, p = .51, V =.094]. At one-month follow up (T4), 27 (38.0%) participants in the intervention and 21 (28.4%) participants in the control showed clinical and reliable improvement, and 6 (8.45%) and 10 (13.5%) showed clinical and reliable deterioration, respectively, which did not differ significantly between groups [$X^2(2, N = 145)$ = 1.34, p = .51, V =.094].

The clinical threshold for AAI is 20 or above. Among completers, 58.1% of participants met the clinical threshold for appearance anxiety. At T3, similar numbers of participants exhibited clinical change in the intervention (n = 20, 28.2%) and control (n = 21, 26.6%), with one (1.4%) and two (2.5%) participants exhibited clinical deterioration, respectively [$X^2(2, N = 150)$ = .27, p = .87, V =.043]. At T4 differences between-groups remained non-significant,

[$X^2(2, N=144) =.78, p =.68, V =.074$] with 21 (29.6%) and two (2.81%)

participants within the intervention and 19 (25.6%) and 4 (5.41) within the

control meeting the criteria for clinical improvement and deterioration,

respectively.

Clinical cut-offs are not available for the BAS-2, FAS and SSS, therefore

clinical change was not calculated on these measures. Within this study,

completers appeared to report lower levels of baseline body appreciation ($M =$

2.78, $SD = 0.74$) compared to participants included in the development of the

BAS-2, which used student ($M = 3.47$-3.97, $SD = 0.73$) and community samples

($M = 3.22$-3.47, $SD = 0.86$-0.96: Tylka & Wood-Barcalow, 2015). However,

baseline BAS-scores in the present study were marginally higher compared to a

sample of women with rheumatoid arthritis ($M = 2.58$-2.60, $SD = 0.79$-0.96) who

participated in a previous trial of the intervention (Alleva, Diedrichs, Halliwell,

Peters et al., 2018). Furthermore, the mean score for completers on the FAS (M

$= 3.70, SD = 0.77$) fell between the range reported in the community sample (M

$= 3.98$-4.18, $SD = 0.63$-0.64) included in the development of the FAS (Alleva et

al., 2017), and the sample of women with rheumatoid arthritis ($M = 3.17$-3.3, SD

$= 0.89$-0.96) who participated in a previous trial of the intervention (Alleva,

Diedrichs, Halliwell, Peters et al., 2018). It is possible that this reflects

differences in functionality impairment due to dermatological conditions and

rheumatoid arthritis. There also appeared to be elevated levels of skin shame in

this sample, given the mean score for completers on the SSS ($M = 80.3, SD =$

13.8) appears higher than those reported in the community dermatology sample

($M = 66.9, SD = 17.8$) included in the development of the SSS (Scott, 2004).

Discussion

This study sought to examine whether a one-week body functionality writing intervention could improve positive body image and reduce appearance/skin-related distress in adults living with a range of dermatological conditions. The potential effectiveness and acceptability of an adapted version of EYH was examined in a parallel RCT.

In line with the primary hypothesis, there was evidence participants in the intervention, as opposed to the control, with lower or midrange baseline levels of body appreciation and functionality appreciation reported significantly higher levels of positive body image immediately after completing the final exercise and one-month later. However, effect sizes reduced from medium to small for body appreciation, and large to medium for functionality appreciation. Outcomes remained fairly similar in ITT analyses, though effects of the intervention on body appreciation were small regardless of baseline score, and at follow up the effect only remained significant for participants with mid-range baseline scores. Similarly, ITT analysis indicated that the effect of the intervention on functionality appreciation dropped from large to small at post-intervention, and medium to small at follow up. There remained no effect of the intervention on functionality appreciation for relatively high baseline scorers.

There was evidence that that baseline scores on the FAS moderated the effect of the intervention on post-intervention functionality appreciation. It is possible that the moderation indicates the intervention may be less relevant for individuals with already high levels of functionality appreciation, as functionality is the proposed mechanism of change. There were no other significant interaction effects for functionality appreciation and body appreciation.

109

Additionally, the number of participants included in analyses of participants with relatively low and high BAS-2 and FAS scores were relatively small. Caution is therefore needed when drawing conclusions about the effect of the intervention on participants with relatively high and low baseline scores. It is possible that the study is overinclusive of non-significant findings for participants with relatively high baseline levels of body appreciation and body functionality and overinclusive of significant findings for participants with relatively low baseline scores.

It is also possible the lack of effects of the intervention for participants with relatively high body appreciation and functionality appreciation at baseline may have been a result of a ceiling effect, suggesting the measures chosen were not sensitive enough to detect change in individuals with higher baseline levels of positive body image and/or the recruitment of participants with subclinical levels of distress. In a meta-analysis of standalone body image interventions, selection of participants with elevated appearance distress was identified as a moderator, with studies including participants with lower levels of distress yielding smaller effect sizes (Alleva et al. 2015). Within this study, participants were not formally screened for elevated distress, although they were asked to self-report whether they felt their skin condition affected their body image. Whilst this affects the strength of conclusions about the effectiveness of the intervention, it may better reflect the range of individuals who may access the intervention via third sector organisations.

Over a third of participants completing the intervention met the criteria for clinical change on the DLQI and close to 30% met the threshold for clinical change on appearance anxiety. However, between-group differences were non-significant. Comparisons of participants' scores on secondary measures of

distress did not support the hypothesis that participants in the intervention would report lower levels of skin shame, appearance anxiety and impaired quality-of-life, compared to participants in the control condition.

It is unclear why participants did not exhibit improvements on negative aspects of body image and dermatology-related impairments. It is possible participants scores were influenced by the Coronavirus pandemic. For example, some participants fed back that they felt less self-conscious due to lack of social contact and facemasks offering concealment. Consequently, some questions may have felt less relevant (e.g. "Over the last week, how much has your skin affected any social or leisure activity?"). It is also possible that aspects of positive body image are more responsive to change. Consequently, the short nature of the intervention may have been insufficient to reduce feelings of shame or improve quality-of-life, particularly where individuals have experienced intrusive reactions from others. Additionally, the absence of components directly addressing shame and other maintaining factors in appearance and health-related distress may explain the lack of effect, which warrants further investigation. Whilst our findings do not support the use of EYH to specifically reduce distress associated with living with a dermatological condition, our findings suggest that in a community sample, completion of the intervention may enhance positive body image.

In relation to acceptability, feedback was generally positive. Participants who completed functionality tasks, as opposed to creativity tasks, were more likely to report a perceived benefit of the intervention on their body image and wanting to continue practicing what they had learnt from the task. This may partially explain why effects of the intervention on positive body image largely remained at one-month follow up. However, it is important to note that the

evaluation was completed following the final writing task. Consequently, the feedback is not representative of all participants who started the study and is likely to be biased towards participants who were motivated and interested in completing the study.

A major limitation of this study is the high rate of attrition (>65%). Attrition is often high in studies testing self-help interventions within populations with visible differences (Bundy et al., 2013; Hudson et al., 2020; Krasuska et al., 2018), as well as in the wider literature on self-help (Linardon & Fuller-Tyszkiewicz, 2020; Meyerowitz-Katz et al., 2020). Pure self-help interventions typically reporting higher rates of attrition when compared to wait-list controls and facilitated interventions (D'Alton et al., 2019; Hudson et al., 2020). However, attrition within this study was far higher than attrition reported in previous trials of EYH. It is likely aspects of recruitment partly explained this difference. For example, financial incentives and human facilitated enrolment, as used in previous trials, are linked to lower levels of attrition (Linardon & Fuller-Tyszkiewicz, 2020). Whilst attrition may be more naturalistic in this study, it raises questions related to the acceptability of the use of writing tasks within this study. It also limits conclusions about the effect of the intervention based on allocation. Technical issues within the study likely contributed to high attrition. Participants in both conditions reported experiencing technical difficulties (e.g. difficulty loading the writing task, and problems with downloading the functions list). Subsequently, the data collection period was extended, and minor alterations were made to the study (e.g. including examples of body functions within the task instructions in addition to providing a downloadable list). In future it may be helpful to offer individuals the option to download the full intervention materials or receive a print copy of the intervention.

112

Within previous research, authors have emphasised the likelihood that participants completing trials of non-facilitated psychosocial interventions are likely to be non-random (Bell et al., 2013). For instance, participants experiencing positive outcomes and higher in motivation are more likely to complete interventions (Bell et al., 2013). This increases the risk of type one errors and limits conclusions relating to the effectiveness of the interventions based on allocation (National Institutes of Health, 2014). Nevertheless, this also applies to the control condition, it may also explain why participants completing the creativity tasks wrote for longer than the recommended 15-minutes. There was evidence that dropout was non-random given non-completers had, on average, poorer scores on measures of body image, skin-related shame and quality-of-life. It is possible that being asked to write positively about their bodies brought up difficult feelings for some participants. Correspondingly, observational studies have identified association between self-criticism and fear of self-compassion (Gilbert et al., 2011).

In order to address the high attrition, we employed a conservative method of last-observation-carried-forward to examine the effect of participant assignment on potential outcomes. However, given the very high attrition within this study, it is difficult to predict how non-completers' scores may have changed over the course of the study. Furthermore, last-observation-carried-forward is associated with increased risk of type two errors (Saha & Jones, 2016). The effect of the intervention remained predominantly significant, though smaller, in conservative ITT analysis, indicating that effects of the intervention on positive body image were relatively robust. Furthermore, high dropout is also likely a naturalistic reflection of who will use and potentially benefit from self-help interventions. Future research using writing interventions would benefit

from further investigating the reasons for discontinuation as well as examining techniques to retain engagement.

A strength of this study was the use of a 'sham' control to differentiate the effect of the functionality writing intervention, beyond writing more generally. There was evidence, within feedback, that participants within the creative writing group remained blinded to the condition. Furthermore, feedback indicated that participants largely 'agreed' or 'strongly agreed' that the creative writing tasks helped them focus on their creativity, whilst the functionality tasks helped participants focus on their body functions. Although not a focus of this study, it is possible that the process of writing creatively had a therapeutic benefit for some participants. For example, within previous studies, comparing EYH to matched creative writing tasks, there were effects over time for participants allocated to both conditions (Alleva et al. 2015). This effect may reflect natural changes over time, or active components of the control condition, like distraction and enjoyment. Correspondingly, studies using active controls typically have lower effect sizes and arguably more robust findings (Alleva et al., 2015b). Feedback from one participant indicated that the creative writing tasks had helped them focus on important aspects of themselves beyond their appearance, suggesting an overlap with the theoretical mechanisms of change, whereas another participant spoke of feeling sad that they could not think of a story, indicating the creative writing tasks evoked emotional responses for some participants. It is possible that emotional responses to the writing tasks may have influenced participants' subsequent scores on outcome measures.

The findings from this study add further support to the growing evidence that completing a one-week functionality intervention has the potential to improve functionality appreciation and body appreciation for a range of groups

including adults with dermatological conditions, women with rheumatoid arthritis (Alleva, Diedrichs, Halliwell, Martijn et al., 2018), student populations (Alleva et al., 2014; Stern & Engeln, 2018), and women with high levels of body dissatisfaction (Alleva et al., 2015a). Furthermore, given the brief and low-cost nature of the intervention, it is promising that the effect of the intervention remained at one-month post-intervention. However, no existing studies have examined the longevity of the intervention beyond one-month, and further research including longer follow up periods is required.

Conclusions

This research adopted a RCT design to examine the acceptability and effectiveness of a one-week writing intervention on positive body image and skin/appearance-related distress, in a community sample of adults living with a range of dermatological conditions. Attrition was high and there were no effects of the intervention, compared to a control, on measures of appearance anxiety, skin-related shame, or quality-of-life. However, for participants who did not start the study with relatively high levels of positive body image, there were medium-to-large effects of completing the functionality tasks on body and functionality appreciation, which were generally maintained at one-month follow up, with small-to-medium effects.

References

All Party Parliamentary Group on Skin. (2003). *Enquiry into the impact of skin diseases on people's lives*. London, UK: All Party Parliamentary Group on Skin. https://www.appgs.co.uk/wp-content/uploads/2012/06/ENQUIRY-INTO-THE-IMPACT-OF-SKIN-DISEASES-ON-PEOPLE%E2%80%99S-LIVES-2003.pdf

All Party Parliamentary Group on Skin. (2013). *The psychological and social impact of skin diseases on people's lives: updated 2013 edition*. London, UK: All Party Parliamentary Group on Skin. https://www.appgs.co.uk/publication/view/the-psychological-and-social-impact-of-skin-diseases-on-peoples-lives-final-report-2013/

Alleva, J. M., Diedrichs, P. C., Halliwell, E., Martijn, C., Stuijfzand, B. G., Treneman-Evans, G., & Rumsey, N. (2018). A randomised-controlled trial investigating potential underlying mechanisms of a functionality-based approach to improving women's body image. *Body Image*, *25*, 85-96. https://doi.org/10.1016/j.bodyim.2018.02.009

Alleva, J. M., Diedrichs, P. C., Halliwell, E., Peters, M. L., Dures, E., Stuijfzand, B. G., & Rumsey, N. (2018). More than my RA: A randomized trial investigating body image improvement among women with rheumatoid arthritis using a functionality-focused intervention program. *Journal of Consulting and Clinical Psychology*, *86*(8), 666-676. https://doi.org/10.1037/ccp0000317

Alleva, J. M., Martijn, C., Jansen, A., & Nederkoorn, C. (2014). Body language: Affecting body satisfaction by describing the body in functionality

116

terms. *Psychology of Women Quarterly*, *38*(2), 181-196.

https://doi.org/10.1177/0361684313507897

Alleva, J. M., Martijn, C., Van Breukelen, G. J., Jansen, A., & Karos, K. (2015a).

Expand Your Horizon: A programme that improves body image and

reduces self-objectification by training women to focus on body

functionality. *Body Image, 15,* 81-89.

https://doi.org/10.1016/j.bodyim.2015.07.001

Alleva, J. M., Sheeran, P., Webb, T. L., Martijn, C., & Miles, E. (2015b). A meta-

analytic review of stand-alone interventions to improve body image.

PLoS One, 10(9)*,* e0139177.

https://doi.org/10.1371/journal.pone.0139177

Alleva, J. M., Tylka, T. L., & Van Diest, A. M. K. (2017). The Functionality

Appreciation Scale (FAS): Development and psychometric evaluation in

US community women and men. *Body Image*, *23*, 28-44.

https://doi.org/10.1016/j.bodyim.2017.07.008

Alleva, J. M., Veldhuis, J., & Martijn, C. (2016). A pilot study investigating

whether focusing on body functionality can protect women from the

potential negative effects of viewing thin-ideal media images. *Body

Image*, *17*, 10-13. https://doi.org/10.1016/j.bodyim.2016.01.007

Basra, M. K. A., Fenech, R., Gatt, R. M., Salek, M. S., & Finlay, A. Y. (2008).

The Dermatology Life Quality Index 1994–2007: a comprehensive review

of validation data and clinical results. *British Journal of Dermatology*,

159(5), 997-1035. https://doi.org/10.1111/j.1365-2133.2008.08832.x

Basra, M. K. A., Salek, M. S., Camilleri, L., Sturkey, R., & Finlay, A. Y. (2015). Determining the minimal clinically important difference and responsiveness of the Dermatology Life Quality Index (DLQI): further data. *Dermatology, 230*(1)*,* 27-33. https://doi.org/10.1159/000365390

Bell, M. L., Kenward, M. G., Fairclough, D. L., & Horton, N. J. (2013). Differential dropout and bias in randomised controlled trials: when it matters and when it may not. *British Medical Journal, 346*, e8668-e8668. https://doi.org/10.1136/bmj.e8668

Bessell, A., & Moss, T. P. (2007). Evaluating the effectiveness of psychosocial interventions for individuals with visible differences: a systematic review of the empirical literature. *Body Image, 4*(3), 227-238. https://doi.org/10.1016/j.bodyim.2007.04.005

Bowe, W. P., Doyle, A. K., Crerand, C. E., Margolis, D. J., & Shalita, A. R. (2011). Body image disturbance in patients with acne vulgaris. *The Journal of Clinical and Aesthetic Dermatology, 4*(7), 35-41. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3140907/

Bundy, C., Pinder, B., Bucci, S., Reeves, D., Griffiths, C. E., & Tarrier, N. (2013). A novel, web-based, psychological intervention for people with psoriasis: the electronic Targeted Intervention for Psoriasis (eTIPs) study. *The British Journal of Dermatology, 169*(2), 329–336. https://doi.org/10.1111/bjd.12350

D'Alton, P., Kinsella, L., Walsh, O., Sweeney, C., Timoney, I., Lynch, M., ... & Kirby, B. (2019). Mindfulness-based interventions for psoriasis: A randomized controlled trial. *Mindfulness, 10*(2), 288-300. https://doi.org/10.1007/s12671-018-0973-5

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible

statistical power analysis program for the social, behavioural, and

biomedical sciences. *Behaviour Research Methods*, *39*(2), 175-191.

https://doi.org/10.3758/BF03193146

Finlay, A. Y., & Khan, G. (1994). Dermatology Life Quality Index (DLQI)—a

simple practical measure for routine clinical use. *Clinical and*

Experimental Dermatology, 19(3), 210-216.

https://doi.org/10.1111/j.1365-2230.1994.tb01167.x

Fox, F. E., Rumsey, N., & Morris, M. (2007). "Ur skin is the thing that everyone

sees and you can't change it!": Exploring the appearance-related

concerns of young people with psoriasis. *Developmental*

Neurorehabilitation, 10(2), 133-141.

https://doi.org/10.1080/13638490701217594

Gilbert, P., McEwan, K., Matos, M., & Rivis, A. (2011). Fears of compassion:

development of three self-report measures. *Psychology and*

Psychotherapy: Theory, Research and Practice, 84(3), 239–255.

https://doi.org/10.1348/147608310X526511

Groesz, L. M., Levine, M. P., & Murnen, S. K. (2002). The effect of experimental

presentation of thin media images on body satisfaction: A meta-analytic

review. *International Journal of Eating Disorders*, *35*(1), 1-16.

https://doi.org/10.1002/eat.10214

Guest, E., Costa, B., Williamson, H., Meyrick, J., Halliwell, E., & Harcourt, D.

(2019). The effectiveness of interventions aiming to promote positive

body image in adults: A systematic review. *Body Image*, *30*, 10–25.

https://doi.org/10.1016/j.bodyim.2019.04.002

Hay, R. J., Johns, N. E., Williams, H. C., Bolliger, I. W., Dellavalle, R. P.,
Margolis, D. J., ... & Michaud, C. (2014). The global burden of skin
disease in 2010: an analysis of the prevalence and impact of skin
conditions. *Journal of Investigative Dermatology, 134*(6)*,* 1527-1534*.*
https://doi.org/10.1038/jid.2013.446

Horn, E. J., Fox, K. M., Patel, V., Chiou, C. F., Dann, F., & Lebwohl, M. (2007).
Association of patient-reported psoriasis severity with income and
employment. *Journal of the American Academy of Dermatology*, *57*(6),
963-971. https://doi.org/10.1016/j.jaad.2007.07.023

Johnston, S. A., Krasuska, M., Millings, A., Lavda, A. C., & Thompson, A. R.
(2017). Experiences of rosacea and its treatment: an interpretative
phenomenological analysis. *British Journal of Dermatology, 178*(1), 154-
160. https://doi.org/10.1111/bjd.15780

Kent, G. (2002). Testing a model of disfigurement: effects of a skin camouflage
service on well-being and appearance anxiety. *Psychology and
Health*, *17*(3), 377-386. https://doi.org/10.1080/08870440290029601

Krasuska, M., Millings, A., Lavda, A. C., & Thompson, A. R. (2018).
Compassion-focused self-help for skin conditions in individuals with
insecure attachment: a pilot evaluation of acceptability and potential
effectiveness. *The British Journal of Dermatology*, *178*(2), e122–e123.
https://doi.org/10.1111/bjd.15934

Lavda, A.C., Webb, T., & Thompson, A.R. (2012) A meta-analysis of the
effectiveness of psychological interventions for adults with skin
conditions. *British Journal of Dermatology, 167*(5). 970-979.
https://doi.org/10.1111/j.1365-2133.2012.11183.x

Linardon, J., & Fuller-Tyszkiewicz, M. (2020). Attrition and adherence in smartphone-delivered interventions for mental health problems: A systematic and meta-analytic review. *Journal of Consulting and Clinical Psychology, 88*(1), 1–13. https://doi.org/10.1037/ccp0000459

Mastro, S., Zimmer-Gembeck, M. J., Webb, H. J., Farrell, L., & Waters, A. (2016). Young adolescents' appearance anxiety and body dysmorphic symptoms: Social problems, self-perceptions and comorbidities. *Journal of Obsessive-Compulsive and Related Disorders*, *8*, 50-55. https://doi.org/10.1016/j.jocrd.2015.12.001

Magin, P., Adams, J., Heading, G., Pond, D., & Smith, W. (2006). Psychological sequelae of acne vulgaris: results of a qualitative study. *Canadian Family Physician, 52*, 978-979. http://www.cfp.ca/content/cfp/52/8/978.full.pdf

Magin, P., Adams, J., Heading, G., Pond, D., & Smith, W. (2009). The psychological sequelae of psoriasis: Results of a qualitative study. *Psychology, Health & Medicine, 14*(2), 150-161. https://doi.org/10.1080/13548500802512294

Magin, P. J., Pond, C. D., Smith, W. T., Watson, A. B., & Goode, S. M. (2011) Correlation and agreement of self-assessed and objective skin disease severity in a cross-sectional study of patients with acne, psoriasis, and atopic eczema. *International Journal of Dermatology, 50*(12), 1486-1490. https://doi.org/10.1111/j.1365-4632.2011.04883.x

Mallon, E., Newton, J. N., Klassen, A., Stewart-Brown, S. L., Ryan, T. J., & Finlay, A. Y. (1999). The quality of life in acne: a comparison with general medical conditions using generic questionnaires. *The British Journal of*

Dermatology, 140(4), 672-676. https://doi.org/10.1046/j.1365-2133.1999.02768.x

Montgomery, K., Norman, P., Messenger, A. G., & Thompson, A. R. (2016). The importance of mindfulness in psychosocial distress and quality of life in dermatology patients. *British Journal of Dermatology*, *175*(5), 930-936. https://doi.org/10.1111/bjd.14719

Muftin, Z., & Thompson, A. R. (2013). A systematic review of self-help for disfigurement: Effectiveness, usability, and acceptability. *Body Image, 10*(4), 442-450. https://doi.org/10.1016/j.bodyim.2013.07.005

Mulgrew, K. E., & Tiggemann, M. (2018). Form or function: Does focusing on body functionality protect women from body dissatisfaction when viewing media images? *Journal of Health Psychology*, *23*(1), 84-94. https://doi.org/10.1177/1359105316655471

Papadopoulos, L., Bor, R., & Legg, C. (1999).Coping with the disfiguring effects of vitiligo: a preliminary investigation into the effects of cognitive–behavioural therapy. *British Journal of Medical Psychology, 72*(3), 385–396. https://doi.org/10.1348/000711299160077

Partridge J, & Julian D., (2017) *'The Face Equality Campaign – The evidence: The incidence and prevalence of disfigurement'*. Changing Faces. London. https://www.changingfaces.org.uk/wp-content/uploads/2016/03/FE-Campaign-Epidemiology-2-pages.pdf

Porter, J. R., & Beuf, A. H. (1991). Racial Variation in Reaction to Physical Stigma: A Study of Degree of Disturbance by Vitiligo Among Black and

White Patients. *Journal of Health and Social Behavior, 32*(2), 192-204. https://doi.org/10.2307/2137152

Reynolds, L. M., & Harris, L. (2021). Stigma in the face of cancer disfigurement: A systematic review and research agenda. *European Journal of Cancer Care, 30*(1), e13327. https://doi.org/10.1111/ecc.13327

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*(5), 443-453. https://doi.org/10.1111/j.1365-2648.2004.03227.x

Saha, C., & Jones, M. P. (2016). Type I and Type II error rates in the last observation carried forward method under informative dropout. *Journal of Applied Statistics, 43*(2), 336-350. https://doi.org/10.1080/02664763.2015.1063112

Schofield, J., Grindlay, D., & Williams, H. (2009). Skin conditions in the UK: a health care needs assessment. Nottingham, UK: Centre of Evidence Based Dermatology UK, University of Nottingham. https://www.nottingham.ac.uk/research/groups/cebd/documents/hcnaskin conditionsuk2009.pdf

Schulz, K. F., Altman, D. G., & Moher, D. (2010). CONSORT 2010 statement: Updated guidelines for reporting parallel group randomised trials. *The British Medical Journal, 340*, 698-702. https://doi.org/10.1136/bmj.c332

Scott, C. (2004). *Understanding psychodermatological distress: constructing a skin shame scale* (Doctoral dissertation, University of Sheffield, UK). http://etheses.whiterose.ac.uk/14863/1/412462.pdf

Sherman, K. A., Roper, T., & Kilby, C. J. (2019). Enhancing self-compassion in individuals with visible skin conditions: randomised pilot of the 'My Changed Body' Self-compassion Writing Intervention. *Health Psychology and Behavioral Medicine*, *7*(1), 62-77. https://doi.org/10.1080/21642850.2019.1587298

Stern, N. G., & Engeln, R. (2018). Self-compassionate writing exercises increase college women's body satisfaction. *Psychology of Women Quarterly*, *42*(3), 326-341. https://doi.org/10.1177/0361684318773356

Stone, A., & Wright, T. (2013). When your face doesn't fit: employment discrimination against people with facial disfigurements. *Journal of Applied Social Psychology, 43*(3), 515–526. https://doi.org/10.1111/j.1559-1816.2013.01032.x

Thomas, E. V., Warren-Findlow, J., Webb, J. B., Quinlan, M. M., Laditka, S. B., & Reeve, C. L. (2019). "It's very valuable to me that I appear capable": A qualitative study exploring relationships between body functionality and appearance among women with visible physical disabilities. *Body Image*, *30*, 81-92. https://doi.org/10.1016/j.bodyim.2019.05.007

Thompson, A. R., Guterres, S., & Bewley, A. P. (2020). Psychodermatological research priorities identified by Priority Setting Partnerships. *Clinical and Experimental Dermatology*, *45*(8), 1106-1108. https://doi.org/10.1111/ced.14447

Tylka, T. L., & Wood-Barcalow, N. L. (2015). The Body Appreciation Scale-2: item refinement and psychometric evaluation. *Body Image*, *12*, 53-67., https://doi.org/10.1016/j.bodyim.2014.09.006

Veale, D., Eshkevaria, E., Kanakama, N., Ellisona, N., Costa, A., and Werner, T. (2014). The Appearance Anxiety Inventory: Validation of a process measure in the treatment of body dysmorphic disorder. *Behavioural and Cognitive Psychotherapy, 42*(5), 605-616. https://doi.org/10.1017/S1352465813000556

Veale, D., Gledhill, L. J., Christodoulou, P., & Hodsoll, J. (2016). Body dysmorphic disorder in different settings: A systematic review and estimated weighted prevalence. *Body Image, 18*, 168-186. https://doi.org/10.1016/j.bodyim.2016.07.003

Versnel, S. L., Plomp, R. G., Passchier, J., Duivenvoorden, H. J., & Mathijssen, I. M. (2012). Long-term psychological functioning of adults with severe congenital facial disfigurement. *Plastic and Reconstructive Surgery*, *129*(1), 110-117. https://doi.org/10.1097/PRS.0b013e3182361f64

Appendices

(Part 2)

Appendix 2A: Ethics approval letter

Kate Adkins
Registration number: 180156922
Psychology
Programme: Doctorate in Clinical Psychology

Dear Kate

PROJECT TITLE: Can a brief body-functionality writing intervention improve body image in individuals with a skin condition? A Randomised Control Trial
APPLICATION: Reference Number 032128

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 23/04/2020 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

> University research ethics application form 032128 (form submission date: 16/04/2020); (expected project end date: 01/10/2021).
> Participant information sheet 1075582 version 2 (16/04/2020).
> Participant consent form 1075563 version 2 (14/02/2020).

If during the course of the project you need to deviate significantly from the above-approved documentation, please inform me since written approval will be required.

Your responsibilities in delivering this research project are set out at the end of this letter.

Yours sincerely

Thomas Webb
Ethics Administrator
Psychology

Please note the following responsibilities of the researcher in delivering the research project:

> The project must abide by the University's Research Ethics Policy:
> https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/approval-procedure
> The project must abide by the University's Good Research & Innovation Practices Policy:
> https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPolicy.pdf
> The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
> The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
> The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.

Appendix 2B: Sample size calculation using G*Power (Faul et al., 2007)

F tests - ANCOVA: Fixed effects, main effects and interactions
Analysis: A priori: Compute required sample size
Input: Effect size f   = 0.25
                 α err prob   = 0.05
                 Power (1-β err prob)   = 0.80
                 Numerator df   = 1
                 Number of groups   = 2
                 Number of covariates   = 1
Output: Noncentrality parameter λ = 8.0000000
                 Critical F   = 3.9169322
                 Denominator df   = 125
                 Total sample size   = 128
                 Actual power   = 0.8014112

129

Expand Your Horizon

More Than My Skin Condition

Introduction

In our current world many individuals focus on what their body looks like (e.g., weight, shape, skin and hair). In addition, they are often negative about the appearance of their body (e.g., "I'm not thin enough!"). As a consequence, they tend to ignore what their body can do (the *functional* aspects), such as their body's ability to walk or the ability to see and feel.

Individuals living with a chronic *skin condition* are often faced with appearance concerns that are related to their symptoms and/or treatment, which individuals *without* a skin condition may not worry about (e.g. "Will people stare at me?" or "I wish my choice of clothing wasn't so restricted"). Skin conditions are *not* purely cosmetic and affect how the skin functions. Some skin conditions are also associated with other health condition and can affect other functional aspects of the body, (e.g. restricting movement).

The aim of this body image programme is twofold: (1) we would like you to focus on your body functionality in a more *holistic* way, and (2) we would like you to focus on the things that your body can do *despite* experiencing symptoms of your skin condition. Completing our three brief writing exercises over the course of one week can help you to achieve this.

Body concerns in the context of living with a skin condition can be complicated, and this programme will not be the "be all, and end all." However, we hope that it can offer you some extra support along the road to a more positive body image.

Are you ready to get started?

☐ Yes! I'm ready to practice thinking about my body in a more holistic and positive way!

[Page break here]

What is body functionality?

In this programme, we will be referring to the term "body functionality." ***Body functionality*** basically means all of the things that your body is able to *do* – in contrast to how your body *looks*.

When you think about body functionality, what kinds of functions come to mind? Take a moment now to think about some of the things that your body can *do*. Then, when you're ready, click on "Next" to continue.

[Page break here]

Diversity of body functionality

What kinds of things did you think of?

Below is a list of some body functions that other women have come up with. Take a moment to read through them. Some of these functions may have already been on your mind, but you may not have thought of the other ones yet.

Body Functions Related to Physical Capacities
Walking
Reaching
Bending
Carrying
Physical coordination
Strength
Reflexes
Balance

Body Functions Related to Internal Processes
Healing from a cold
Digesting food
Absorbing vitamins
Creating a baby
Healing from a wound
Regulating temperature, hunger, thirst, etc.
General restoration (e.g., during sleep)
Removing toxins from the body (e.g., through the liver)
Breathing

Body Functions Related to Senses
Seeing

Tasting
Touching
Hearing
Smelling
Experiencing pleasure
Feeling emotions
Thought processing

Body Functions Related to Creative Endeavours
Painting
Drawing
Sculpting
Writing
Singing
Playing an instrument
Reading
Photography
Gardening

Body Functions Related to Self-Care
Sleeping/napping
Eating
Drinking
Cooking
Caring for the body (e.g., taking a bath)

Body Functions Related to Communication with Others
Talking
Body language
Facial expressions (e.g., smiling)
Hugging
Cuddling
Kissing
Sex
Crying
Shaking hands
Massage
Making eye contact
Comforting others

[Page break here]

Diversity of body functionality

As you may have noticed, your body's functions can relate to many *diverse* domains, including (1) physical capacities (e.g., walking) and (2) internal processes (e.g., digesting food), but also (3) senses (e.g., seeing), (4) creative endeavours (e.g., singing), (5) self-care (e.g., bathing), and (6) communication with others (e.g., eye contact).

It may be easy to focus on just one or two domains of body functionality, such as physical capacities. However, throughout this programme we would like you to try to focus on *other* domains, too. This is because creating a more *holistic* view of your body functionality can help you to feel more positively about your body *overall*.

In addition, when reading through the list, you might have thought, "I can't do that!" or, "I can do that, but not without pain and hassle!" There is no denying that skin conditions can put barriers in your way when it comes to doing the things that you want or need to do. However, throughout this programme, we would like you to focus on the things that your body is *able* to do, including the things that your body is able to do *despite* experiencing symptoms of your skin condition. Reflecting on this can also help you to feel more positively about your body overall.

[Page break here]

Importance of body functionality

Lastly, before you start your first writing exercise, we'd like you to take a moment to contemplate the *importance* of some of your body functions to your life. Ask yourself, **what do these functions mean to me?**

For example, how dull would life be if you couldn't taste food or listen to music? To take another example, where would you be if you couldn't communicate to others using your body (e.g., via body language)? Some body functions seem simple and others seem complex, yet all of them play an important role in our lives and can help us to enact our values (e.g., showing love to our family and friends by giving them a hug).

At first, it may seem difficult to think of your body in a more holistic and positive way, especially if you're used to thinking of it differently or when symptoms flare up or worsen. But, with practice, it will become easier and more natural to you – like a muscle that gets stronger with exercise! Completing our writing exercises over the coming days can help set you on a course towards a more positive body image.

If at any time during the study you have questions, comments, or need help with the writing exercises, please send me an e-mail at k.adkins@sheffield.ac.uk

Now, let's get started with your first writing exercise!

[Page break here]

Writing Exercise #1

At the start, we asked you to think of some of the things that your body can do. Now, in this writing exercise, we would like you to **describe in more detail what your body can do.**

In your writing, we would like you to take your time, really let go, and explore the different things that your body can *do*. Specifically, in this first writing exercise you will focus <u>only</u> on body functions that are related to (1) **the body's senses** (e.g., feeling pleasure) and (2) **physical capacities** (e.g., going for a walk). You will focus on the other domains of body functionality in your second and third writing exercises. If you need inspiration, you can always refer back to the list of body functions (see <u>here</u>).

Importantly, when you are writing about your body's functions, we would like you to adopt a **holistic** focus (i.e., not limited to just one or two functions). We would also like you to think about the functions that your body can perform **despite** experiencing symptoms of your skin condition(s). Lastly, remember to reflect on **what these functions mean to you**. Ask yourself, "Why are these functions important to me?" Remember that each simple and complex function plays an important role in our lives and can help us to enact our values.

<u>There are only 2 rules for this writing exercise:</u>
(1) Please aim to write for at least 15 minutes. Feel free to take a 5-minute break at some point, if you need to.
(2) After you have finished the writing exercise, please reread what you have written (this will enhance the benefit of the programme for you).

Your writing will be confidential and anonymous. Don't worry about spelling, sentence structure, or grammar. Lastly, **different bodies can do different things**, so everyone's writing will be different. Therefore, there are no right or wrong answers. Your writing will be unique depending on **your own body**.

Now, go ahead and get started!

Please record the starting time of this writing exercise: _____

Please record the end time of this writing exercise: _____

Writing Exercise #2

A few days ago, you completed your first writing exercise, wherein you described the functionality of your body. Specifically, you focused on body functions that are related to the body's senses and physical capacities.

Today, in your second writing exercise, you will focus <u>only</u> on body functions that are related to (1) **internal processes** (e.g., digesting food) and (2) **creative endeavours** (e.g., painting). Please take your time, really let go, and explore the functions that are related to these domains of body functionality. If you need inspiration, you can always refer back to the list of body functions (see [here](#)).

As in your first writing exercise, it is important that you try to adopt a **holistic** focus (i.e., not limited to just one or two functions) and that you also reflect on what your body can do – **despite** experiencing symptoms of your skin condition. We would also like you to **reflect on what these functions mean to you.** Ask yourself, "Why are these functions important to me?" Each simple and complex body function plays an important role in our lives and can help us to enact our values (e.g., by painting, we can express our emotions and express who we are).

<u>Again, there are only 2 rules for this writing exercise:</u>
(1) Please aim to write for at least 15 minutes. Feel free to take a 5-minute break at some point, if you need to.
(2) After you have finished the writing exercise, please reread what you have written (this will enhance the benefit of the programme for you).

Remember that your writing will be confidential and anonymous, and that you do not need to worry about spelling, sentence structure, or grammar. Lastly, your writing will be unique depending on **your own body** – There are no right or wrong answers.

Now, go ahead and get started!

Please record the starting time of this writing exercise: _____

Please record the end time of this writing exercise: _____

Writing Exercise #3

Over the past few days, you have completed two writing exercises about the functionality of your body. You focused on body functions that are related to (1) the body's senses, (2) physical capacities, (3) internal processes, and (4) creative endeavours.

Today, in your final writing exercise, you will focus <u>only</u> on body functions that are related to (1) **self-care** (e.g., eating, sleeping) and (2) **communication with others** (e.g., hugging). Once again, we would like you to take your time, really let go, and explore the body functions that are related to these domains of body functionality. As always, you may refer back to the list of body functions if you need inspiration (see <u>here</u>).

When you are writing about your body's functions, remember to adopt a **holistic** focus (i.e., not limited to just one or two functions) and to reflect on what your body can still do – **despite** experiencing symptoms of your skin condition. Further, remember to **reflect on what these functions mean to you,** and to ask yourself "Why are these functions important to me?" Each simple and complex function plays an important role in our lives and can help us to enact our values (e.g., by hugging a friend, we can express our love for him or her).

<u>Again, there are only 2 rules for this writing exercise:</u>
(1) Please aim to write for at least 15 minutes. Feel free to take a 5-minute break in between, if you need to.
(2) After you have finished the writing exercise, please reread what you have written (this will enhance the benefit of the programme for you).

Remember that your writing will be confidential and anonymous, and that you do not need to worry about spelling, sentence structure, or grammar. **Your body is unique**, so your writing will be unique, too. There are no right or wrong answers.

Now, go ahead and get started!

Please record the starting time of this writing exercise: _____

Please record the end time of this writing exercise: _____

Completion of Writing Exercises

In today's session you finished your final writing exercise. Thank you, and well done!

We hope that the exercises have helped you to think about your body in a more **holistic** sense, and to reflect on what your body can do **despite** experiencing symptoms of your skin condition. We also hope that you were able to reflect on why your body functionality is **meaningful** to you.

We encourage you to see these exercises as "only the beginning." To continue practicing viewing your body in a more positive light, here are a few things that you can try in the coming days and weeks:

(1) Paste a note on your mirror reminding you to think about what you've learned (e.g., "I appreciate all of the things that my body can do").

(2) Every day, write down one or two sentences about your body functionality (e.g., "Today I am grateful that my body enabled me to give my daughter a hug").

(3) Reflect on your body functionality as you go about your daily activities. For example, while listening to music you could think, "How amazing that my body enables me to hear my favourite songs."

(4) If you feel down about your appearance, try to think about your body functionality, as well (e.g., "I might feel unattractive today, but I'm glad that my body does so much for me").

What other techniques can you come up with to help you practice thinking of your body in a more positive way? Take a moment to think about what tips and tricks might help <u>you</u> to accomplish this, and write them in the space below. Then, when you're ready, click on "Next" to proceed to the end of the session.

To help me practice thinking of my body in a more positive way, I will:

(1) _____

(2) _____

Appendix 2D: Control exercises

Creative writing assignments (Alleva et al., 2015a)

Writing Assignment Introduction

In our society, science, statistics, mathematics, and law are viewed as important and worthwhile disciplines to study. As a result, many people do not take time to engage in creative activities because they may seem less "worthwhile." This is unfortunate, because engaging in creative activities is important for a healthy, fulfilling life. Over the coming days, you are going to develop your ***creativity*** by working a series of short stories.

Before we move on, take a moment to think about **your favourite stories** (as a child and/or as an adult). What was it about those stories that made them special to you? For example, was it something about the main character (e.g., who was very clever)? Was it something about the setting (e.g., a medieval castle)? Or, was it perhaps something about the plot (e.g., the main character went on a trip around the world)? Try to keep these aspects in the back of your mind as you work on the writing assignments in this training, because your favourite stories may inspire your own writing.

At first, you may find it challenging to work on developing your creativity. You might even think that you are simply "not a creative person." But, with practice, it will become easier and more natural to you to use your creative skills. Completing our writing tasks over the coming days will help you to accomplish this.

If at any time during the study you have questions or need help regarding the writing assignment, please send me an e-mail at k.adkins@sheffield.ac.uk

Now, let's get started with your first writing assignment!

Writing Assignment #1

At the start, I mentioned that you would be developing your creativity by working on a series of short stories. In this writing assignment, you will work on **your first short story**. Please follow these instructions:

First, choose a main character. The main character of your story should <u>not</u> be yourself, and it should <u>not</u> be an existing character from another story (e.g., Little Red Riding Hood). **Second,** choose a setting. Your setting can be as realistic (e.g., Amsterdam train station) or as wild (e.g., the Moon) as you like. **Third,** choose a plot (e.g., your main character woke up to find herself in a different city). **Fourth:** Start writing! In your writing, it is important that you take your time, really let go, and explore your main character, setting, and plot. Try to use **as much detail as possible** (e.g., what does the air smell like? what is the temperature?). If you need inspiration, think about your favourite stories and what made them memorable to you.

<u>There are only 3 rules for this writing assignment:</u>
(1) Write for at least 15 minutes (you can write for longer, if you like);
(2) Once you have started writing, do not stop until at least 15 minutes have passed;
(3) After you have finished the writing assignment, please reread what you have written.

Your writing will be completely confidential and anonymous. Don't worry about spelling, sentence structure, or grammar. Also, everyone is different, so everyone's writing will be different, too. There are no right or wrong short stories. In addition, you do not need to finish your short story—the most important part is the *process*, not the final product.

Now, go ahead and get started!

Please record the starting time of this writing assignment:

Please record the end time of this writing assignment:

Writing Assignment #2

A few days ago, you completed your first writing assignment, wherein you worked on writing your own short story. Today, in your second writing assignment, you will work on writing a <u>new</u> short story. Please follow these instructions:

First, choose a main character. Remember that the main character of your story should <u>not</u> be yourself, and it should <u>not</u> be an existing character from another story. **Second,** choose a setting. You can make your setting as realistic or as wild as you like. **Third,** choose a plot (what happens to your main character?). **Fourth:** Start writing! Note that because you are writing a <u>new</u> short story, it is important to choose a <u>different</u> main character, setting, and plot than in your first writing assignment. It is also important that you take your time, really let go, and explore your main character, setting, and plot, and that you try to use **as much detail as possible.**

<u>These are the rules for this writing assignment:</u>
(1) Write for at least 15 minutes (you can write for longer, if you like);
(2) Once you have started writing, do not stop until at least 15 minutes have passed;
(3) After you have finished the writing assignment, please reread what you have written.

Your writing will be completely confidential and anonymous, and you do not need to worry about spelling, sentence structure, or grammar. Also, everyone is different, so everyone's writing will be different, too. There are no right or wrong short stories. Lastly, you do not need to finish your short story—the most important part is the *process*, not the final product.

Now, go ahead and get started!

Please record the starting time of this writing assignment:

Please record the end time of this writing assignment:

Writing Assignment #3

Over the past few days, you have completed two writing assignments wherein you worked on writing two different short stories. Today, you will work on your final <u>new</u> short story.

As in the first two writing assignments, please follow these four steps. **First,** choose a main character. She or he should <u>not</u> be yourself or an existing character from another story. **Second,** choose a setting—you can make it as realistic or as wild as you like. **Third,** choose a plot (what will happen to your main character this time?). **Fourth:** Start writing! Once again, it is important that you choose a <u>different</u> main character, setting, and plot than in your first writing assignments. Also, it is important that you take your time, really let go, and explore your main character, setting, and plot, and that you use **as much detail as possible.**

<u>These are the rules for this writing assignment:</u>
(1) Write for at least 15 minutes (you can write for longer, if you like);
(2) Once you have started writing, do not stop until at least 15 minutes have passed;
(3) After you have finished the writing assignment, please reread what you have written.

Remember that your writing will be completely confidential and anonymous, and you do not need to worry about spelling, sentence structure, or grammar. You are unique, so your writing will be unique, too. There are no right or wrong short stories. Lastly, as always, you do not need to finish your short story—the most important part is the *process*, not the final product.

Now, go ahead and get started!

Please record the starting time of this writing assignment:

Please record the end time of this writing assignment:

<h1 style="text-align:center">Appendix 2E: Information sheet and consent form</h1>

Can a 1 week online writing intervention improve body image in adults living with a visible skin condition?

<u>**Participant Information**</u>

You are invited to take part in an online study examining whether a brief writing intervention, compared to a control writing activity, could improve body image for adults living with a skin condition. The information below is intended to help you to decide whether or not to take part in the study. Please take time to read the following information carefully and decide whether or not you wish to take part. If you have any additional questions or queries please feel free to contact the researcher.

Am I eligible to take part?

To participate in this study you must:

- Have a **<u>skin condition</u>** (e.g. acne, eczema, alopecia, psoriasis, vitiligo, rosacea, dermatitis).
- Consider your skin condition to **negatively impact your body image**
- Be **<u>age 18 or over</u>**
- **<u>Want to improve your body image</u>**
- Be **<u>willing to complete three online writing tasks over one week</u>**
- Have sufficient English to complete the questionnaires and writing task

Do I have to take part?

No, it is your decision whether you want to take part or not. You are also allowed to change your mind and exit the study at any point.

What will happen during the study?

If you decide to take part in the study:

- You will be asked to complete a number of **questionnaires about yourself, your skin condition, and your body image**, which should take no longer than 10 minutes (*Time established from pilot study*).
- You will then be randomly assigned to either (1) the writing intervention or (2) another control writing task and asked to **complete a 15 minute writing task**. If you are assigned to the control writing activity to will be given access to the intervention once you have completed the one month follow up.

<u>2 days later:</u>

- You will then be asked to complete another **15 minute writing task**.

<u>2 days later:</u>

- You will be asked to complete a final **15 minute writing task.**
- You then be asked to fill out the **questionnaires about your body image** again and provide **feedback** on the intervention.

<u>1 month later:</u>

- You will then be asked to complete the **body image questionnaires** once more.

<div style="text-align:center">143</div>

- All participants completing the study will be offered the option to download the intervention.

Are there any benefits from taking part in the study?

Participants completing the study will be offered entry into a prize draw for a £50 voucher. Initial research suggests that the writing intervention we are testing can improve body image. However, it has not yet been tested in people with skin conditions. Therefore, we do not yet know whether or not it can improve the body image of people taking part. We hope that this research will help us better understand ways to improve body image in adults living with a range of visible skin conditions.

Are there any risks from taking part in the study?

There are no known risks to participating in this study. For some people, completing questionnaires and working through the writing exercises could bring up difficult feelings. The researchers are not able to provide any psychological support to participants, so we recommend that participants contact their GP if they are concerned about their psychological wellbeing.

Will the study be confidential?

Yes. All the information that we collect about you during the course of the research will be kept strictly confidential and will only be accessible to members of the research team.   You will not be able to be identified in any reports or publications. If you would like to enter the prize draw or would be interested in taking part in future research, you will be asked to provide your email address. Once downloaded your email address will be separated from your responses and the email address will be kept in password protected files. All email addresses for the prize draw will be destroyed after the prize draw has taken place and been accepted.

What is the legal basis for processing my personal data?

According to data protection legislation, we are required to inform you that the legal basis we are applying in order to process your personal data is that 'processing is necessary for the performance of a task carried out in the public interest' (Article 6(1)(e)). Further information can be found in the University's Privacy Notice

https://www.sheffield.ac.uk/govern/data-protection/privacy/general

The University of Sheffield will act as the Data Controller for this study. This means that the University is responsible for looking after your information and using it properly.

Who has reviewed the study?

This project has been ethically approved via the University of Sheffield's Ethics Review Procedure, as administered by the Psychology department.

What will happen to the results of the study?

The results will be analysed and written up in a report that will form part of the researcher's Clinical Psychology doctorate. We also plan to write up and present the research for publication at conferences and for a peer reviewed journal.

What if something goes wrong or I have concerns about how the study is conducted?

If you have any concerns or complaints about the study you can contact the primary researcher (Kate Adkins) via the contact details below or the researcher's supervisor (Professor Paul Overton: email: p.g.overton@sheffield.ac.uk or Tel: (+44) 0114 222 6624).

If you are unhappy with how your complaint has been handled you can contact the Prof Elizabeth Milne (Head of Psychology, University of Sheffield), who will be able to escalate the complaint through the appropriate channels (Email: psy-hod@sheffield.ac.uk or Tel: (+44) 0114 222 6568). Address: Department of Psychology, University of Sheffield, Floor G, Cathedral Court, 1 Vicar Lane, Sheffield, S1 2LT, UK.

If the complaint relates to how your personal data has been handled, you can find information about how to raise a complaint here: https://www.sheffield.ac.uk/govern/data-protection/privacy/general.

Researcher Contact Details

If you have any questions or would like to find out more about the study you can contact the researcher via the details below.

Dr Kate Adkins (Trainee Clinical Psychologist). Email: k.adkins@sheffield.ac.uk Address: Department of Psychology, The University of Sheffield , Cathedral Court. 1 Vicar Lane, Sheffield. S1 2LT

Consent

Please indicate below if you have read and understood the above information and if you consent to taking part in the study.

☐ Yes, I have read the information above and consent to participating in the study.

☐ No, I do not consent to participating in this study.

Please indicate below if you are willing and able to complete **three 15 minute writing exercises** over the next **week**.

☐ Yes

☐ No

Appendix 2F: Feedback on acceptability of the intervention

We are interested in your feedback on the intervention. How much do you agree with the following statements:

Rated on a 5 point Likert scale

1	2	3	4	5
Strongly disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Strongly agree

1. The instructions for the writing tasks were easy to understand and follow
2. The writing tasks helped me to focus on what my body is capable of rather than what my body looks like.
3. The writing task improved how I feel about my body.
4. The writing task improved how I feel about my skin condition.
5. I plan to continue practicing what I have learn from this task.
6. I would recommend these writing tasks to a friend or family member with a skin condition.

Below is a space where you can provide additional feedback (optional):

_____

_____

_____

__

Appendix 2G: Debrief form

Thank you for volunteering your time. **You were randomly assigned to [the intervention: 'Expand Your Horizon'/a control writing task.]**

You can download the intervention here [insert]

What was the purpose of this study?

The purpose of this study is to examine whether a writing intervention ('Expand Your Horizon'; Alleva et al., 2015a), which aims to teach people to focus on what their body can do (i.e. functions) rather than what their body looks like (i.e. appearance), can improve body image in adults living with a range of visible skin conditions. Existing research has reported that women completing the 'Expand Your Horizon' reported improvements in body image (Alleva et al., 2015a; Alleva, Diedrichs, Halliwell, Martijn, et al., 2018), including the body image of women with rheumatoid arthritis (Alleva, Diedrichs, Halliwell, Peters et al., 2018).

Research also indicates that the emotional impact of skin conditions is often overlooked (e.g. Tan, 2004), and that appearance-related concerns have been cited as a central aspect of living with a skin condition (e.g. Magin, Adams, Heading, Pond, & Smith, 2006; 2009). It is hoped that this study will help us better understand and develop interventions aimed at improving body image in adults with visible skin condition.

What if I feel distressed and/or want further support?

If you feel distressed as a consequence of taking part in the study and/or feel like you need further support you should contact your GP.

Below are a couple of websites/sources of support/information that you may also find helpful:

- Changing Faces are a UK based charity who support individuals living with a visible difference (including skin conditions). They provide a variety of support services including confidence workshops and self-help booklets: https://www.changingfaces.org.uk/
- Skin Support is a website developed by the British Association of Dermatologists and provides information and self-help resource for people with skin conditions: http://www.skinsupport.org.uk/
- The Samaritans are a UK based charity who provide confidential emotional support service: http://www.samaritans.org/ . They can be contacted in a variety of ways including by phone and email: Tel 08457 90 90 90 (24 hours), email jo@samaritans.org

Contacting the researcher

If you are interested in finding out more about the study and/or have any questions about the study please contact the researcher (Kate Adkins) via the contact details below. You are also welcome to request a report of the study results by contacting the researcher.

If you have any concerns or complaints about the study you can contact the researcher directly (Kate Adkins) or contact the researcher's supervisor (Professor Paul Overton: email: p.g.overton@sheffield.ac.uk or Tel: (+44) 0114 222 6624).

Many thanks,

Kate Adkins (Trainee Clinical Psychologist) Email: K.Adkins@sheffield.ac.uk

Address: Department of Psychology, University of Sheffield, Cathedral Court. 1 Vicar Lane, Sheffield. S1 2LT

Appendix 2H: Demographic questions

We would like to collect some basic background information for the study.

What is your age? (in years) _____

What gender do you identify with?

- Female
- Male
- Other _____
- Prefer not to say

What country do you currently reside in?

Please select the option that best describes your current situation.

- Student
- Employed
- Unemployed
- Retired
- Homemaker
- Other (Please state)
- Prefer not to say

Please describe you highest level of education:

- GCSEs or equivalent
- A levels or equivalent
- Vocational qualification e.g. (NVQ)
- Some University
- Undergraduate degree
- University higher degree e.g. MSc, PhD, MD
- Don't know
- Other (Please state)
- Prefer not to say

Please describe your current relationship status

- Single

- In a relationship

- Cohabiting (Living with partner)

- Married or Civil partnership

- Other (Please state)

- Prefer not to say

Choose one option that best describes your ethnic group or background

- White/Caucasian

- English / Welsh / Scottish / Northern Irish / British

- Irish

- Gypsy or Irish Traveller

- Any other White background, (please describe)

- Mixed / Multiple ethnic groups

- White and Black Caribbean

- White and Black African

- White and Asian

- Any other Mixed / Multiple ethnic background (please describe)

- Asian / Asian British

- Indian

- Pakistani

- Bangladeshi

- Chinese

- Any other Asian background, please describe

- Black / African / Caribbean / Black British

- African

- Caribbean

- Any other Black / African / Caribbean background, please describe

- Other ethnic group

- Arab

- Any other ethnic group, please describe

Appendix 2I: Skin condition history

We would also like to collect some information about your skin condition?

What skin condition(s) do you have?

- Acne
- Psoriasis
- Eczema/Dermatitis
- Alopecia
- Vitiligo
- Rosacea
- Other _____

How visible do you feel your skin condition is to other people?

How long have you had symptoms of your skin condition?

Have you ever received a diagnosis or medical treatment for your skin condition?

(e.g. GP/Dermatologist) Yes/No/Unsure

Are you currently receiving prescribed treatment (e.g. topical gels/creams, contraceptive pill, antibiotics, Accutane) to treat your skin condition from any of the following medical practitioners?

- GP
- Dermatologist
- Other (Please state)
- None

Specific diagnosis if received _____

What areas of your body are affected by your skin condition (Please select all that apply)

- Face
- Neck

- Chest

- Back

- Other (Please state)

Please indicate how bad you think your skin condition is now:

- Mild

- Mild-Moderate

- Moderate

- Moderate-severe

- Severe

Do you have any other diagnosed physical or mental health condition? Physical or

mental health conditions? (e.g. eczema, psoriasis, alopecia, diabetes, cancer,

Polycystic Ovary Syndrome, depression, anxiety).

- Yes
- No
- Prefer not to answer

If yes please list below _____

Are you currently receiving any psychological support/treatment/counselling?

Appendix 2J: Body appreciation scale-2

For each item, the following response scale should be used:

1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 =Always.

Directions for participants: Please indicate whether the question is true about you never, seldom, sometimes, often, or always.

1. I respect my body.

2. I feel good about my body.

3. I feel that my body has at least some good qualities.

4. I take a positive attitude towards my body.

5. I am attentive to my body's needs.

6. I feel love for my body.

7. I appreciate the different and unique characteristics of my body.

8. My behaviour reveals my positive attitude toward my body; for example, I hold my head high and smile.

9. I am comfortable in my body.

10. I feel like I am beautiful even if I am different from media images of attractive people (e.g., models, actresses/actors).

Scoring Procedure: Average participants' responses to Items

1–10.

Appendix 2K: Functionality appreciation

Functionality Appreciation Scale (FAS: Alleva et al., 2017**).**

Please indicate the extent to which you agree with each of the following statements:

Strongly   Disagree   Neither agree   Agree   Strongly agree
disagree   nor disagree

1. I appreciate my body for what it is capable of doing.
2. I am grateful for the health of my body, even if it isn't always as healthy as I would like it to be.
3. I appreciate that my body allows me to communicate and interact with others.
4. I acknowledge and appreciate when my body feels good and/or relaxed.
5. I am grateful that my body enables me to engage in activities that I enjoy or find important.
6. I feel that my body does so much for me.
7. I respect my body for the functions that it performs.

Appendix 2L: Appearance Anxiety

Please check the box that best describes the way you have felt about your appearance or a specific feature OVER THE PAST WEEK, INCLUDING TODAY.

		Not at all	A little	Often	A lot	All the time
1	I compare aspects of my appearance to others	0	1	2	3	4
2	I check my appearance (e.g. in mirrors, by touching with my fingers, or by taking photos of myself)	0	1	2	3	4
3	I avoid situations or people because of my appearance	0	1	2	3	4
4	I brood about past events or reasons to explain why I look the way I do	0	1	2	3	4
5	I THINK about how to camouflage or alter my appearance	0	1	2	3	4
6	I am focussed on how I feel I look, rather than on my surroundings	0	1	2	3	4
7	I avoid reflective surfaces, photos, or videos of myself	0	1	2	3	4
8	I discuss my appearance with others or question them about it	0	1	2	3	4
9	I try to camouflage or alter aspects of my appearance	0	1	2	3	4
10	I try to prevent people from seeing aspects of my appearance within particular situations (e.g., by changing my posture, avoiding bright lights)	0	1	2	3	4

Appendix 2M: Skin Shame Scale

Here is a list of statements describing feelings and experiences about your skin that you may or may not have. Many people have had these feelings at some time while others will rarely or never have had these feelings. Please try to be as honest as you can in responding to each statement.

Please read each statement carefully and circle the number on the right that best describes how often it has applied to you over the last week.

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

1. I've learnt to live with my skin condition

2. I avoid looking at my skin the mirror

3. My skin looks unattractive

4. I avoid undressing in front of people

5. My skin condition rules my life

6. Others stare at my skin

7. My skin makes me different

8. My skin is beautiful

9. I avoid getting treatment for my skin

10. I am ashamed of my skin

II. I avoid socialising because of my skin

12. Hiding my skin makes me feel better

13. I worry how my skin looks to others

14. I find myself thinking about my skin

15. I am proud of my skin

16. I avoid discussing my skin

17. I believe that people accept my skin

18. I avoid intimate contact because of my skin

19. My skin is as attractive as other people

20. I avoid touching my skin

21. I can control my skin condition

22. I feel despondent about my skin

23. I feel good when people touch my skin

24. My skin condition is only one aspect of me

Appendix 2N: DLQI

DERMATOLOGY LIFE QUALITY INDEX

DLQI

Hospital No: Date:

Name: Score:
Address: Diagnosis:

The aim of this questionnaire is to measure how much your skin problem has affected your life OVER THE LAST WEEK. Please tick ☑   one box for each question.

1.	Over the last week, how **itchy**, **sore**, **painful** or **stinging** has your skin been?	Very much ❐ A lot ❐ A little ❐ Not at all ❐	
2.	Over the last week, how **embarrassed** or **self conscious** have you been because of your skin?	Very much ❐ A lot ❐ A little ❐ Not at all ❐	
3.	Over the last week, how much has your skin interfered with you going **shopping** or looking after your **home** or **garden**? relevant ❐	Very much ❐ A lot ❐ A little ❐ Not at all ❐ Not	
4.	Over the last week, how much has your skin influenced the **clothes** you wear?	Very much ❐ A lot ❐ A little ❐ Not at all ❐ Not relevant ❐	
5.	Over the last week, how much has your skin affected any **social** or **leisure** activities?	Very much ❐ A lot ❐ A little ❐ Not at all ❐ Not relevant ❐	
6.	Over the last week, how much has your skin made it difficult for you to do any **sport**?	Very much ❐ A lot ❐ A little ❐ Not at all ❐ Not relevant ❐	
7.	Over the last week, has your skin prevented	Yes ❐	

| | you from **working** or **studying**? | No | ☐ |
| | | Not relevant | ☐ |

	If "No", over the last week how much has	A lot	☐
	your skin been a problem at	A little	☐
	work or **studying**?	Not at all	☐

8.	Over the last week, how much has your	Very much	☐
	skin created problems with your	A lot	☐
	partner or any of your **close friends**	A little	☐
	or **relatives**?	Not at all	☐
		Not relevant	☐

9.	Over the last week, how much has your	Very much	☐
	skin caused any **sexual**	A lot	☐
	difficulties?	A little	☐
		Not at all	☐
		Not relevant	☐

10.	Over the last week, how much of a	Very much	☐
	problem has the **treatment** for your	A lot	☐
	skin been, for example by making	A little	☐
	your home messy, or by taking up time?	Not at all	☐
		Not relevant	☐

Please check you have answered EVERY question. Thank you.

Appendix 2O: State measures of appearance satisfaction, skin satisfaction and functionality satisfaction

Three questions will be rated on visual analogue scales from 0 (least satisfied) – 100 (most satisfied)

Please respond to the following questions once you have completed the writing exercise:

1. At the moment how satisfied do you feel with how your body looks?
2. At the moment how satisfied do you feel with how are with how your skin (and/or hair if you're skin condition affects your hair) looks?
3. At the moment how satisfied do you feel with what your body does for you?