The Role of Self-Compassion in Adjustment to Chronic Illness

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Declaration

This thesis has not been submitted to any other degree or institution.

Structure and word counts

Abstracts

Lay summary	493
Meta-analysis	250
Empirical study	250

Part I: Meta-analysis

Excluding references and tables	6022
Including references and tables	12045

Part II: Empirical study

Excluding references and tables	7971
Including references and tables	11553

Total word count

Excluding references and tables	13990
Including references and tables	23598

Lay Summary

Living with a chronic illness can have a negative impact on psychological wellbeing, which in turn, may worsen physical health. Therefore, understanding factors that improve wellbeing for those with chronic illnesses is important. This may help in the development of effective psychological treatments for those with a chronic health condition experiencing psychological difficulty. Self-compassion is being compassionate to oneself in the face of suffering and failure. It has three components: self-kindness (being kind to oneself rather than self-critical), common humanity (seeing pain as part of being human rather than isolating) and mindfulness (seeing negative experiences in a balanced way). Self-compassion is one factor that is considered to improve wellbeing in chronic illness populations. This thesis therefore examines the role of self-compassion in adjustment to chronic illness.

Part I aimed to understand whether people with chronic illnesses with more self-compassion have less psychological distress. Studies that look at the relationship between self-compassion and psychological distress were identified and their results were combined to indicate the size of the relationship. Findings showed that self-compassion was strongly linked to reduced psychological distress in chronically ill populations. This suggests that self-compassion may have an important role in reducing psychological distress for those with chronic illnesses and psychological therapies should aim to increase self-compassion to improve wellbeing for this group. Future research in this area is needed to understand how self-compassion increases wellbeing in those with chronic illnesses.

Part II was interested specifically in Inflammatory Bowel Disease (IBD). People with IBD may believe others view them negatively because of their condition, which can have a negative impact on their psychological wellbeing. Therefore, this study aimed to understand whether certain facial expressions lead to those with IBD believing they are being negatively evaluated. The study was also interested in how this belief affected the common humanity

versus isolation aspect of self-compassion in those with IBD. Reduced common humanity has been linked to depression in this population and so understanding factors that influence it may have important implications for wellbeing. Part II also looked at whether having perfectionistic personality traits increases the belief of those with IBD that others view them negatively as a result of their condition and increases the impact on feelings of common humanity.

Participants completed a survey measuring perfectionistic traits and common humanity and isolation. They also completed a task where they were shown images of positive, negative, or neutral facial expressions and indicated how much they believed the person in the image was negatively evaluating them because of their IBD. Findings showed that those with IBD believe negative and neutral faces may be making negative evaluations about their IBD. This belief did not, for the most part, affect feelings of common humanity. However the belief that they are being negatively evaluated may result in people with a desire to conceal imperfections, feel more isolated. Further research is needed to understand how social interactions involving perceived negative evaluation may influence common humanity in IBD.

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To my parents who have always believed in me, even when I didn’t believe in myself; thank you for your love and support. I would not be where I am without you.

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Finally, to 18-year-old me who never thought this would be possible – you did it!

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Part I: Literature Review

The Association Between Self-compassion and Psychological Distress in Chronic Illness: A Meta-analysis

Abstract

Objectives

People living with chronic illness are vulnerable to psychological distress, thus it is important to understand factors associated with distress in this population. Self-compassion has been linked to improved psychological outcomes across chronic illness populations. This meta-analysis aimed to quantify the strength and direction of the association between self-compassion and psychological distress in chronic illness populations.

Methods

A systematic search of three electronic databases was conducted to identify research reporting associations between self-compassion and psychological distress in chronic illness. Pre-determined inclusion and exclusion criteria were applied. A random effects meta-analysis was conducted to evaluate the association between self-compassion and psychological distress. Moderator analyses were conducted to explore study heterogeneity. Quality appraisal examined the methodological quality of included studies.

Results

Forty-five studies and 51 effect sizes were eligible for inclusion. Meta-analysis revealed that self-compassion was negatively associated with psychological distress (r= -.519; 95% CIs [-.553, -.482]; p = 0.000). Distress type was a significant moderator of this relationship, with studies that assessed distress using measures of stress revealing larger effects than those that examined depression or combined distress. Effect sizes did not vary by illness type, sex, age, or illness duration.

Conclusions

This meta-analysis extends the self-compassion and psychological distress research in chronic illness by quantifying the strength and direction of the association between self-compassion and psychological distress. The findings indicated that the magnitude of the association between these variables was largest for stress. The findings highlight the importance of self-compassion in reducing psychological distress for chronic illness populations.

Practitioner points

- Enhancing self-compassion should be considered as a potential way to reduce psychological distress in chronic illness populations.
- Self-compassion should be considered by clinicians during assessment and formulation with people with chronic health conditions.
- Further research is required to establish the mechanisms underlying the association between self-compassion and psychological distress in chronic illness groups.

Key words: ‘self-compassion’, ‘psychological distress’, ‘chronic illness’, ‘meta-analysis’, ‘associations’.

Introduction

Chronic illness is a broad term with variances in its definition across different professional bodies and countries. However, it is generally agreed that chronic illness persists across time and significantly impacts day to day life (Bernell & Howard, 2016; Moss-Morris, 2013). According to the World Health Organization (WHO), cardiovascular diseases, cancers, chronic respiratory diseases and diabetes are the main types of chronic illness (World Health Organization; WHO, 2022). A range of other conditions are, however, frequently classified as chronic illnesses within the literature, including long-term neurological disorders such as epilepsy and dementia (Feigin et al., 2016), chronic pain disorders including arthritis (Fayaz et al., 2016), inflammatory diseases (Ford et al., 2011) and Human Immunodeficiency Virus (HIV) (Deeks et al., 2013). It is estimated that approximately 15 million people in England are living with a chronic illness (Department of Health; DoH, 2012).

Chronic illnesses are generally incurable and often involve symptom management and increasing disability (Panjwani & Revenson, 2020). It is therefore perhaps unsurprising that they can have a profound impact on psychological wellbeing (De Ridder et al., 2008) and that this population is considered vulnerable to developing anxiety and depression, which can increase disease burden (Gold et al., 2020; Naylor et al., 2012). The question of what factors are related to psychological distress in chronic illness populations is therefore an important one to address.

Self-compassion, as conceptualised by Neff (2003a), is directing compassion towards oneself when faced with personal suffering and failures and comprises of three facets: self-kindness, common humanity, and mindfulness (Neff, 2003a). Research has highlighted that self-compassion is linked to psychological wellbeing in various chronic illness populations, and is proposed to free up emotion regulation resources, alter cognitive appraisal and improve coping (Sirois, 2015; Sirois et al., 2015a). However, the magnitude of the association between self-compassion and psychological distress in this population remains unclear. Furthering understanding of this relationship could have important implications for interventions used to treat psychological distress in the chronic illness population and for future research examining self-compassion. This meta-analysis therefore aims to quantify the association between self-compassion and psychological distress in those with chronic illnesses.

Psychological Distress and Chronic Illness

Psychological distress is an umbrella term for an emotional state that often includes symptoms of stress, anxiety, and depression, experienced by an individual in response to a specific situation or trigger (Ridner, 2004; Viertiö et al., 2021). It is transient in nature, with variations in intensity. It may dissipate when the individual's context changes or they adapt to the stressor, or it may worsen should the individual struggle to cope with the stressor, becoming part of a diagnosable mental health condition such as anxiety, depression, or Post-Traumatic Stress Disorder (Phillips, 2009; Sirois & Owens, 2021).

Significant adjustments to daily life, functional limitations (Sirois et al., 2015b), reduced independence (Mistretta & Davis, 2022) and impact on sense of identity (Panjwani & Revenson, 2020) means that those with chronic illnesses are vulnerable to experiencing psychological distress. Indeed, physical health related stressors have been shown to directly contribute towards depression in those with chronic health conditions (Warner et al., 2019). Furthermore, the unpredictable nature of chronic illness can lead to feelings of uncertainty and anxiety about the future (Panjwani & Revenson, 2020). Health-related anxiety is particularly prevalent in this population, with worries regarding disease progression or disease and symptom recurrence being commonplace, impacting quality of life (Lebel et al., 2020).

Research has also consistently suggested that psychological distress leads to poorer physical health. The sensitivity of endocrine response systems to psychological stress causes inflammation and affects immune functioning, leading to increased vulnerability to infection and disease (Cohen et al., 2007; Glaser & Kiecolt-Glaser, 2005). Stress can also lead to poor engagement in health promoting behaviours, which in turn has a detrimental impact on physical health (Homan & Sirois, 2017). Furthermore, links between affective disorders and negative health outcomes in chronic illness populations have been established through factors such as increased functional impairment, poor symptom management, reduced treatment adherence and lack of support through social withdrawal (Katon & Ciechanowski, 2002; Martin et al., 2005). Thus, developing an understanding of what factors are associated with psychological distress is important to improving the physical and psychological health of this population.

Self-compassion and Chronic Illness

Self-compassion involves directing compassion towards oneself when faced with personal suffering and failures and comprises of three facets (Neff, 2003a). The first, self-kindness, is being understanding to oneself when difficulties arise, rather than being self-critical. Common humanity refers to viewing suffering and failure as part of the human condition, rather than something isolating and unique to the individual. Finally, the mindfulness component involves taking a balanced approach to negative thoughts and feelings, rather than over-identifying with them or trying to avoid or repress them (Neff, 2003a; Neff, 2003b).

Research has highlighted various ways in which self-compassion is beneficial for those with chronic illnesses. Self-criticism, over-identifying with negative thoughts and emotions, and viewing chronic illness difficulties as isolating, is likely to increase negative emotions and thus depletion of emotion regulation resources (Sirois, 2015). It is proposed that self-compassion, however, increases self-regulation resources and positive affect, meaning that resources are available to promote engagement in self-care and health promoting behaviour for better condition management (Abdollahi et al., 2020; Sirois, 2015; Sirois & Hirsch, 2019).

The combination of the three facets of self-compassion is also proposed to positively influence how difficulties are appraised, which in turn predicts more adaptive coping (Sirois et al., 2015a). Cognitive appraisal of stressors involves determining the likely significance of them upon wellbeing and evaluating what, if anything, can be done to effectively cope with them (Lazarus & Folkman, 1984). Self-compassion has been linked to more positive appraisal of chronic illness related difficulties through reducing the tendency to catastrophize and ruminate over them (Purdie & Morley, 2015; Wren et al., 2012). Instead, self-compassionate individuals with chronic illnesses are more accepting of difficulties as part of life (Costa & Pinto-Gouveia, 2011; Morgenroth et al., 2022; Pinto-Gouveia et al., 2015). This ability to positively reframe and accept chronic health related difficulties by those who are self-compassionate, means that they feel more able to engage in adaptive coping strategies to reduce stress, rather than maladaptive ones that contribute to psychological distress (Allen & Leary, 2010; Neff et al., 2007; Sirois et al., 2015a). These benefits of self-compassion are further supported by research indicating that therapies aimed at enhancing self-compassion may be beneficial to the psychological and physical wellbeing of those with chronic health conditions (Kılıç et al., 2021; Mistretta & Davis, 2022).

Studies have demonstrated a link between self-compassion and psychological distress in groups of individuals with specific types of chronic illness diagnoses. Although previous systematic reviews have attempted to synthesise some of these findings (Hughes et al., 2021; Longworth, 2020; Misurya et al., 2020), the size of the association is yet to be quantified. Extending the findings of previous systematic reviews by quantifying the magnitude of the association between self-compassion and psychological distress will provide an indication of how significant this relationship is across chronic illness populations. This may prompt further examination of the specific mechanisms through which self-compassion affects distress and the effectiveness of self-compassion-based interventions. It may also affect how self-compassion-based psychological therapies are used within clinical practice in this population.

Current Study

This meta-analysis investigated the strength and direction of the association between self-compassion and psychological distress in chronic illness populations. It was hypothesised based on the previously outlined theory and research, that self-compassion would be associated with less psychological distress.

Moderator analyses will determine whether the association between self-compassion and psychological distress is moderated by the type of psychological distress measured (i.e. overall psychological distress or individual distress indices such as anxiety, depression, or stress), type of chronic illness, age of participants and sex of participants. Illness duration was also included as an additional exploratory moderator; however, this was not included in pre-registration of the meta-analysis.

Studies examining the association between self-compassion and multiple types of psychological distress have reported variations in effect sizes between type of psychological distress measured (e.g. Costa & Pinto-Gouveia, 2011). Therefore, it was anticipated that type of psychological distress examined would strengthen or weaken the association between self-compassion and psychological distress. This is important to understand as it may direct the focus of self-compassion research to a particular type of psychological distress and have implications for the suitability of self-compassion interventions according to the distress experienced.

Research has also reported variations in the effect size for the association between self-compassion and psychological distress between different chronic illness populations (for example, various chronic health conditions versus cancer; Pinto-Gouveia et al., 2014). It was therefore expected that type of illness would moderate the association between self-compassion and psychological distress. This could indicate that the association between self-compassion and psychological distress is particularly important to consider in future research pertaining to specific types of chronic illnesses. It may also indicate that enhancing self-compassion could have similar or differential effects on psychological distress according to illness type.

Research has consistently found that males have higher levels of self-compassion than females (Yarnell et al., 2019; Yarnell et al., 2015), and self-compassion increases with age (Homan, 2016; Toth-Kirarly & Neff, 2021). It was therefore anticipated that being female and younger, would strengthen the association between self-compassion and psychological distress.

Methods

Protocol Registration

This meta-analysis was pre-registered on PROSPERO which can be accessed via the following link:

https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42023387333

Literature Search

Relevant literature was identified through searching three electronic databases (Scopus, PsycInfo and Medline via Ovid) on 16th January 2023, along with the first 10 pages of Google Scholar. To ensure relevant literature investigating self-compassion and psychological distress in chronic illness populations was identified, search terms appropriate to each database were developed using an iterative scoping process (Table 1). Given the breadth of the concept and the variations in definition across the literature (Phillips, 2009), for the purpose of this meta-analysis, psychological distress included both disorder-specific terms and symptoms such as ‘anxiety’, ‘depression’ and ‘stress’ as well as broader concepts such as ‘psychological difficulties’ to capture both aspects of the definition. Similarly, broader terms for ‘chronic illness’ were included, as well as disease specific terms. Terms were searched for within titles, abstracts and keywords. MESH terms were included where appropriate. Reference lists of identified papers were searched for additional relevant papers, and forward reference searches were completed to identify relevant papers which had referenced papers already identified for inclusion since their publication. Grey literature was included to increase methodological rigor (Conn et al., 2003; Hopewell et al., 2007). References were managed using Zotero reference manager.

Table 1

Table showing search terms used in literature search (OR used within columns and AND across columns)

Self-compassion	Psychological distress	Chronic illness
“self-compassion”, “compassion”	“depress*”, “anxiety”, “stress”, "post-traumatic stress", “PTSD”, "psychological distress", “distress”, "mental health difficulties", "psychological difficulties"	"chronic* ill*", "chronic disease*", "physical health condition*", "long term health condition*", "medical condition*", "cystic fibrosis", “fibromyalgia”, "rheumatoid arthritis", “cancer”, “dementia”, “parkinson’s”, "human immunodeficiency virus", "acquired immune deficiency syndrome", "heart disease", "multiple sclerosis", "chronic fatigue", “epilepsy”, “asthma”, "chronic pain", "chronic obstructive pulmonary disease", "inflammatory bowel disease", "irritable bowel syndrome", “diabetes”, “endometriosis”

Eligibility Criteria

Studies meeting the following inclusion criteria were included in the meta-analysis; (1) the sample were individuals age 18 and over with a chronic illness diagnosis, (2) include a validated measure of self-compassion and psychological distress, (3) utilised quantitative or mixed methods, (4) available in English language, (5) data available for the association between self-compassion and psychological distress or available upon request and (6) the full-text was available.

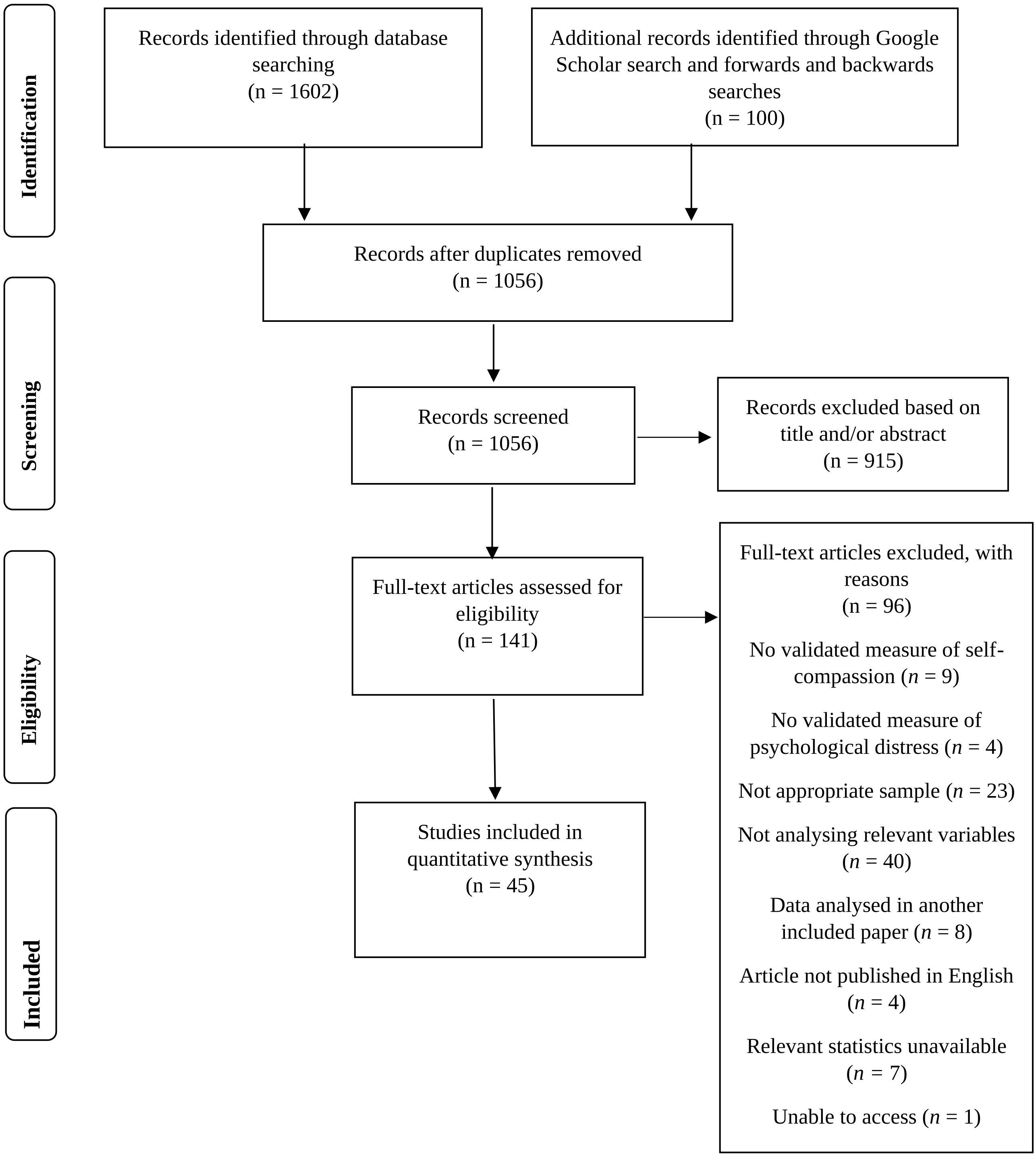
Studies were excluded if they; (1) did not meet inclusion criteria, (2) included participants that did not have a clear and/or current diagnosis of a chronic illness, (3) were an editorial, letter, discussion paper, guidance document, conference paper or book review or were a systematic, scoping or literature review.

Screening

Figure 1 shows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram summarising the search strategy and screening process for the papers included in the meta-analysis (Page et al., 2021).

Figure 1

PRISMA diagram of study selection process



Data Extraction

Effect sizes were extracted as Pearson’s *r* as they were the most frequently reported effect sizes across the studies included. Sex (% female), participant age, type of psychological distress, type of chronic illness and illness duration data were extracted for moderator analyses. Sample size and additional demographic data including study design, country of origin, percentage Caucasian and publication status, were also extracted. The researcher contacted authors for effect sizes or demographic data where they were not reported. The *r* value for the association between self-compassion and psychological distress at baseline was extracted from longitudinal or intervention studies. Where this data was not available the effect size at the next closest time point was extracted. To improve the accuracy of data extraction, a second reviewer (a Trainee Clinical Psychologist) extracted data from a third of the papers selected at random.

Quality Analysis

The quality of the papers included in the meta-analysis were assessed using a tool adapted from the Appraisal Tool for Cross-sectional Studies (AXIS; Downes et al., 2016) by Sirois and Owens (2021), as per the suggestions from Quintana (2015). The adapted tool consists of 11 criteria of relevance to cross-sectional research, with papers given a score of ‘1’ for each criterion they meet or ‘0’ if they fail to meet the criterion (Appendix A). An overall score out of 11 is then calculated with a score of five or less indicating low quality, six to eight indicating moderate quality and higher than eight indicating high quality (Sirois & Owens, 2021). The author initially assessed the quality of all the papers and subsequently, a third of the papers were randomly selected and checked by a second rater (a Trainee Clinical Psychologist), with any disagreements resolved through discussion.

Analyses

A random effects meta-analysis was conducted using the Comprehensive Meta-Analysis software (CMA; Version 3, Borenstein et al., 2013). The random effects approach allows inferences to be made about studies beyond those included in the analysis, rather than inferences specific to the set of studies being observed as in fixed effects meta-analysis (Hedges & Vevia, 1998). This is because the random effects model takes into account two sources of variance; within-studies error variance and between studies variance, reducing the risk of type 1 error (Borenstein et al., 2010).

CMA converted the extracted correlation co-efficients to Fisher's Z-scores for analysis, before converting them back to correlation co-efficients and computing an overall effect size. The magnitude of the effect sizes were interpreted using Cohen's (1992) criteria, where $r = .10$ represents a small effect size, $r = .30$ is medium and $r = .50$ is large. Where studies used more than one measure of psychological distress and thus reported multiple effect sizes, an average effect size for overall distress was calculated to avoid over-inflating the magnitude of the effects (Card, 2012). Similarly, where studies reported effect sizes for individual subscales of the SCS or used a two-factor variation of the SCS and thus reported two effect sizes, an average effect size was calculated.

Heterogeneity

Q and I^2 statistics were calculated to test for and quantify study heterogeneity and determine whether moderator analyses were appropriate (Card, 2012). A significant Q statistic indicates the presence of heterogeneity amongst the pooled effect sizes, beyond that which can be explained by sampling error (Borenstein et al., 2010). The I^2 statistic indicates the percentage of variability that is not due to sampling error, with 25% indicating low, 50% indicating moderate and 75% indicating high heterogeneity (Higgins et al., 2003).

Moderator analyses were conducted to investigate sources of variance when the *Q* statistic indicated the presence of significant heterogeneity. The data for outcome type and illness type was categorical, and thus these moderators were tested via subgroup analysis. Three or more effect sizes per subgroup were required to include the subgroup in the analysis, in line with recommendations by Card (2012). The data for age, gender (percentage female), and illness duration were continuous and therefore, these moderators were examined using meta-regressions.

Sensitivity Analyses

Sensitivity analyses were conducted to examine whether inclusion of studies with certain methodological differences impacted the overall results of the meta-analysis. The effect sizes produced following sensitivity analyses were inspected to determine whether they were comparable to the effect size produced prior to studies being removed.

Publication Bias

Studies with larger effect sizes are more likely to be published, which can lead to inflated effect sizes in meta-analyses (Quintana, 2015). To assess and reduce the risk of this publication bias, several approaches were taken. Firstly, the non-published literature was searched, and relevant papers were included in the present analysis. Secondly, several tests to detect publication bias were conducted on CMA.

A fail-safe *N* (Rosenthal, 1979) was calculated to estimate how many studies with non-significant associations could be added to the observed pooled effect size, before the *p* value would increase beyond .05 and become insignificant. An *N* of at least $5k + 10$ (where *k* is the number of samples in the analysis) would be deemed sufficiently high to suggest low likelihood of the significance being threatened by publication bias (Rosenthal, 1979).

Duval and Tweedie’s (2000) trim-and-fill method was employed to assess whether studies being removed (‘trimmed’) or added (‘filled’) to create symmetry around the mean would alter the overall findings. This was judged firstly visually by comparing the funnel plot displaying the values from the studies included in the meta-analysis, with the funnel plot displaying the ‘trim-and-fill’ values (Duval & Tweedie, 2000). Secondly, Egger’s regression test was conducted to statistically measure the degree of asymmetry present in the funnel plot (Sterne & Egger, 2005), with a significant value being suggestive of publication bias (Egger et al., 1997).

Results

Study Characteristics

Forty-five studies met inclusion criteria (Total *N* = 14481), resulting in 51 effect sizes being included in the meta-analysis. The pool of studies included in the meta-analysis investigated a broad range of chronic illnesses. Most studies used variations of the Self-Compassion Scale (SCS; Neff, 2003a) to measure self-compassion, aside from one study. Thirty-six studies measured depression using nine different measures, 24 studies measured anxiety using 11 different measures, 14 studies measured stress using five different measures, four studies measured diabetes distress using four different measures, four studies measured negative affect using the same measure and five studies measured overall psychological distress using four different measures. Twenty-eight studies used multiple measures of distress, therefore 30 of the 51 effect sizes were a result of combining effect sizes. Study characteristics are presented in Table 2.

Table 2

Study characteristics of included studies

Author (Year of publication)	Country	Study design	Analysed sample size (N)	Diagnosis	Age (mean)	% Female	Illness duration (years)	Self-compassion measure	Distress measure(s)	Effect size(s) and p-value(s)
Abdollahi et al. (2020)	Iran	Cross-sectional	210	Breast cancer	43.2	100	9.2	SCS	PSS	**Stress r = -0.62 (p<0.01)**
Baker et al. (2019)	UK	Cross-sectional	270	Epilepsy	-	76.2	-	SCS	HADS	Depression r = -0.585 (p≤0.01) Anxiety r = -0.608 (p≤0.01) **Overall r = -0.597**
Campbell et al. (2022)	Australia	Experimental	108	Multiple Sclerosis	-	-	-	SCS	DASS PSS	Distress r = -0.658 (p<0.001) PSS r = -0.665 (p<0.001) **Overall r = -0.662**
Carvalho et al. (2018)	Portugal	Cross-sectional	231	Chronic pain	48.51	100	-	SCS-SF	DASS	**Depression r = -0.550 (p<0.001)**
Carvalho et al. (2020)	Portugal	Cross-sectional	49	Chronic pain	50.49	100	-	SCS	DASS	**Depression r = -0.505**
Carvalho et al. (2021)	Sweden	Experimental	49	Various	43.2	85.7	-	SCS	HADS	Depression r =-0.251 Anxiety r = -0.329 **Overall r = --0.290**
Costa & Pinto-Gouveia (2011)	Portugal	Cross-sectional	103	Rheumatoid Arthritis & chronic pain	60.22	79.6	-	SCS	DASS	Depression r =-0.609 (p<0.001) Anxiety r = -0.373 (p<0.001) Stress r = -0.588 (p<0.001) **Overall r = --0.531**
Davey et al. (2020)	UK	Cross-sectional	420	Chronic pain	48.2	74	12	SCS-SF	PHQ-9	**Depression r =-0.340 (p=0.01)**
Eccles et al. (2023)	UK	Cross-sectional	130	Parkinson's Disease	64.68	56.9	5.21	SCS	DASS	Depression r =-0.726 (p<0.001) Anxiety r = -0.479 (p<0.001) Stress r = -0.654 (p<0.001) **Overall r = --0.630**

Author (Year of publication)	**Country**	**Study design**	**Analysed sample size (*N*)**	**Diagnosis**	**Age (mean)**	**% Female**	**Illness duration (years)**	**Self-compassion measure**	**Distress measure(s)**	**Distress measured, effect size(s) and p-value(s)**
Emmerich et al. (2020)	Germany	Longitudinal	T1 - 872, T2 - 316	Chronic pain	45.83(T1)	90.5	-	SCS-D	PHQ-9 PASS	Depression *r* = -0.464 (*p*<0.001) Stress *r* = -0.456 (*p*<0.001) **Overall *r* = -0.460**
Friss et al. (2015)	New Zealand	Cross-sectional	110	Diabetes	57.6	0.655	16.7	SCS	PHQ-9 DDS-2	Depression *r* = -0.570 (*p*<0.001) Diabetes distress *r* = -0.580 (*p*<0.001) **Overall *r* = -0.575**
Gedik & Idiman (2020)	Turkey	Cross-sectional	89	Multiple Sclerosis	39.78	0.753	7.26	SCS	HADS	Depression *r* = 0.45 (*p*<0.01) Anxiety *r* = -0.41 (*p*<0.01) **Overall *r* = -0.430**
Harrison et al. (2017)	Canada	Cross-sectional	70	Chronic Obstructive Pulmonary Disease	70.8	0.66	8.8	SCS-SF	HADS	Depression *r* = 0.51 (*p*<0.001) Anxiety *r* = -0.500 (*p*<0.001) **Overall *r* = -0.505**
Hirsch et al. (2021)	Austria	Cross-sectional	1218	Fibromyalgia, Rheumatoid Arthritis, Osteoarthritis & Ankylosing Spondylitis	58	0.52	-	SCS	PSS GAD-2 PHQ-2	Stress *r* = -0.49 (*p*=0.00) Anxiety *r* = -0.390 (*p*=0.00) Depression *r* = -0.380 (*p*=0.00) **Overall *r* = -0.421**
Ho et al. (2022)	China	Cross-sectional	127	Colorectal cancer	63.8	0.583	-	SCS	PANAS HADS	Negative affect *r* = -0.339 Anxiety *r* = -0.281 Depression *r* =-0.257 **Overall *r* = -0.293**
Kauser et al. (2021)	UK	Cross-sectional	114	Cystic Fibrosis	32.32	0.491	-	SCS	DASS	Depression *r* =-0.517 Anxiety *r* = -0.384 Stress *r* = -0.545 **Overall *r* = -0.485**

Author (Year of publication)	**Country**	**Study design**	**Analysed sample size (*N*)**	**Diagnosis**	**Age (mean)**	**% Female**	**Illness duration (years)**	**Self-compassion measure**	**Distress measure(s)**	**Distress measured, effect size(s) and p-value(s)**
Kelliher-Rabon et al. (2021)	USA	Cross-sectional	Sample 1: 419 Sample 2: 235	Sample 1: Fibromyalgia Sample 2: Cancer	Sample 1: 47.66 Sample 2: 61.28	Sample 1: 0.957 Sample 2: 0.634	- -	SCS-SF	Sample 1: DASS Sample 2: MHP-P	Sample 1: Depression r =-0.64 (p<0.01) Anxiety r = -0.470 (p<0.01) **Overall r = -0.561** Sample 2: Depression r =-0.63 (p<0.01) Anxiety r = -0.53 (p<0.01) **Overall r = -0.582**
Kemppainen et al. (2013)	USA	Cross-sectional	1969	Human Immuno-deficiency Virus	45.11	0.272	12.93	BVSCI	CES-D SCL-90	Depression r =-0.300 Anxiety r = -0.441 **Overall r = -0.373**
Kılıç et al. (2022)	UK	Cross-sectional/ Longitudinal	116	Type 2 Diabetes	-	-	-	SCS	PHQ-8 GAD-7 PAID	Depression r =-490 (p<0.01) Anxiety r = -0.580 (p<0.01) Diabetes distress r =-0.540 (p<0.01) **Overall r = -0.543**
Morgenroth et al. (2022)	Germany	Cross-sectional	45	Heart failure	60.5	0.2	8.71	SCS	HADS	Depression r =-0.340 (p<0.05) Anxiety r = -0.28 (p = NS) **Overall r = --0.310**
Morrison et al. (2019)	UK	Cross-sectional	176	Type 2 Diabetes	-	0.318	-	SCS	PHQ-9 DDS-17	Depression r = -0.58 (p<0.001) Diabetes distress r = 0.400 (p<0.001) **Overall r = --0.495**
Ogueji (2021)	Nigeria	Cross-sectional	832	Human Immuno-deficiency Virus	38.86	1	-	SCS-SF	K6	**Overall r = --0.550 (p<0.01)**
O'Loughlin et al. (2020)	USA	Cross-sectional	111	Human Immuno-deficiency Virus	42.8	0.461	13.7	SCS-SF	BDI BAI	Depression r =-0.415 (p<0.001) Anxiety r = -0.365 (p<0.001) **Overall r = --0.390**

Author (Year of publication)	**Country**	**Study design**	**Analysed sample size (*N*)**	**Diagnosis**	**Age (mean)**	**% Female**	**Illness duration (years)**	**Self-compassion measure**	**Distress measure(s)**	**Distress measured, effect size(s) and p-value(s)**
Pinto-Gouveia et al. (2014)	Portugal	Cross-sectional/ longitudinal	Sample 1: 68 Sample 2: 63	Sample 1: Various Sample 2: Cancer	Sample 1: 51.55 Sample 2: 54.04	Sample 1: 75 Sample 2: 82.5	-	SCS	DASS	Sample 1: Depression *r* = -0.591 Anxiety *r* = -0.374 Stress *r* = -0.580 **Overall *r* = -0.521** Sample 2: Depression *r* = -0.479 Anxiety *r* = -0.166 Stress *r* = -0.473 **Overall *r* = -0.381**
Potter et al. (2020)	Canada	Cross-sectional	144	Irritable Bowel Syndrome	21.65	0.806	-	SCS	DASS	**Depression *r* = -0.510 (*p*<0.01)**
Purdie & Morley (2015)	UK	Experimental	60	Chronic pain	46.9	0.76	13.9	SCS	DAPOS	Depression *r* = -0.70 Anxiety *r* = -0.520 **Overall *r* = -0.618**
Santerre-Baillargeon et al. (2018)	Canada	Cross-sectional	48	Vulvodynia	26.83	1	6.15	SCS	BDI STAI	Depression *r* = -0.480 (*p*<0.01) Anxiety *r* = -0.640 (*p*<0.01) **Overall *r* = -0.565**
Schellekens et al. (2017)	Netherlands	Cross-sectional	88	Lung Cancer	62.8	0.33	0.38	SCS-12	HADS	**Overall *r* = -0.550 (*p*<0.01)**
Sirois & Hirsch (2019)	UK	Cross-sectional	Sample 1: 319 Sample 2: 152 Sample 3: 61 Sample 4: 55	Sample 1: Fibromyalgia Sample 2: Fibromyalgia Sample 3: Chronic Fatigue Sample 4: Cancer	Sample 1: 47.89 Sample 2: 41.51 Sample 3: 33.91 Sample 4: 61.24	Sample 1: 0.961 Sample 2: 0.894 Sample 3: 0.838 Sample 4: 0.62	-	SCS	Sample 1: DASS Sample 2 & 3: PSS-10 Sample 4: PSS-4	Sample 1: **Stress *r* = -0.583 (*p*<0.01)** Sample 2: **Stress *r* = -0.601 (*p*<0.01)** Sample 3: **Stress *r* = -0.628 (*p*<0.01)** Sample 4: **Stress *r* = -0.625 (*p*<0.01)**

Author (Year of publication)	**Country**	**Study design**	**Analysed sample size (*N*)**	**Diagnosis**	**Age (mean)**	**% Female**	**Illness duration (years)**	**Self-compassion measure**	**Distress measure(s)**	**Distress measured, effect size(s) and p-value(s)**
Sirois et al. (2015a)	Canada	Cross-sectional	Sample 1: 155 Sample 2: 170	Sample 1: Inflammatory Bowel Disease Sample 2: Arthritis	Sample 1: 38.84 Sample 2: 47.44	Sample 1: 0.831 Sample 1: 0.915	-	SCS	PSS-10	Sample 1: **Stress $r = -0.560$ ($p<0.05$)** Sample 2: **Stress $r = -0.560$ ($p<0.05$)**
Skinta et al. (2018)	UK	Cross-sectional	90	Human Immuno-deficiency Virus	43.5	0	12.24	SCS-SF	CES-D STICSA PANAS	Depression $r = -0.710$ ($p<0.001$) Anxiety $r = -0.490$ ($p<0.001$) Negative affect $r = -0.630$ ($p<0.001$) **Overall $r = -0.618$**
Snyder et al. (2022)	USA	Cross-sectional	56	Lung Cancer	64.88	100	-	SCS-SF	DASS	**Depression $r = -.440$ ($p<0.001$)**
Stutts et al. (2020)	USA	Cross-sectional	140	Parkinson’s Disease	68.72	0.421	7.15	SCS	DASS	Depression $r = -0.370$ ($p<0.01$) Anxiety $r = -0.300$ ($p<0.01$) Stress $r = -0.390$ ($p<0.01$) **Overall $r = -0.354$**
Tanenbaum et al. (2018)	USA	Cross-sectional	542	Type 1 diabetes	41.4	0.65	23.3	SCS-Diabetes	DDS-T1	**Diabetes distress $r = -0.610$ ($p<0.001$)**
Trinidade & Sirois (2021)	Portugal	Cross-sectional/ longitudinal	155	Inflammatory Bowel Disease	36.5	0.697	8.54	SCS	DASS	Depression $r = -0.63$ ($p<0.01$) Anxiety $r = -0.440$ ($p<0.01$) Stress $r = -0.610$ ($p<0.01$) **Overall $r = -0.565$**
Van der Donk et al. (2020)	Netherlands	Cross-sectional	245	Cancer	65.35	0.249	2.39	SCS	CES-D PANAS	Depression = -0.474 Negative affect = -0.369 **Overall $r = -0.423$**
Van der Heide et al., (2021)	Netherlands	Cross-sectional	2899	Parkinson’s Disease	-	-	-	SCS-SF	PSS-10	**Stress $r = -0.650$ ($p=0.000$)**
Van Niekirk et al. (2022)	Netherlands	Cross-sectional	277	Polycystic Ovary Syndrome	30.57	1	13.19	SCS	PROMIS	**Overall $r = -0.620$ ($p=0.001$)**

Author (Year of publication)	**Country**	**Study design**	**Analysed sample size (*N*)**	**Diagnosis**	**Age (mean)**	**% Female**	**Illness duration (years)**	**Self-compassion measure**	**Distress measure(s)**	**Distress measured, effect size(s) and p-value(s)**
Wei et al. (2022)	China	Cross-sectional	289	Cancer	50.11	0.623	-	SCS-SF	PHQ-9 STAI-6	Depression $r = -0.229$ Anxiety $r = -0.258$ **Overall $r = -0.244$**
Williams et al. (2021)	USA	Cross-sectional	181	Human Immuno-deficiency Virus	42.81	0.249	11.71	SCS-SF	CES-D	**Depression $r = -0.658$ ($p<0.01$)**
Williamson et al. (2022)	USA	Cross-sectional	108	Lung Cancer	64.81	0.481		SCS-SF	CES-D	**Depression $r = -.390$ ($p<0.001$)**
Wren et al. (2012)	USA	Cross-sectional	88	Chronic pain	53.93	0.716	11.79	SCS	PANAS	**Negative affect $r = -0.354$ ($p<0.01$)**
Yousefi Afrashteh & Masoumi (2021)	Iran	Cross-sectional	210	Breast cancer	38.97	100	-	SCS	BDI BAI	Depression $r = -0.48$ ($p<0.001$) Anxiety $r = -0.53$ ($p<0.001$) **Overall $r = -0.505$**
Zhu et al. (2020)	China	Cross-sectional	301	Cancer	50.07	0.604	1.19	SCS-SF	PHQ-9 STAI-6	Depression $r = -0.370$ ($p<0.01$) Anxiety $r = -0.390$ ($p<0.01$) **Overall $r = -0.380$**
Ziemer (2014)	USA	Experimental	50	Chronic pain	48.9	0.82	-	SCS-SF	CES-D	**Depression $r = -0.680$ ($p<0.01$)**

Note. ‘-‘ indicates data not reported/not obtainable. Where a study reported more than one ‘psychological distress’ construct, a mean effect size was calculated and entered into the meta-analysis; correlation values entered into meta-analysis denoted in **bold.** Abbreviations: BAI (Beck Anxiety Inventory; Beck et al., 1988), BDI (Beck Depression Inventory; Beck et al., 1961), BVSI (Brief Version of the Self-compassion Inventory; Kemppainen et al., 2013), CES-D (Centre for Epidemiologic Studies – Depression Scale; Radloff, 1977), DAPOS (Depression, Anxiety and Positive Outlook Scale; Pincus et al., 2004), DASS (Depression Anxiety and Stress Scale; Lovibond & Lovibond., 1995), DDS-2 (Diabetes Distress Scale 2-item, Fisher et al., 2008), DDS-17 (Diabetes Distress Scale 17-item; Martinez et al., 2018), DDS-T1 (Diabetes Distress Scale for Type 1 Diabetes; Fisher et al., 2015), GAD-2 (Generalised Anxiety Disorder 2-item; Kroenke et al, 2007), GAD-7 (Generalised Anxiety Disorder 7-item; Spitzer et al., 2006), HADS (Hospital Anxiety and Depression Scale; Zigmond & Snaith, 1983), K6 (Kessler Psychological Distress Scale; Kessler et al., 2003), MHP-P (Multi-dimensional Health Profile – Part 1; Ruehlman et al., 1999), PAID (Problem Areas In Diabetes Scale, Welch et al., 1997), PANAS (Positive and Negative Affect Scale; Watson et al., 1988), PHQ-2 (Patient Health Questionnaire 2-item; Lowe et al., 2005), PHQ-8 (Patient Health Questionnaire 8-item; Kroenke et al., 2009), PHQ-9 (Patient Health Questionnaire 9-item; Kroenke et al., 2001), PROMIS (Patient Reported Outcomes Measurement Information System; Pilkonis et al., 2011), PSS (Perceived Stress Scale; Cohen et al., 1983), PSS-2 (Perceived Stress Scale 2-item), PSS-10 (Perceived Stress Scale 10-item; Cohen & Williamson, 1988), SCL-90 (Symptom Checklist-90; Derogatis et al., 1977), SCS (Self-compassion Scale; Neff, 2003a), SCS-D (Self-compassion Scale German version, Hupield & Ruffieux, 2011), SCS-Diabetes (Self-compassion Scale Diabetes Specific Version; Tanenbaum et al., 2018), SCS-SF (Self-compassion Scale Short Form; Raes et al., 2011), STAI (State-Trait Anxiety Index; Spielberger, 1970), STAI-6 (State Trait Anxiety Inventory 6-item; Marteau et al., 1992), STICSA (State Trait Inventory for Cognitive and Somatic Anxiety; Grös et al., 2007).

Quality Assessment

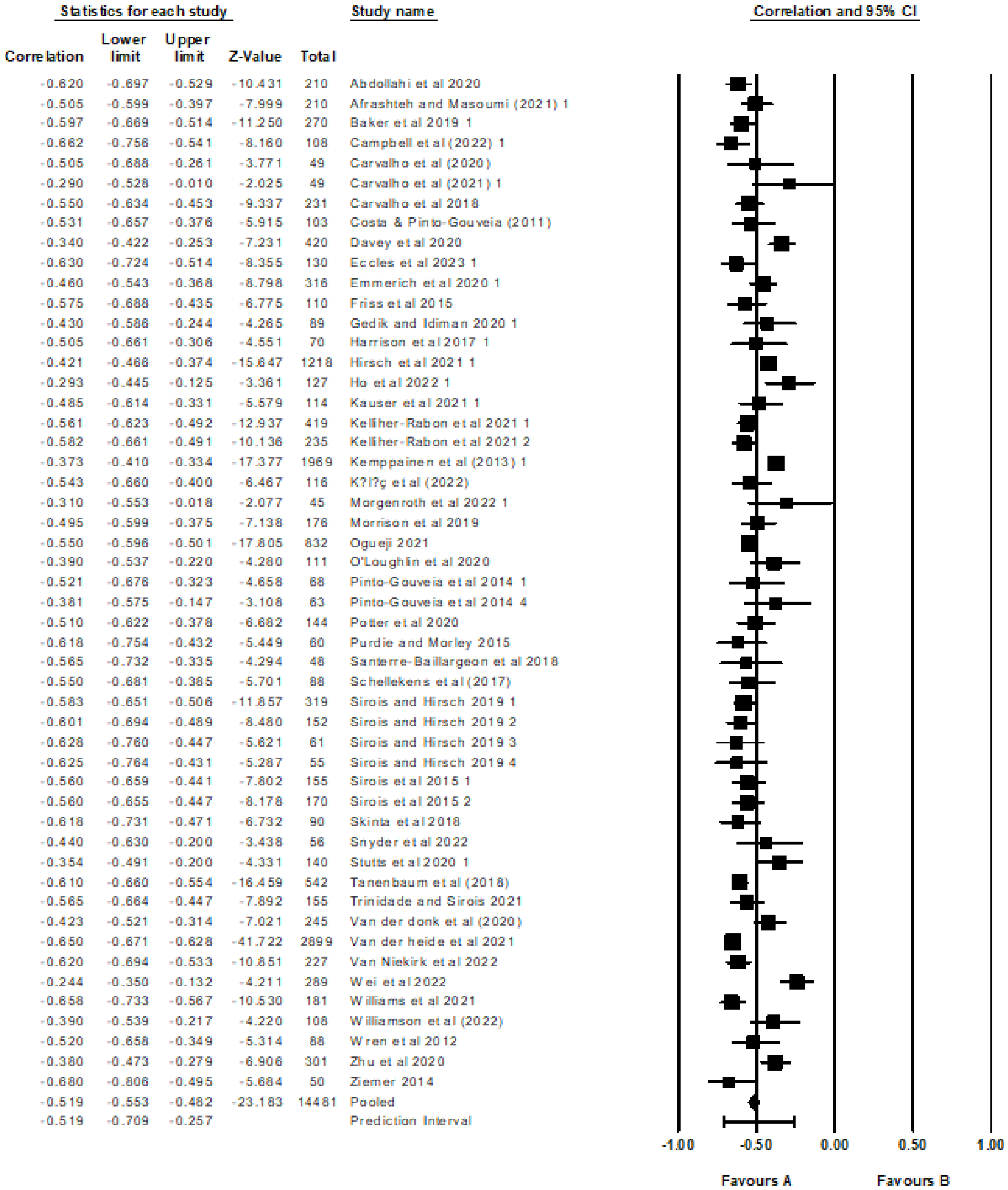
All studies included in the sample were of either moderate or high quality (see Appendix B). A second researcher (a Trainee Clinical Psychologist) independently quality assessed one third of the papers (*N* = 15). Inter-rater agreement was initially at 80% and increased to 100% following discussions. The highest score obtained was 10 out of 11, with 13 studies satisfying this number of criteria. The lowest score was 6, with two studies achieving this score. Thirteen studies were rated as moderate in quality and 32 were rated as high in quality. None of the studies included had a representative sample, with all studies using convenience sampling approaches. Many (N = 18) also failed to recruit the sample from an appropriate population base. Other common areas of weakness were lack of clearly defined inclusion criteria, with ten studies failing to meet this criterion, and insufficient reporting of methods (N = 9).

Meta-analysis

Of the 51 effect sizes extracted for inclusion in the analysis, 47 were *r* values and 4 were *P* values (Spearman's rank correlation co-efficient), given the similarity between these metrics, conversion to a common metric was not required. There was a significant large negative association between self-compassion and psychological distress outcomes (r= -.519; 95% CIs [-.553, -.482]; z = -23.183, p = 0.000), providing support for the hypothesis. There was evidence of high heterogeneity $Q(50) = 358.836$, p =0.000, $I^2 = 86.066\%$, $T^2 = 0.023$. Size of effects ranged from r = -.244 to -.680 (Figure 2).

Figure 2

Forest plot displaying effect sizes included in the meta-analysis



Statistics for each study					Study name
Correlation	Lower limit	Upper limit	Z-Value	Total	
-0.620	-0.697	-0.529	-10.431	210	Abdollahi et al 2020
-0.505	-0.599	-0.397	-7.999	210	Afrashteh and Masoumi (2021) 1
-0.597	-0.669	-0.514	-11.250	270	Baker et al 2019 1
-0.662	-0.756	-0.541	-8.160	108	Campbell et al (2022) 1
-0.505	-0.688	-0.261	-3.771	49	Carvalho et al (2020)
-0.290	-0.528	-0.010	-2.025	49	Carvalho et al (2021) 1
-0.550	-0.634	-0.453	-9.337	231	Carvalho et al 2018
-0.531	-0.657	-0.376	-5.915	103	Costa & Pinto-Gouveia (2011)
-0.340	-0.422	-0.253	-7.231	420	Davey et al 2020
-0.630	-0.724	-0.514	-8.355	130	Eccles et al 2023 1
-0.460	-0.543	-0.368	-8.798	316	Emmerich et al 2020 1
-0.575	-0.688	-0.435	-6.775	110	Friss et al 2015
-0.430	-0.586	-0.244	-4.265	89	Gedik and Idiman 2020 1
-0.505	-0.661	-0.306	-4.551	70	Harrison et al 2017 1
-0.421	-0.466	-0.374	-15.647	1218	Hirsch et al 2021 1
-0.293	-0.445	-0.125	-3.361	127	Ho et al 2022 1
-0.485	-0.614	-0.331	-5.579	114	Kauser et al 2021 1
-0.561	-0.623	-0.492	-12.937	419	Kelliher-Rabon et al 2021 1
-0.582	-0.661	-0.491	-10.136	235	Kelliher-Rabon et al 2021 2
-0.373	-0.410	-0.334	-17.377	1969	Kemppainen et al (2013) 1
-0.543	-0.660	-0.400	-6.467	116	K?l?ç et al (2022)
-0.310	-0.553	-0.018	-2.077	45	Morgenroth et al 2022 1
-0.495	-0.599	-0.375	-7.138	176	Morrison et al 2019
-0.550	-0.596	-0.501	-17.805	832	Ogueji 2021
-0.390	-0.537	-0.220	-4.280	111	O'Loughlin et al 2020
-0.521	-0.676	-0.323	-4.658	68	Pinto-Gouveia et al 2014 1
-0.381	-0.575	-0.147	-3.108	63	Pinto-Gouveia et al 2014 4
-0.510	-0.622	-0.378	-6.682	144	Potter et al 2020
-0.618	-0.754	-0.432	-5.449	60	Purdie and Morley 2015
-0.565	-0.732	-0.335	-4.294	48	Santerre-Baillargeon et al 2018
-0.550	-0.681	-0.385	-5.701	88	Schellekens et al (2017)
-0.583	-0.651	-0.506	-11.857	319	Sirois and Hirsch 2019 1
-0.601	-0.694	-0.489	-8.480	152	Sirois and Hirsch 2019 2
-0.628	-0.760	-0.447	-5.621	61	Sirois and Hirsch 2019 3
-0.625	-0.764	-0.431	-5.287	55	Sirois and Hirsch 2019 4
-0.560	-0.659	-0.441	-7.802	155	Sirois et al 2015 1
-0.560	-0.655	-0.447	-8.178	170	Sirois et al 2015 2
-0.618	-0.731	-0.471	-6.732	90	Skinta et al 2018
-0.440	-0.630	-0.200	-3.438	56	Snyder et al 2022
-0.354	-0.491	-0.200	-4.331	140	Stutts et al 2020 1
-0.610	-0.660	-0.554	-16.459	542	Tanenbaum et al (2018)
-0.565	-0.664	-0.447	-7.892	155	Trinidade and Sirois 2021
-0.423	-0.521	-0.314	-7.021	245	Van der donk et al (2020)
-0.650	-0.671	-0.628	-41.722	2899	Van der heide et al 2021
-0.620	-0.694	-0.533	-10.851	227	Van Niekirk et al 2022
-0.244	-0.350	-0.132	-4.211	289	Wei et al 2022
-0.658	-0.733	-0.567	-10.530	181	Williams et al 2021
-0.390	-0.539	-0.217	-4.220	108	Williamson et al (2022)
-0.520	-0.658	-0.349	-5.314	88	Wren et al 2012
-0.380	-0.473	-0.279	-6.906	301	Zhu et al 2020
-0.680	-0.806	-0.495	-5.684	50	Ziemer 2014
-0.519	-0.553	-0.482	-23.183	14481	Pooled
-0.519	-0.709	-0.257			Prediction Interval

Sensitivity Analyses

Sensitivity analysis revealed that removing the four studies that reported Spearman's rank rather than Pearson's correlation co-efficient (Baker et al., 2019; Eccles et al., 2023; Morrison et al., 2019; Van Niekirk et al., 2022), did not largely impact the overall effect size (*r*= -.512; 95% CIs [-.549, -.473]; *z* = -21.468, *p* = 0.000), supporting inclusion of these effect sizes in the meta-analysis.

Removing the five experimental or longitudinal studies (Campbell et al., 2022; Carvelo et al., 2021; Emmerich et al., 2020; Purdie & Morley, 2015; Ziemer, 2014) also did not appear to impact the overall effect size (*r*= -.515; 95% CIs [-.552, -.477]; *z* = -21.876, *p* = 0.000).

Moderator Analyses

Subgroup Analyses

Effect sizes were grouped according to the type of psychological distress measured, creating three moderator subgroups; stress (*k* = 8; *N* = 4021), depression (*k* = 8; *N* = 1239), and overall distress (*k* = 35; *N* = 9221). There was an insufficient number of effect sizes to create a distinct subgroup for anxiety, and therefore this type of distress was not included in the analysis. The subgroup analysis indicated that the effects obtained from studies that measured stress (*r* = -0.634, 95% *CI* [-0.653, -0.615], *p* = 0.000), depression (*r* = -0.484, 95% *CI* [-0.526, -0.439], *p* = 0.000) and overall distress (*r* = -0.475, 95% *CI* [-0.490, -0.459], *p* = 0.000) differed significantly in magnitude (*Q*(2) = 24.650, *p* = 0.000). Studies that measured stress had a large effect size and those that measured depression and overall distress had moderate effect sizes. These findings indicate that the magnitude of the pooled effect size was affected by type of distress measured, supporting the hypothesis.

Effect sizes were grouped according to illness type, creating six moderator subgroups; cancer (*k* = 12; *N* = 1987), endocrine (*k* = 5; *N* = 1171), infection (*k* = 5; *N* = 3183), neurological (*k* = 6; *N* = 3636), pain (*k* = 14; *N* = 3643) and ‘other’ (*k* = 9; *N* = 861). The ‘other’ subgroup included illnesses which could not be categorised into further distinct subgroups. The subgroup analysis indicated that the effects obtained from studies that measured cancer (*r* = -0.448, 95% *CI* [-0.482, -0.411], *p* = 0.000), endocrine (*r* = -0.587, 95% *CI* [-0.623, -0.547], $p = 0.000$), infection ($r = -0.449$, 95% *CI* [-0.476, -0.421], $p = 0.000$), neurological ($r = -0.632$, 95% *CI* [-0.652, -0.612], $p = 0.000$), pain ($r = -0.487$, 95% *CI* [-0.512, -0.462], $p = 0.000$), and other ($r = -0.516$, 95% *CI* [-0.564, -0.465], $p = 0.000$) illness types, did not differ significantly in magnitude ($Q(5) = 10.076$, $p = 0.073$). These findings did not support the hypothesis that the magnitude of the association would be affected by illness type.

Meta-regression Analyses

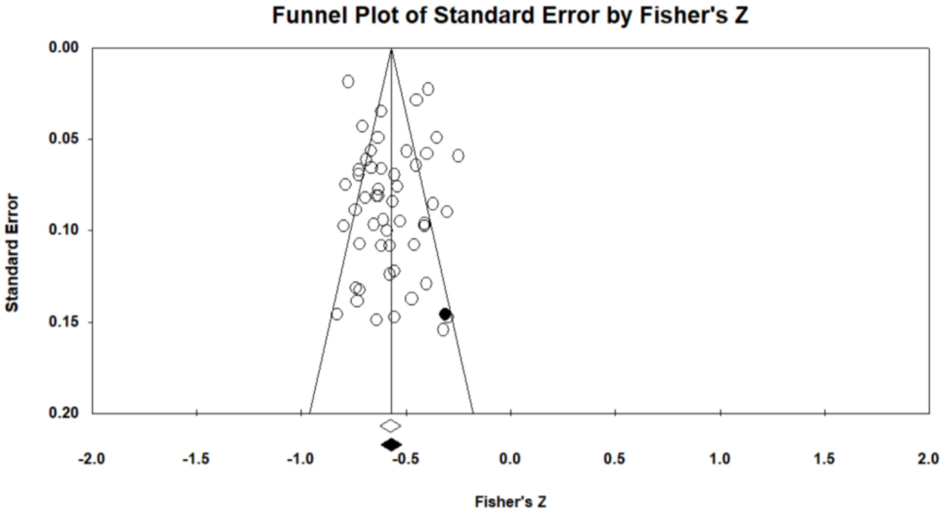
There were no sex-related differences ($Q(1) = 1.354$, b = -0.1504, $p = 0.0598$, 95% CI [-0.3070, 0.0062], $z = -1.88$), no age-related differences ($Q(1) = 3.40$, b = -0.0037, $p = 0.065$, 95% CIs [-0.0002, 0.0077], $z = 1.84$), and no illness duration-related differences ($Q(1) = 1.26$, b = -0.0081, $p = 0.2612$, 95% CIs [-0.0222, 0.0060], $z = -1.12$) in the magnitude of the associations between self-compassion and psychological distress across the studies, contrary to hypotheses.

Publication Bias

The tests were unanimous in suggesting minimal publication bias. Fail-safe *N* (Rosenthal, 1979) revealed that 4588 studies with null results would need to be added to the analysis in order for the effects to become insignificant, surpassing the Fail-safe *N* threshold of 265 ($5k + 10$). Visual inspection of the funnel plots (Figure 3) was indicative of minor asymmetry around the mean effect size, confirmed by the trim-and-fill method which imputed one study to the right of the mean. However, with the additional study imputed, the effect size remained almost identical to the originally obtained effect size ($r = 0.516$, 95% CIs [-.551, -.480]), indicating that it was not affected by asymmetry. Egger’s regression test was also non-significant ($t(49) = 0.493$, $p = .625$), indicating minimal asymmetry was present.

Figure 3

Funnel plot including imputed study from trim-and-fill analysis.



Discussion

The findings of this meta-analysis provide support for the hypothesis that self-compassion is associated with lower psychological distress in chronic illness populations. Quantifying this association extends the findings that self-compassion is an important resource for those living with chronic health conditions. Moderator analysis indicated that larger effects were found for those studies reporting effects for stress than studies reporting effects for depression or multiple types of distress. This supported the hypothesis that the association between self-compassion and psychological distress would vary according to the type of distress examined. Contrary to hypotheses however, moderator analyses indicated that the association between self-compassion and psychological distress did not vary significantly as a function of illness type, age, gender, or illness duration.

The large association between self-compassion and psychological distress found in this meta-analysis is consistent with previous research that examined ways in which self-compassion improves psychological wellbeing. Self-compassion has been found to reduce psychological distress by supporting emotional regulation (Sirois, 2015) and altering the way in which stressors associated with chronic illness are appraised (Costa & Pinto-Gouveia, 2011; Morgenroth et al., 2022; Pinto-Gouveia et al., 2015; Purdue & Morley, 2015). Psychological distress has been shown to increase the body's vulnerability to poor physical health (Cohen et al., 2007) and reduce engagement in adaptive health behaviours. (Homan & Sirois, 2017). Thus, by reducing psychological distress, self-compassion may be beneficial to improving physical health outcomes of chronically ill populations. Considered in the context of this previous research, the large association identified between self-compassion and psychological distress suggests that self-compassion could be a valuable resource in maintaining psychological and physical wellbeing in the context of chronic illness.

Moderator analysis indicated that self-compassion may be especially important when the psychological distress experienced is stress. Individuals living with chronic health conditions are susceptible to experiencing significant illness-related stressors (Sirois et al., 2015b) and stress has been found to increase the body's vulnerability to illness (Cohen et al., 2007; Glaser & Kiecolt-Glaser, 2005). This bi-directional relationship means that stress can be particularly detrimental to the psychological and physical wellbeing of someone living with a chronic illness. As studies examining stress revealed stronger associations between self-compassion and psychological distress, self-compassion could be one positive psychological quality that reduces the burden of stress in chronic illness populations. This finding is supported by previous research that revealed self-compassion reduces stress in chronic illness populations by freeing up resources for engagement in adaptive coping strategies and health-promoting behaviours (Sirois, 2015; Sirois et al., 2015a; Sirois & Hirsch, 2019).

The association between self-compassion and psychological distress were comparable regardless of chronic illness type indicating that the relationship is relatively consistent across diagnoses. This may be due to similarities in the types of stressors leading to psychological distress that those with various chronic illnesses face, such as functional limitations and reduced independence (Mistretta & Davis, 2022; Sirois et al., 2015b). The association between self-compassion and psychological distress was also relatively consistent across different ages, gender and length of illness. These findings may therefore indicate that self-compassion is a useful resource for reducing psychological distress in chronic illness populations regardless of the individual's chronic illness diagnosis, age, sex and duration of illness.

The large association between self-compassion and psychological distress revealed by this meta-analysis is consistent with systematic reviews that summarised some of the literature in this area (Hughes et al., 2021, Longworth, 2020; Misurya et al., 2020). However, as far as the author is aware, this study is the first to systematically examine and quantify these associations. The association is also comparable to the large effect size found in a meta-analysis examining the association between self-compassion and psychopathology in general adult samples (Macbeth & Gumley, 2012), suggesting that self-compassion has an important role in reducing psychological distress across both healthy and chronically ill populations.

Contrary to findings in the current study, previous research in healthy populations did not find that the self-compassion-psychological distress association was larger when stress was the type of distress measured (Macbeth & Gumley, 2012). Individuals living with chronic health conditions face a range of daily stressors (Gignac et al., 2000; Mistretta & Davis, 2022) and chronic illness related stressors have been found to directly contribute towards depression (Warner et al., 2019). Having resources such as self-compassion may therefore have a larger effect on reducing stress for this population in comparison to general adult populations where stress may be less prevalent.

The finding that the average association between self-compassion and psychological distress was robust to the effects of sex and age is not consistent with previous research, which indicates that females and younger people tend to have lower levels of self-compassion (Homan, 2016; Toth-Kirarly & Neff, 2021; Yarnell et al., 2019; Yarnell et al., 2015). However, a meta-analysis in the general adult population also did not find that the association between self-compassion and psychological distress varied according to sex and age (Macbeth & Gumley, 2012). The higher proportion of females to males in the studies' samples could have meant that gender differences were not detectable.

Although the type of psychological distress measured may explain some of the sample heterogeneity, it appears that some remains unexplained. It is not always possible to identify all the factors that contribute to differences between samples (Riley et al., 2011), however one alternative source of heterogeneity could be disease severity. More severe symptomology has been linked to a more pessimistic illness perspective, which in turn has been found to increase psychological distress in some illness groups (Zhang et al., 2016). Given the links between self-compassion and more positive appraisal of chronic illness difficulties (e.g. Morgenroth et al., 2022; Pinto-Gouveia et al., 2015), disease severity could explain some of the variance in the association between self-compassion and psychological distress.

Strengths and Limitations

A key strength of this review is the large number of effect sizes identified for inclusion (51) and large overall sample size from the studies included (N = 14481), with more than two thirds of the included studies having a sample size of over 100. This suggests that the majority were sufficiently powered to detect a medium correlation (Cohen, 1992). Multiple tests of publication bias were used in the current study and indicated it was minimal. High inter-rater reliability was established for both the data extraction and quality appraisal processes. A further strength is the use of sensitivity analyses to examine the impact of methodological differences on the pooled effect size. None of the sensitivity analyses led to a significant change in the effect size, indicating that it was robust to these methodological differences, increasing the reliability and validity of the findings.

The findings should be considered in light of several limitations, however. The use of cross-sectional data means that causation cannot be established, thus causality cannot be concluded from the findings. The majority of the self-compassion theory and research proposes that self-compassion has a role in reducing psychological distress, however, the direction of the association could be reversed. For example, stress has been found to predict reduced emotional regulation capabilities in some populations (Extremera & Rey, 2015). Self-compassion is considered to have a role in regulating emotions (Sirois, 2015), so consequently, increased stress could reduce emotional regulation by reducing self-compassion. Similarly, research findings have shown that individuals with depression employ maladaptive coping strategies such as self-blame in response to stressors (Folkman & Lazarus, 1986) and have less cognitive flexibility, affecting their appraisal process (Caouette & Guyer, 2016). It is considered that higher self-compassion leads to less self-blame and more positive appraisal; thus depression may affect how an individual appraises stressors through reducing self-compassion.

The presence of significant heterogeneity across studies examining the association between self-compassion and psychological distress, suggests that the studies were somewhat incomparable due to factors such as sample and methodological differences and is thus a limitation of the present study. Furthermore, there were insufficient studies examining anxiety to form an anxiety subgroup for the type of distress moderator analysis. Consequently, although there were larger associations between self-compassion and psychological distress when studies examined stress, this could not be compared to the effect sizes found in studies that examined anxiety. An anxiety subgroup may have influenced the findings of the distress type moderator analysis. Further research is therefore warranted to explore the association between self-compassion and anxiety. Similarly, illnesses were categorised into subgroups based on both similarities in symptomology (for example, pain) and cause (for example, hormone dysfunction), due to the diverse range of chronic health conditions across the sample. This again highlights the potential incomparability of the studies included, and categorising the illnesses differently may have changed the findings of the moderator analysis.

The use of convenience sampling in the included studies is a further limitation of the findings of this meta-analysis. This sampling method likely means that populations that are less able to attend clinics or use the internet, such as those with the most debilitating symptoms, were not captured in the data. The findings of this meta-analysis may therefore be more relevant for healthier subgroups of the chronic illness population and reduces the generalisability of the findings.

Future Directions and Clinical Implications

This meta-analysis found a robust relationship between self-compassion and lower psychological distress, highlighting the importance of further understanding the mechanisms that link these two variables. Research has begun to identify some of these mechanisms; for example, the use of more adaptive coping styles in those with inflammatory bowel disease and arthritis (Sirois et al., 2015a) and the ability to take a decentred perspective of illness in those with heart failure (Morgenroth et al., 2022). Of particular importance could be developing understandings of the mechanisms that link self-compassion and stress. Further investigation of these and other mechanisms that link self-compassion and psychological distress, across various chronic illness groups, is warranted. Such research would improve understandings of why individuals who are more self-compassionate experience less psychological distress, help identify chronic illness groups most vulnerable to having lower self-compassion and have implications for the target of interventions that aim to improve self-compassion.

The studies included in this meta-analysis are predominantly cross-sectional in nature. However, longitudinal research is required in order to determine the temporal sequencing of pathways between self-compassion and psychological distress. This would improve understandings of the relationship between self-compassion and psychological distress, which would again have implications for the targets of psychological therapy.

The evidence-base for interventions that target self-compassion is evolving and they are now included in recommendations by the National Institute for Health and Care Excellence (NICE) for treatment of certain chronic health conditions. Acceptance and Commitment Therapy (ACT) is one therapy with a self-compassion component that has been recommended by NICE for treatment of chronic pain (NICE, 2021). ACT is thought to improve self-compassion by increasing acceptance and non-judgemental awareness of negative thoughts and feelings (Neff & Tirch, 2013). The strength of the association between self-compassion and psychological distress found in this meta-analysis, and the links between self-compassion and acceptance of difficulty in chronically ill populations, suggests that further exploration of self-compassion-based interventions in treatment of chronic health conditions is warranted. A recent meta-analysis found small effects of self-compassion focused interventions on self-compassion in individuals with chronic health conditions and psychological difficulties; however, the included studies were of poor quality (Misterra & Davis, 2022). Further research with more rigorous methodologies, such as randomised control trials, examining the efficacy of self-compassion-based interventions in supporting individuals with chronic health conditions would be beneficial. Given the findings regarding the link between self-compassion and stress in this meta-analysis, further research into the effectiveness of self-compassion interventions in reducing stress may also be of benefit to individuals with chronic illness.

Clinicians should be mindful of how self-compassionate an individual is when working with chronically ill patients and it should be an area of consideration in psychological assessment and formulation. Clinicians should also aim to foster self-compassion when delivering therapy, regardless of the psychological approach to treatment.

Conclusions

This meta-analysis found that self-compassion is associated with lower psychological distress in individuals with chronic illnesses. Moderator analyses indicated that the magnitude of the association between these variables was largest for stress, suggesting that self-compassion may be particularly important for reducing stress in this population. The association did not vary according to illness type, suggesting that self-compassion may play an important role in reducing psychological distress across chronic health conditions. Accordingly, future research would benefit from increasing understanding of the underlying mechanisms that link self-compassion and psychological distress and examine the effectiveness of self-compassion interventions in chronic illness populations. Such research would provide insights into the implications of being more self-compassionate in the face of chronic illness difficulties and improve understandings of how to increase self-compassion in order to reduce psychological distress.

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Appendices

Appendix A: Quality Criteria

1. Were the hypotheses/aims/objectives of the study clear?
2. Was the method of obtaining the data clearly described?
3. Were criteria for inclusion in the sample clearly defined?
4. Was the target/reference population clearly defined?
5. Was the sample taken from an appropriate population base so that it closely represented the target/reference population under investigation?
6. Was the selection process likely to select participants that were representative of the target/reference population under investigation (i.e., random sampling)?
7. Were the outcome variables measured using validated and reliable means?
8. Was the independent variable measured using validated and reliable means?
9. Was appropriate statistical analysis used?
10. Were the methods (including statistical methods) sufficiently described to enable them to be repeated?
11. Did the study describe any limitations?

Appendix B: Quality assessment

	Quality criteria											
Author (Year)	1	2	3	4	5	6	7	8	9	10	11	Total
Abdollahi et al. (2020)	1	1	0	1	1	0	1	1	1	1	1	9
Afrashteh & Masoumi (2021)	1	1	1	1	1	0	1	1	1	1	1	10
Baker et al. (2019)	1	1	1	1	0	0	1	1	1	1	1	9
Campbell et al. (2022)	1	1	1	1	0	0	1	1	1	1	1	9
Carvalho et al. (2018)	1	0	1	1	0	0	1	1	1	0	1	7
Carvalho et al. (2020)	1	1	1	1	0	0	1	1	1	0	1	8
Carvalho et al. (2021)	1	1	1	1	0	0	1	1	1	1	1	9
Costa & Pinto-Gouveia (2011)	1	1	1	1	1	0	1	1	1	1	1	10
Davey et al. (2020)	1	1	0	1	1	0	1	1	1	1	1	9
Eccles et al. (2023)	1	1	1	1	0	0	1	1	1	1	1	9
Emmerich et al. (2020)	1	1	1	1	1	0	1	1	0	0	1	8
Friss et al. (2015)	1	1	1	1	1	0	1	1	1	1	1	10
Gedik & Idiman (2020)	1	1	1	1	1	0	1	1	1	1	1	10
Harrison et al. (2017)	1	1	1	1	1	0	1	1	1	1	1	10
Hirsch et al. (2021)	1	1	0	1	1	0	1	1	1	0	1	8
Ho et al. (2022)	1	1	1	1	1	0	1	1	1	1	1	10
Kauser et al. (2021)	1	1	0	1	1	0	1	1	1	1	1	9
Kelliher-Rabon et al. (2021)	1	1	0	1	0	0	1	1	1	1	1	8
Kemppainen et al. (2013)	1	0	0	1	?	0	1	1	1	0	1	6
Kılıç et al. (2022)	1	1	1	1	0	0	1	1	1	1	1	9
Morgenroth et al. (2022)	0	1	0	1	1	0	1	1	1	1	1	8
Morrison et al. (2019)	0	1	1	1	1	0	1	1	1	1	0	8
Ogueji (2021)	1	1	1	1	1	0	1	1	1	1	0	9
O'Loughlin et al. (2020)	1	1	0	1	?	0	1	1	1	0	1	7
Pinto-Gouveia et al. (2014)	1	1	1	1	1	0	1	1	1	0	1	9
Potter et al. (2020)	1	1	1	1	0	0	1	1	1	1	1	9
Purdie & Morley (2015)	1	1	1	1	1	0	1	1	1	1	1	10
Santerre-Baillargeon et al. (2018)	1	1	1	1	0	0	1	1	1	1	1	9
Schellekens et al. (2017)	1	1	1	1	?	?	1	1	1	1	1	9
Sirois & Hirsch (2019)	1	1	0	1	0	0	1	1	1	1	1	8

Sirois et al. (2015)	1	1	1	1	0	0	1	1	1	1	1	9
Skinta et al. (2018)	1	1	1	1	1	0	1	1	1	1	1	10
Snyder et al. (2022)	1	1	1	1	0	0	1	1	1	1	1	9
Stutts et al. (2020)	1	1	1	1	?	?	1	1	1	1	1	9
Tanenbaum et al. (2018)	1	0	1	1	0	0	1	1	1	0	1	7
Trinidade & Sirois (2021)	1	1	0	1	0	0	1	1	1	1	1	8
Van der Donk et al. (2020)	1	1	0	1	1	0	1	1	1	1	1	9
Van der Heide et al. (2021)	1	1	1	1	1	0	1	1	1	1	1	10
Van Niekirk et al. (2022)	0	0	0	1	1	0	1	1	1	0	1	6
Wei et al. (2022)	1	1	1	1	0	0	1	1	1	1	1	9
Williams et al. (2021)	1	1	1	1	1	0	1	1	1	1	1	10
Williamson et al. (2022)	1	1	1	1	0	0	1	1	1	1	1	9
Wren et al. (2012)	1	1	1	1	1	0	1	1	1	1	1	10
Zhu et al. (2020)	1	1	1	1	1	0	1	1	1	1	1	10
Ziemer (2014)	1	1	1	1	1	0	1	1	1	1	1	10

Notes. 1 = Meets criteria, 0 = does not meet criteria, ? = not clear from the paper.

Appendix C: Prisma Checklist

This checklist has been removed due to copyright.

Part II: Empirical Study

An Investigation into the Role of Perceived Stigma and Perfectionism in Common Humanity in Individuals with Inflammatory Bowel Disease

Abstract

Objectives

This study investigated perception of stigma in facial expressions, and the impact of perceived stigma and perfectionism on common humanity, in individuals with Inflammatory Bowel Disease (IBD). It was hypothesised that those shown neutral or negative faces would perceive more stigma and have reduced feelings of common humanity than those shown positive faces. Perfectionistic traits were expected to moderate these effects.

Method

An experimental between-subjects design was employed. Participants were randomised to a positive, neutral, or negative faces condition. They were shown images of facial expressions and indicated whether they believed the person in the image would negatively evaluate them in relation to their IBD, to measure perception of stigmatisation. Pre-task measures of trait perfectionism and self-compassion were completed, and a post-task measure of state common humanity and isolation.

Results

Participants shown neutral and negative faces reported significantly higher levels of perceived stigma than those shown positive faces. Differences in state common humanity and isolation were not observed between the conditions. Non-display of imperfection significantly strengthened the effect of being presented with neutral rather than positive faces on state isolation.

Conclusions

Findings suggest that those with IBD are hypervigilant to negative evaluation. Perceiving faces as stigmatising did not, for the most part, increase momentary feelings of isolation or reduce momentary common humanity. However, stigma may leave those with the desire to conceal imperfection vulnerable to feeling isolated. Future research should use alternative experimental designs to examine the role of stigma and perfectionism in common humanity in IBD populations.

Practitioner points

- Individuals with IBD show hypervigilance to being negatively evaluated. Those experiencing psychological distress may benefit from treatments that target this hypervigilance to improve outcomes.
- Stigma perception did not, for the most part, affect trait common humanity and isolation, however those with a desire to conceal imperfections may be vulnerable to feeling isolated due to stigma perception. Further research is required to understand this relationship and to explore whether cultivating self-compassion has positive implications for those with IBD.

Keywords: 'Inflammatory Bowel Disease', 'common humanity', 'isolation', 'perceived stigma', 'self-compassion', 'perfectionism'.

Introduction

Inflammatory Bowel Disease (IBD) is the collective term for chronic conditions that cause inflammation of the gastrointestinal tract (Crohn's and Colitis UK, 2021; CCUK). The debilitating nature of IBD symptomology means it is associated with anxiety, depression, reduced quality of life and disability (Marinelli et al., 2019; Neuendorf et al., 2016). The stigma felt by those living with IBD as a result of their condition has been linked to an increase in such negative outcomes (Looper & Kirmayer, 2004; Taft et al., 2011; Taft et al., 2009) and maladaptive coping strategies such as illness concealment and social withdrawal (Dibley & Norton, 2013; Hall et al., 2005; Muse et al., 2021).

Research has demonstrated that self-compassion has a positive impact on well-being in IBD populations (Sirois et al., 2015; Trinidade & Sirois, 2021). Neff (2003a; 2007) defines self-compassion as the ability to direct compassion towards oneself in times of suffering and being able to show kindness and understanding in the face of personal shortcomings. One aspect of self-compassion is common humanity; the ability to see pain and failure as part of being human, rather than isolating (Neff, 2003a). Adverse social judgements may leave those with IBD feeling isolated with their difficulties and encourage them to conceal IBD and socially withdraw (Barned et al., 2016; Muse et al., 2021; Taft & Keefer, 2016). Thus, lack of connection may leave them vulnerable to reduced feelings of common humanity, which has been linked to depression in IBD samples (Trinidade & Sirois, 2021). Investigating ways those with IBD perceive others to be making adverse social judgements and how this impacts common humanity, could suggest ways in which common humanity and depression in this population are linked, thus having implications for well-being.

Inflammatory Bowel Disease

The two main types of IBD are Ulcerative Colitis and Crohn’s disease. Both conditions are characterised by stomach pains, rectal bleeding, diarrhoea, and fatigue (Searle & Bennett, 2001; Strober et al., 2007). Anti-inflammatory medications can be used to manage symptoms of both conditions with varying success, and whilst surgery to remove the colon may successfully cure Ulcerative Colitis, Crohn’s disease relapses may still occur following surgery (Fakhoury et al., 2014; Strober et al., 2007). The symptoms of IBD can have a debilitating impact on daily functioning, affecting relationships, employment, and wellbeing (Jones et al., 2019). Furthermore, findings indicate that prevalence of symptoms of anxiety (32.1%) and depression (25.2%) are higher in this population than in healthy controls (Barberio et al., 2021).

Stigma in IBD

Stigma has been defined as ‘a social process… characterized by exclusion, rejection, blame or devaluation that results from experience, perception or reasonable anticipation of an adverse social judgement’ (Scambler, 2009). There are various forms of stigma; perceived stigma is when an individual believes others to hold negative feelings towards them, such as shame or disgust, (Taft & Keefer, 2016), enacted stigma when someone is actually discriminated against in response to their stigmatised condition (Scambler, 2004) and internalised stigma when the individual holds stereotypical attitudes towards their stigmatised condition or trait (Livingstone & Boyd, 2010).

There are a number of potential sources for the stigma people with IBD may experience. The historical perception of IBD being psychosomatic and the concealability of the illness, means others may view the symptoms experienced as not ‘real’ and exaggerated (O’Donnell & Habenicht, 2022; Taft & Keefer, 2016). The taboo nature of the bowel-related symptomology may be an additional source of stigma (Barned et al., 2016; Taft & Keefer, 2016). Research exploring the experiences of those with IBD identified concerns about what others think regarding their symptoms, the belief that others lack understanding about IBD and worries about the social unacceptability of bowel difficulties (Dibley & Norton, 2013; Muse et al., 2021; Polak et al., 2020). This indicates that those living with IBD may believe others to hold negative thoughts and feelings towards IBD. This is supported by research that identifies that those with IBD are more likely to perceive stigma than experience direct acts of stigma (Polak et al, 2020; Taft & Keefer, 2016).

Perceived stigma has been linked to negative outcomes for those with IBD including reduced health-related quality of life, poorer illness related self-efficacy, low self-esteem, anxiety, and depression in those with IBD (Looper & Kirmayer, 2004; Taft et al., 2011; Taft et al., 2009). Members of stigmatised groups may act in line with the perceived adverse attitudes of others to protect themselves from discriminatory experiences (Link, 1987). Indeed, those with IBD report that due to concerns about how others view their condition, they make attempts to conceal their difficulties (Barned et al., 2016) or avoid social contact entirely (Dibley & Norton, 2013; Hall et al., 2005; Muse et al., 2021).

Illness concealment and social withdrawal, however, may have negative consequences for those with IBD. Concealment comes with increased stress due to the possibility of discovery and being viewed negatively for hiding difficulties (Joachim & Acorn, 2000), whereas self-disclosure of illness has been linked to improved illness-related emotional processing and adjustment (Lepore, 2001). Concealment and social withdrawal also lead to increased feelings of isolation (Muse et al., 2021) and reduced access to social support, which has been linked to better health outcomes and psychological adjustment in those living with IBD (Oliveira et al., 2007; Sewitch et al., 2001). Therefore, examination of factors that lead to engagement in these maladaptive ways of coping in those with IBD, may increase understandings of how physical and psychological outcomes can be improved.

The discrepancy between perceived stigma and experienced stigma highlighted in the research, suggests that those with IBD believe others to hold negative thoughts and feelings towards their condition in the absence of discriminatory experiences (Muse et al., 2021; Polak et al., 2020; Taft & Keefer, 2016). Members of stigmatised groups may expect to have aspects of their identity negatively evaluated, resulting in hypervigilance to cues that confirm their expectations (Kaiser et al., 2006; Major & O'Brien, 2005). This extends to facial expressions, with research suggesting that expectation of negative social judgement leads stigmatised individuals to have an increased perception of rejection in the faces of others (Hugenberg & Wilson, 2013; Inzlicht et al., 2008). Given IBD is a stigmatised condition, hypervigilance to cues from facial expressions that they are being negatively evaluated, may result in the those with IBD perceiving stigmatisation in the absence of expressions displaying rejecting emotions.

The Role of Common Humanity in IBD Stigma

Self-compassion is one factor that may have positive implications for those with IBD. Neff (2003a; 2007) defines self-compassion as the ability to direct compassion towards oneself in times of suffering and in the face of personal shortcomings. There are three proposed facets in Neff's conceptualisation. Self-kindness is the ability to show understanding to oneself in the face of difficulty, rather than being self-critical. Common humanity refers to viewing suffering as a necessary and connecting part of the human condition, rather than something isolating and unique to the individual. The mindfulness aspect involves taking a balanced view of negative thoughts and feelings rather than over-identifying with them (Neff, 2003a; Neff, 2003b; Neff, 2007).

Evidence indicates that self-compassion predicts lower depression, anxiety, and stress in IBD populations (Sirois et al., 2015; Trinidade & Sirois, 2021). Feeling isolated with difficulty, and thus an absence of connectedness to others, was a particularly important predictor of depression in this population (Trinidade & Sirois, 2021). Although this link has been demonstrated in adult community samples (Körner et al., 2015), the relationship was stronger when examined in those with IBD, indicating that this population is particularly vulnerable to feeling isolated with their struggles (Trinidade & Sirois, 2021). Those with IBD report concealing their difficulties, socially withdrawing, and feeling more isolated due to the belief that they are being negatively evaluated by others (Barned et al., 2016; Muse et al., 2021; Taft & Keefer, 2016). This could leave them feeling alone with their difficulties and a lack of connection to others, i.e. increased feelings of isolation and reduced common humanity. Therefore, should those with IBD be hypervigilant to cues from facial expressions that they are being negatively evaluated, and perceive facial expressions to be stigmatising, they may experience increased feelings of isolation and reduced common humanity.

The Role of Perfectionism

Perfectionism is considered a multi-dimensional trait, with two overarching factors: Perfectionistic Striving (PS) and Perfectionistic Concerns (PC) (Molnar et al., 2016). Individuals with high PC are concerned about making mistakes, negative evaluation from others and the perceived high expectations of others (Dunkley & Blankstein, 2000; Frost et al., 1993; Stoeber & Otto, 2006). Their focus on gaining others' approval and sensitivity to criticism, means individuals high in PC display interpersonal characteristics and behaviour that leave them vulnerable to social disconnection (Sherry et al., 2016; Stoeber et al., 2017). Related to but distinct from the perfectionism construct is 'perfectionistic self-presentation' (PSP) (Hewitt et al., 2003). Individuals high in PSP are said to engage in perfectionistic behaviours due to a need to appear to be perfect (rather than actually be perfect) in attempts to gain approval from others. Hewitt and colleagues (2003) identify three distinct facets of PSP; self-promotion (displaying perfection), non-display of imperfection and non-disclosure of imperfection (concealing imperfection). These three facets are highly correlated with PC, particularly non-disclosure, suggesting that those who are concerned about making mistakes and perceive others as having high expectations of them, are more likely to try to conceal imperfection and give an impression of perfection (Hewitt et al., 2003).

When symptoms of chronic health difficulties such as pain, impaired functioning, and fatigue are experienced by those high in PC, they may struggle to meet the perceived high standards of others (Molnar et al., 2016). This may result in an increased desire to conceal perceived imperfections, such as symptoms of IBD, and amplification of feelings of social disconnection (Molnar et al., 2016). As previously described, concealment and social disconnection are frequently experienced by those with IBD (Muse et al., 2021) and the resulting feelings of isolation have negative implications for well-being (Trinidade & Sirois, 2021). Indeed, Flett et al. (2011), found that elevated PC and PSP in this population, were associated with increased engagement in maladaptive coping strategies and greater psychosocial and physical impact of IBD. Thus, trait PC and PSP may be particularly detrimental in the context of IBD and increase feelings of isolation.

High PC has also been shown to predict increased hypervigilance to perceived negative evaluation (Shannon et al., 2018), perhaps due to concerns around meeting others' standards (Hewitt & Flett, 1991). Those with high PSP are considered to be similarly concerned with potential negative evaluation and thus, attempt to promote perfectionistic qualities or conceal imperfection (Hewitt et al, 2003). Taken together, in the context of IBD, these perfectionistic traits may amplify hypervigilance to cues of negative evaluation from facial expressions, and thus perceived stigma and the impact this has on common humanity.

The Current Study

Research has indicated that perceived stigmatisation has negative implications for individuals with IBD and that they are hypervigilant to the possibility of negative evaluation. Facial valence tasks have been used to demonstrate that chronically stigmatised individuals perceive negative emotions in neutral faces (Inzlicht et al., 2008; Kaiser et al., 2006; Maner et al., 2005). However, it is unclear whether those with IBD are similarly hypervigilant to such cues and perceive stigmatisation in the absence of expressions displaying rejecting emotions. This is important to understand as it may highlight ways in which stigmatisation can be reduced in IBD populations, improving psychological and physical outcomes. This study therefore aimed to investigate whether individuals with IBD perceive neutral or negative facial expressions as stigmatising. This was examined using an experimental design, in which participants were shown images of positive, neutral, or negative facial expressions and indicated whether they believed the person in the image would negatively evaluate them in relation to their IBD.

Research has also linked the perception of stigma in those with IBD to concealment, social withdrawal and feeling isolated with difficulties (i.e. less common humanity). Reduced common humanity has been linked to psychological distress in IBD, and so understanding factors that may affect this facet of self-compassion may have important implications for wellbeing. Thus, a second aim was to examine the effect of being shown neutral or negative facial expressions on common humanity and isolation in those with IBD.

Individuals with perfectionistic traits have a propensity to be hypervigilant to negative evaluation, conceal imperfections and feel socially disconnected. Understanding how perfectionistic traits influence these difficulties in individuals with IBD is important given the detrimental impact they have on wellbeing for this population. Therefore, a third aim is to understand whether trait PC and PSP in individuals with IBD, increases perception of stigma in negative and neutral faces, increases feelings of isolation and reduces feelings of common humanity.

There is evidence to suggest that females are generally less self-compassionate than males (Neff & Lamb, 2009; Yarnell et al., 2015) which has been replicated within IBD populations (Trinidade & Sirois, 2021). Studies have also indicated that perceived stigma is higher in individuals who have more frequent IBD flare-ups (Taft et al., 2009). Therefore, participant sex and frequency of flare up were selected as covariates in the current study.

Hypotheses

Hypothesis 1: Individuals with IBD who are presented with images of neutral or negative faces, will perceive the faces to be more stigmatising than those presented with images of positive faces.

Hypothesis 2: Individuals with IBD who are presented with images of neutral or negative faces, will feel more isolated and less common humanity than those presented with images of positive faces.

Hypothesis 3: Trait PC and PSP will moderate the effect of being presented with neutral or negative faces, rather than positive faces, on perception of stigma, in that those with higher trait PC and PSP will perceive the neutral and negative faces to be more stigmatising.

Hypothesis 4: Trait PC and PSP will moderate the effect of being presented with neutral or negative faces, rather than positive faces, on feelings of isolation and common humanity, in that those with high trait PC and PSP will feel more isolated and less common humanity.

Methods

Participants

A convenience sample of 195 adults with IBD were recruited. Organisations and charities supporting individuals with IBD were contacted by email and asked to advertise the study on their social media channels, websites, or other platforms. The study was also advertised on Twitter (Appendix A).

Inclusion criteria were adults aged 18 and over, who had a self-reported diagnosis of IBD from their General Practitioner or physician and could read and write in English. To increase confidence that participants did have a diagnosis of IBD, they were asked about the medications they are currently prescribed. This has been used in previous research to screen out individuals who do not have a diagnosis of IBD (Voth & Sirois, 2009). All participants who took part reported taking medications that are prescribed to manage symptoms of IBD.

A priori power analysis was conducted according to Cohen (1992). This was calculated based on between subjects analysis of variance (ANOVA) being the statistical test used. The aim was to attain a medium effect size and a significance level of $\alpha = .05$. To achieve a power of 0.80, $N = 183$ was required, including an additional 15% to account for incomplete or spoiled data. The study fulfilled these requirements.

Data collection took place between September 2022 and February 2023. A total of 286 participants began the survey, 268 consented to take part, 222 completed the pre-task measures and 195 participants completed the task and the post-task measures. Participants who began the survey but had completed less than 80% of any of the key measures were excluded. Four participants were therefore excluded. This resulted in a total of 195 participants being included in the final data set. Participant demographics are presented in Table 1.

Table 1

Demographic data and descriptive statistics of overall sample and by condition

Variable	**Overall sample *N (%)* or mean (SD)**	**Positive condition *N* (%) or mean (SD) *N* = 64**	**Negative condition *N* (%) or mean (SD) *N* = 73**	**Neutral condition *n* (%) or mean (SD) *N* = 58**
Age (*n* = 195, range 19-78 years)	42.49 (13.73)	42.38 (14.84)	42.32 (13.48)	42.83 (12.83)
Sex (*n* = 195)				
Female	152 (77.9)	49 (76.6)	60 (82.2)	43 (74.1)
Male	42 (21.5)	15 (23.4)	12 (16.4)	15 (25.9)
Non-binary	1 (0.5)	0 (0)	1 (1.4)	0 (0)
Ethnicity (*n* = 139)				
White	121 (67.2)	47 (73.5)	54 (74)	30 (51.6)
White/Asian	4 (2.1)	1 (1.6)	1 (1.4)	2 (3.4)
Asian	2 (1)	1 (1.6)	1 (1.4)	0 (0)
Other	2 (1)	1 (1.6)	0 (0)	1 (1.7)
Missing	56 (28.7)	14 (21.9)	17 (23.3)	25 (43.1)
Country (*n* = 195)				
Australia	2 (1)	1 (1.6)	0 (0)	1 (1.7)
Canada	1 (0.5)	0 (0)	1 (1.4)	0 (0)
Europe	3 (1.5)	1 (1.6)	1 (1.4)	1 (1.7)
UK	180 (92.3)	60 (93.8)	68 (93.2)	52 (89.7)
USA	7 (3.6)	2 (3.1)	2 (2.7)	3 (5.2)
Other	2 (1)	0 (0)	1 (1.4)	1 (1.7)

Variable	**Overall sample *N (%)* or mean (SD)**	**Positive condition *N* (%) or mean (SD) *N* = 64**	**Negative condition *N* (%) or mean (SD) *N* = 73**	**Neutral condition *n* (%) or mean (SD) *N* = 58**
Education (*n* = 195)				
Some high school	7 (3.6)	2 (3.1)	3 (4.1)	2 (3.4)
High school graduate	7 (3.6)	1 (1.6)	2 (2.7)	4 (6.9)
Some sixth form	12 (6.2)	3 (4.7)	6 (8.2)	3 (5.2)
Sixth form graduate	15 (7.7)	6 (9.4)	6 (8.2)	3 (5.2)
Some university	22 (11.3)	9 (14.1)	7 (9.6)	6 (10.3)
University graduate	132 (67.7)	43 (62.7)	49 (67.1)	40 (69.0)
Employment status (*n* = 193)				
Full-time	118 (60.5)	33 (51.6)	48 (65.8)	37 (63.8)
Part-time	42 (21.5)	11 (17.2)	18 (24.7)	13 (22.4)
Not employed	11 (5.6)	4 (6.3)	4 (5.5)	3 (5.2)
Retired	16 (8.2)	11 (17.2)	3 (4.1)	2 (3.4)
Disabled/sickness leave	6 (3.1)	3 (4.7)	0 (0.0)	3 (5.2)
Missing	2 (1)	2 (3.1)	0 (0.0)	0 (0.0)
Relationship status (*n* = 194)				
Married/Living with intimate other	134 (68.7)	34 (53.1)	57 (78.1)	43 (74.1)
Separated/Divorced	12 (6.2)	4 (6.3)	4 (5.5)	4 (6.9)
Never married	46 (23.6)	23 (35.9)	12 (16.4)	11 (19.0)
Widowed	2 (1)	2 (3.1)	0 (0.0)	0 (0.0)
Missing	1 (0.5)	1 (1.6)	0 (0.0)	0 (0.0)
Remission status (*n* = 195)				
In remission	103 (52.8)	33 (51.6)	38 (52.1)	32 (55.2)
Active	92 (47.2)	31 (48.4)	31 (48.4)	26 (44.8)

Variable	**Overall sample *N (%)* or mean (SD)**	**Positive condition *N* (%) or mean (SD) *N* = 64**	**Negative condition *N* (%) or mean (SD) *N* = 73**	**Neutral condition *n* (%) or mean (SD) *N* = 58**
Onset of symptoms (*n* = 195)				
0-5 years	43 (22.1)	13 (20.3)	16 (21.9)	14 (24.1)
6-10 years	44 (22.6)	15 (23.4)	21 (28.8)	8 (13.8)
11-20 years	108 (55.4)	36 (56.3)	36 (56.3)	36 (62.1)
Flare up in past year (*n* = 195)				
Yes	128 (65.6)	42 (65.6)	50 (68.5)	36 (62.1)
No	67 (34.4)	22 (34.4)	23 (31.5)	22 (37.9)
Length of most recent flare up (*n* = 194)				
Less than 2 weeks	33 (16.9)	13 (20.3)	13 (17.8)	7 (12.1)
2-6 weeks	54 (27.7)	15 (23.4)	19 (26.0)	20 (34.5)
7-10 weeks	26 (13.3)	8 (12.5)	9 (12.3)	9 (15.5)
11-20 weeks	28 (14.4)	8 (12.5)	11 (15.1)	9 (15.5)
More than 20 weeks	53 (27.2)	20 (31.3)	21 (28.8)	12 (20.7)
Missing	1 (0.5)	0 (0.0)	0 (0.0)	1 (1.7)
Frequency of flare ups (*n* = 191)				
Less than once per year	90 (46.2)	28 (43.8)	37 (50.7)	25 (43.1)
Once per year or more	101 (51.8)	35 (54.7)	34 (46.6)	32 (55.2)
Missing	4 (2.1)	1 (1.6)	2 (2.7)	1 (1.7)
Taking prescribed medication (*n* = 195)				
No	55 (28.2)	21 (32.8)	19 (26.0)	15 (25.9)
Yes	140 (71.8)	43 (67.2)	54 (74.0)	43 (74.1)

Materials

Reliability Checks

Cronbach’s alpha (α) was used to calculate the reliability of the measures used in the current study. The recommendations of George and Mallery (2003) were applied when interpreting Cronbach’s alpha: <0.50 indicates unacceptable, 0.50-0.59 indicates poor, 0.60-0.69 indicates questionable, 0.70-0.79 indicates acceptable, 0.80-0.89 indicates good and >0.90 indicates excellent.

Demographic and Clinical Information Questions

A demographic questionnaire was provided to gather data regarding age, gender, ethnicity, country of residence, education level, employment status and marital status. Items regarding frequency and length of flare-ups and prescribed medications were also included (Appendix B).

Perfectionistic Concerns (PC)

The Multi-dimensional Perfectionism Scale Short (MPS Short; Hewitt et al., 2008; Appendix C) is a 15-item version of Hewitt and Flett’s 45-item MPS (Hewitt & Flett, 1991). All three subscales were presented (socially prescribed, self-orientated, and other-orientated perfectionism), with the socially prescribed subscale used to measure PC specifically. Responses are provided on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Five items are reverse scored. Higher scores on the socially prescribed subscale indicate greater trait PC. Stoeber (2018) reported internal consistency was acceptable (α = .75) for the socially prescribed perfectionism subscale, good (α = .86) for the self-orientated subscale and acceptable (α = .75) for the other-orientated subscale. In the current study, Cronbach’s alpha indicated that internal consistency was good (α = .84) for the socially prescribed subscale, excellent (α = .91) for the self-orientated subscale and acceptable (α = .70) for the other-orientated subscale.

Perfectionistic Self-presentation (PSP)

The Perfectionistic Self-Presentation Scale (PSPS; Hewitt et al., 2003; Appendix D), consists of 27 items and three subscales measuring perfectionistic self-promotion, non-display of imperfection and non-disclosure of imperfection. Responses are provided on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Five items are reverse scored. Higher scores represented higher PSP. Hewitt et al. (2003) reported internal consistency was good (α = .86) for the self-promotion subscale, good (α = .83) for the non-display of imperfection subscale, and acceptable for the non-disclosure of imperfection subscale (α = .78). In the current study, Cronbach's alpha indicated that internal consistency was excellent for the self-promotion (α = .920) and non-display (α = .921) subscales and good for the non-disclosure subscale (α = .960).

Trait Self-Compassion

The Self-Compassion Scale (SCS; Neff, 2003a; Appendix E) consists of 26 items and measures the three aspects of self-compassion, including common humanity versus isolation. Responses are provided on a Likert scale ranging from 1 (not at all true for me) to 5 (very true for me). Four items are reversed scored. A high score indicates high self-compassion. Neff (2003a) reported internal consistency was excellent (α = .92) for the overall measure, good (α = .80) for the common humanity subscale and adequate (α = .79) for the isolation subscale. In the current study, Cronbach's alpha test indicated that internal consistency was excellent (α = .95) for the overall scale, good (α = .82) for the common humanity subscale and good (α = .85) for the isolation subscale.

Facial evaluation task

The facial evaluation task consisted of four images of actors displaying either a positive, neutral, or negative facial expression corresponding to the participants' condition (Appendix F). The images of the faces were retrieved from the FACES database (Ebner et al., 2010); an online database of validated images of actors displaying different facial expressions. For the purposes of this study, faces categorised as 'middle-aged' were selected. Images depicting 'neutrality' were shown in the neutral faces condition and images depicting 'happiness' were depicted in the positive faces condition. Images depicting 'disgust' or 'anger' were shown in the negative faces condition. Disgust was selected due to it being a response to infection or disease (Kurzban & Leary, 2001; Tybur et al., 2009) and anger was selected due to it being a response to the perception that illness symptoms are self-inflicted or exaggerated (Dijker & Kooman, 2003).

Alongside each image was a written description of who the individual in the image was, and five statements asking the participant to indicate whether they believed the person in the image would negatively evaluate them in relation to their IBD, to measure perception of stigma. Responses are provided on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Two items are reversed scored. A high score indicates more perceived stigma. These questions were developed based on qualitative literature regarding perceived stigma in IBD and partly informed by the Perceived Stigma Scale in Irritable Bowel Syndrome (PSS-IBS; Jones et al., 2009) which was validated for use with IBD by Taft et al. (2009). An additional question asked why participants responded to the five statements as they did.

Cronbach's alpha of the measure was calculated for each condition; this indicated that internal consistency was adequate to good for the positive, negative, and neutral male conditions ($\alpha = .802$; $\alpha = .868$; $\alpha = .790$ respectively) and adequate to excellent for the positive, negative, and neutral female conditions ($\alpha = .871$; $\alpha = .918$; $\alpha = .783$ respectively).

Cronbach's alpha could not be calculated for the non-binary conditions as there was only one non-binary participant. To ascertain whether any individual question negatively contributed to the reliability of the measure, the mean score across the sample for each question was calculated and analysed for internal consistency. No single item appeared to negatively impact the Cronbach's alpha.

State Common Humanity and Isolation:

The State Self-Compassion Scale – Long form (SSCS-L; Neff et al., 2021; Appendix G) is an 18-item measure of state self-compassion. In the current study, only the items pertaining to the 'common humanity' and 'isolation' subscales were completed (six items in total). The individual subscales have demonstrated good reliability (common humanity, α = .84; isolation, α = .83) and can be used independently of each other (Neff et al., 2021). In the current study, Cronbach's alpha indicated that internal consistency was acceptable (α = .78) for common humanity and good for (α = .86) for isolation.

Procedures

Prior to the commencement of data collection, Crohn's and Colitis UK advertised a request for individuals with IBD to provide feedback on the value of the study, the acceptability of the facial evaluation task and stigma questions and the accessibility of the survey. The feedback deemed the study could have valuable implications for those with IBD and that generally the wording of the stigma questions and length of the survey were appropriate. One individual raised concerns regarding use of the word 'normal' in the stigma questions, however this was retained due to findings from the qualitative literature.

This study was approved by the University of Sheffield's Psychology Department Research Ethics committee (Appendix H). Prior to taking part, participants were provided with an information sheet (Appendix I) and consent questions (Appendix J). Following completion of the survey, participants were linked to a debriefing statement (Appendix K) which provided a more detailed explanation of the purpose of the study, guidance on where to seek support if needed and means to contact the researcher to discuss any concerns about the study. A data management plan (Appendix L) was created to ensure appropriate management and storage of data.

A quantitative methodology was implemented for an experimental, single blinded, between-subjects design. The protocol for this study was registered on the Open Science Framework (https://osf.io/6wdgz/). Participants completed an online survey, via the Qualtrics platform (https://www.qualtrics.com). Recruitment advertisements included a link that took participants to the Qualtrics survey, where they were able to view the information sheet and provide their consent to take part before answering eligibility questions. Participants that did not consent or meet inclusion criteria were thanked for their time and exited from the survey.

Participants who provided their consent and met inclusion criteria were presented with the demographic questionnaire, followed by the MPS-short, the PSPS and the trait SCS. Participants were randomly allocated by Qualtrics into one of three conditions: positive faces condition (control condition), neutral faces condition (experimental condition 1) or negative faces condition (experimental condition 2). Participants completed the facial evaluation task, where they were presented with the images of faces one at a time. Participants were presented with either male, female or a mixture of male and female faces depending on whether they identified as male, female, or non-binary respectively. They were asked to indicate to what extent they agreed with the five statements presented alongside each of the images and subsequently briefly explain what led them to answer in this way.

All participants then completed the state common humanity and isolation subscales of the SSCS-L. They subsequently took part in a short mood neutralisation task, which asked them to briefly describe an experience where they felt someone was supportive towards them in relation to their IBD. Participants were then provided with a link to the debriefing statement, where they were given the opportunity to enter the prize draw to win a £50 (or equivalent currency) Amazon voucher as a thank you for their participation. Identifiable information was destroyed upon completion of the research (June 2023).

Analyses

Data analysis was conducted using Statistical Package for the Social Sciences (SPSS, Version 29). Descriptive statistics were run to identify missing data. Where participants completed less than 80% of any specific measure, they were excluded from the analysis. Data were also inspected for outliers and normality. Item scores were converted into z-scores and where standardised scores were greater than 3.29, they were considered outliers (Tabachnick & Fidell, 2001). Skewness and Kurtosis values were inspected, with normality being assumed where values fell within ±2. Descriptive statistics were calculated for all demographic and outcome variables. A randomisation check was conducted using multiple one-way analyses of variances (ANOVA), to test whether there were differences in trait self-compassion, trait PC and PSP between the conditions.

Between group comparisons were conducted to investigate whether individuals with IBD perceived neutral and negative faces as more stigmatising than positive faces. As between group differences were hypothesised, a one-way ANOVA with *a priori* contrasts between conditions was conducted, to compare differences in the mean perceived stigma scores between the conditions. A one-way analysis of covariance (ANCOVA) was conducted to determine the effect of condition (positive, neutral, or negative) on perceived stigma scores, controlling for gender and frequency of flare up.

Between group comparisons were conducted to investigate whether individuals with IBD who are presented with neutral or negative facial expressions would feel less common humanity and more isolation than those in the positive face conditions. As between group differences were hypothesised, two one-way ANOVAs with *a priori* contrasts between conditions were conducted, to compare differences in the mean common humanity and isolation scores between the conditions. Two one-way ANCOVAs were conducted to determine the effects of condition (positive, neutral, or negative) on common humanity and isolation, controlling for gender and frequency of flare up. Levene's test of homogeneity of variance was conducted alongside all ANOVAs and where homogeneity of variance was violated, Welch's robust test of equality of means was conducted.

To test whether PC or PSP moderated the effect of condition on stigma perception, state common humanity and state isolation, a series of moderator regression analyses were run using the PROCESS macro add-on for SPSS (version 4.2; Hayes, 2022). In the first model, condition was the categorial independent variable, perceived stigma was the dependent variable and PC and PSP were moderators. In the second model, condition was the categorial independent variable, state common humanity was the dependent variable and perfectionistic concerns and the desire to appear perfect were moderators. In the third model, condition was the categorial independent variable, state isolation was the dependent variable and perfectionistic concerns and the desire to appear perfect were moderators.

A brief thematic analysis, based on Braun and Clarke's (2006) method was conducted for the qualitative data gathered in response to the question '*why did you answer questions 1-5 in this* way' from the stigma questionnaire. Firstly, the author familiarised themselves with the data and generated initial codes. These codes were then combined to establish themes. Themes were subsequently reviewed and refined. A second researcher (a Trainee Clinical

Psychologist) checked the codes and themes. Discrepancies were resolved through discussion and potential biases considered.

Results

Preliminary analysis

Two participants missed a single item on one measure. Little's Missing Completely at Random (MCAR; Little, 1988) test was conducted which was non-significant. Thus, this data was assumed to be missing at random. Linear interpolation was used to impute values, a method recommended when the amount of missing data is small (Noor et al., 2014). One outlier within the overall dataset was identified. This item was not removed as there was not clear evidence that the outlier was not legitimate (Osborne & Overbay, 2004). All data fell within ±2 for both skewness and kurtosis, which was supported through visual inspection of histograms (Appendix M). One-way ANOVAs were not significant suggesting that the three groups were equal on overall trait self-compassion, trait common humanity, trait isolation, PC and the three aspects of PSP (Table 2).

Table 2

Means, Standard Deviations, and ANOVA statistic for study variables

Variable	**Overall sample mean (SD)**	**Positive faces mean (SD) *N* = 65**	**Neutral faces mean (SD) *N* = 58**	**Negative face mean (SD) *N* = 73**	***F*(2, 192)**
Perfectionistic concerns	17.84 (6.72)	17.88 (7.05)	17.71 (6.54)	17.90 (6.65)	0.02
Perfectionistic self-promotion	41.08 (13.18)	39.97 (12.54)	39.85 (12.86)	43.04 (13.89)	1.30
Non-display of imperfection	45.26 (13.28)	45.48 (12.99)	43.05 (12.69)	48.81 (13.92)	1.31
Non-disclosure of imperfection	24.40 (8.55)	23.98 (8.05)	24.36 (8.77)	24.79 (8.90)	0.15
Trait self-compassion	2.69 (0.77)	2.65 (0.76)	2.79 (0.78)	2.63 (0.77)	0.73
Trait common humanity	3.04 (0.93)	3.09 (0.94)	3.16 (0.99)	2.91 (0.87)	1.27
Trait isolation	2.52 (1.01)	2.47 (1.00)	2.63 (1.04)	2.47 (1.00)	0.49
Perceived stigma	3.24 (0.50)	3.01 (0.39)	3.20 (0.36)	3.47 (0.57)	15.56***
State common humanity	3.16 (0.97)	3.21 (0.93)	3.22 (1.04)	3.06 (0.95)	0.54
State isolation	2.52 (1.01)	2.47 (1.00)	2.63 (1.04)	2.47 (1.00)	0.49

*** $p<.001$

Hypothesis 1: Are neutral and negative faces perceived as more stigmatising than positive faces?

The one-way ANOVA revealed a significant difference in perceived stigma between conditions ($F(2, 192) = 17.43$, $p<.001$), however, Levene’s test of homogeneity of variance was significant ($p<.001$), thus the null hypothesis that variance between groups was homogenous was rejected. Welch’s robust test of equality of means was therefore reported, which also revealed a significant difference in perceived stigma between conditions (Table 2).

One-way ANOVA *a priori* contrasts between the conditions revealed that perceived stigma for the negative faces condition was significantly higher than perceived stigma for both the positive (*t* (128.16) = -5.57, *p* < .001) and neutral (*t* (123.23) = 3.27, *p* = .001) faces conditions. Perceived stigma was also significantly higher for the neutral faces condition than the positive faces condition (*t* (119.98) = -2.85, *p* = .005).

The one-way ANCOVA revealed that the difference between conditions remained relatively unchanged after controlling for both participant sex and frequency of flare up (*F*(2, 186) = 17.17, *p*<.001). Sex (*F*(1, 186) = 0.024, *p* = 0.878) nor frequency of flare up (*F*(1, 186) = 0.475, *p* = 0.491) had a significant effect on perceived stigma score. Therefore, the results are reported based on the unweighted means.

Hypothesis 2: Does being shown negative or neutral faces lead to reduced momentary common humanity and increased isolation, in comparison to being shown positive faces?

The one-way ANOVA revealed there was no significant difference in state common humanity between conditions (Table 2). Levene’s test of homogeneity of variance was not significant (*p* = .451), thus homogeneity of variance was assumed. *A priori* contrasts between the groups were also not significant. The one-way ANCOVA revealed that the difference remained non-significant (*F*(2, 186) = 0.73, *p* = .481) whilst controlling for frequency of flare up and participant sex. The effects of sex (*F*(1, 186) = 0.50, *p* = .480) and frequency of flare up (*F*(1, 186) = 3.56, *p* = .061) were also non-significant.

The one-way ANOVA revealed that there was not a significant difference in state isolation between conditions (Table 2). Levene’s test of homogeneity of variance was not significant (*p* = .997), thus homogeneity of variance was assumed. *A priori* contrasts between the conditions were also not significant. The one-way ANCOVA revealed that the difference remained non-significant (*F*(2, 186) = 0.52, *p* = .595) whilst controlling for frequency of flare up and participant sex. The effect of sex was also non-significant (*F*(1, 186) = 0.00, *p* = .986), however, there was a significant effect of frequency of flare up (*F*(1, 186) = 4.30, *p* = .040).

Hypothesis 3: Does PC and PSP moderate the effect of being shown negative or neutral faces on perception of stigma?

PC did not moderate the effect of being presented with positive versus neutral faces on perceived stigma. PC also did not moderate the effect of being presented with positive versus negative faces on perceived stigma. None of the facets of PSP moderated the effect of being presented with positive versus neutral faces on perceived stigma. None of the facets of PSP moderated the effect of being presented with positive versus negative faces on perceived stigma (Table 3).

Table 3

Moderating effects of PC and PSP on the effect of condition on perceived stigma, state common humanity and state isolation

	Perceived stigma		**State common humanity**		**State isolation**	
Variable	**Positive vs Neutral condition**	**Positive vs Negative condition**	**Positive vs Neutral condition**	**Positive vs Negative condition**	**Positive vs Neutral condition**	**Positive vs Negative condition**
Perfectionistic concerns	*β* = -.0092 SE = 0.12 *p* = .448	*β* = -.0035 SE = 0.11 *p* = .755	*β* = -.0056 SE = 0.02 *p* = .818	*β* = .0180 SE = 0.02 *p* = .431	*β* = -.0234 SE = 0.03 *p* = .404	*β* = .0228 SE = 0,03 *p* = .384
Perfectionistic self-promotion	*β* = -.0023 SE = .01 *p* = .713	*β* = .0001 SE = 0.01 *p* = .988	*β* = -.0032 SE = 0.01 *p* = .803	*β* = -.0086 SE = 0.01 *p* = .461	*β* = -.0203 SE = 0.01 *p* = .170	*β* = -.0047 SE = 0.01 *p* = .729
Non-display of imperfection	*β* = .0011 SE = .0062 *p* = .8544	*β* = .0032 SE = 0.0056 *p* = .5932	*β* = -.0166 SE = 0.01 *p* = .177	*β* = -.0101 SE = 0.01 *p* = .363	*β* = -.0297 SE = 0.01 *p* = .041	*β* = -.0166 SE = 0.01 *p* = .205
Non-disclosure of imperfection	*β* = -.0075 SE = 0.0091 *p* = .4107	*β* = .0001 SE = 0.0086 *p* = .9898	*β* = -.0095 SE = .02 *p* = .619	*β* = -.0057 SE = .02 *p* = .752	*β* = -.0130 SE = 0.02 *p* = .559	*β* = -.0023 SE = 0.02 *p* = .914

Hypothesis 4: Does PC and PSP moderate the effect of being shown negative or neutral faces on feelings of common humanity and isolation?

The non-display of imperfection facet of PSP strengthened the effect of being shown neutral rather than positive faces on state isolation. Simple slope analyses indicated that the effect was positive and non-significant at low levels of non-display of imperfection (i.e. 1 SD below the mean), *β* = 0.08, SE = 0.25, p = .760, negative and non-significant at the mean non-display of imperfection score, *β* = -0.316, SE = 0.18, p = .089, but negative and significant at high levels of non-display of imperfection (i.e. 1 SD above the mean), *β* = -0.71, SE = 0.28, p = .011.

Non-display of imperfection did not moderate the effect of being presented with positive versus neutral faces on state common humanity. Non-display of imperfection did not moderate the association between being presented with positive versus negative faces and state common humanity or state isolation (Table 3).

The perfectionistic self-promotion and non-disclosure of imperfection facets of PSP did not moderate the effect of being presented with positive versus neutral faces on state common humanity or state isolation. Nor did they moderate the effect of being presented with positive versus negative faces on state common humanity or state isolation (Table 3).

PC did not moderate the effect of being presented with positive versus neutral faces on state common humanity or state isolation. PC also did not moderate the effect of being presented with positive versus negative faces on state common humanity or state isolation (Table 3).

Qualitative Analysis

Four themes were found in the qualitative data exploring participants' reasons for their responses to the stigma questions through the thematic based analysis:

1. *Features of faces indicate trustworthiness*: Many participants identified details of the facial expression that meant they felt more or less able to trust the individual with information regarding their IBD. For example, participants in the neutral and negative conditions identified that facial expressions were 'stoney', 'stern' and 'lack[ed] warmth', which meant they were less able to 'trust' the person in the image. Similarly, participants in both the positive and neutral conditions identified details of the facial expressions that meant they felt more able to share information, for example, "*he's almost smiling… looks almost sympathetic*" and "*person has nice open face*".

2. *Inability to judge trustworthiness:* many participants shared that they found it difficult to judge someone's ability to understand and respond effectively to information regarding their IBD based on their appearance as they would be *"making sweeping assumptions"*.
3. *Sharing diagnosis once trustworthiness is established:* many participants shared that they could only share information about their IBD once trust had been established. For example, "*I don't trust anyone when I first meet them. I have to get to know them before I let down my guard".* Some reflected that sharing information can be damaging and therefore sharing with others was a difficult decision.
4. *Age of faces*: Some participants indicated that age plays a factor in how likely they are to feel able to be open about their IBD with some commenting that younger people are more understanding about the difficulties someone with IBD may face. For example *"people of an older generation tend to make me feel uncomfortable when I open up about my Ulcerative Colitis as they don't feel someone my age could be so sick"*.

Discussion

This study examines perception of stigma in facial expressions in an IBD population, how this impacts common humanity and whether these effects are strengthened by PC and PSP, using an experimental design. In support of the hypothesis, those presented with images of neutral or negative facial expressions, perceived the faces to be more stigmatising than those presented with images of positive facial expressions. The perception of the neutral faces suggests that those with IBD are hypervigilant to the possibility of being negatively evaluated and feel stigmatised in the absence of expressions displaying rejecting emotions. In contrast to what was hypothesised, those who were presented with neutral or negative faces did not report lower momentary feelings of common humanity, or increased momentary feelings of isolation, than those that were presented with positive faces, despite perceiving them as more stigmatising. This suggests that feelings of connectedness to others and isolation in those with IBD are not immediately affected by perceived negative evaluation. Contrary to hypotheses, those higher in trait PC and PSP did not perceive the neutral and negative faces as more stigmatising. In partial support of the hypothesis, non-display of imperfection did have a moderating effect on being presented with neutral rather than positive faces, with participants who reported a greater desire to conceal imperfection and who were shown neutral faces, reporting more momentary isolation than those who were shown positive faces. Being higher in trait PC and the other facets of PSP, however, did not moderate this effect.

The findings of this study are in line with previous research that highlighted those with IBD are concerned that others hold adverse beliefs about their condition and may respond negatively to difficulties those with IBD experience (Muse et al., 2021; Polak et al., 2020; Taft & Keefer, 2016). It also extends the findings from previous research, that indicates stigmatised groups perceive negative evaluation in facial expressions more readily, to those with IBD (Inzlicht et al., 2008; Maner et al., 2005).

The perception of stigma in facial expressions, however, did not impact momentary feelings of common humanity or isolation. A potential explanation for this finding could be the nature of the facial evaluation task. Previous findings have indicated that perceiving stigma encourages those with IBD to conceal their illness and socially withdraw (Barned et al., 2016; Muse et al., 2021; Taft & Keefer, 2016). It could be that the use of these maladaptive coping strategies in response to the perception of stigma, rather than the perception of stigma itself, leads to feelings of isolation. Further research is thus required to understand how these coping strategies impact common humanity and isolation in IBD populations.

Furthermore, a singular experience of perceiving stigma via a hypothetical scenario, may not have been sufficient to induce feelings of isolation and reduce common humanity. The identity threat model of stigma (Major & O’Brien, 2005) proposes that various factors influence how detrimental to an individual’s wellbeing a stigma event is, including the degree of threat posed by the situation. The hypothetical nature of the task in this study would likely have been deemed a low threat to the participants. Although they may have judged the neutral and negative faces to be making negative evaluations, this perception was not sufficient to impact how isolated they felt. This is supported by the qualitative data which revealed mixed findings. Participants highlighted facial features of the neutral and negative faces as possible reasons for believing that the person in the image would make adverse social judgements in response to their IBD. However, they also reported that it was difficult to make judgements about an individual based on an image of their face alone and highlighted the importance of developing a relationship with someone to decide how trustworthy they are. This suggests that although participants evaluated negative and neutral faces as stigmatising, a relationship with the person making the adverse judgement would be needed to impact how connected or isolated they felt in response.

The nature of the task may also explain why PC nor, for the most part, PSP strengthened the effects of the facial expression evaluation task on stigma perception and momentary feelings of common humanity and isolation. Those with trait PC and PSP may not have felt the same level of expectation from an image that they would in a real-life interaction.

Participants with a stronger desire to hide imperfections and who were shown neutral faces, however, reported more momentary isolation than those who were shown positive faces. This finding may have been present in this facet of PSP and not the others, due to different focuses of attention when attempting to present the self as perfect. Given individuals who avoid displaying imperfection are concerned with how they appear and are keen to avoid scrutiny (Hewitt et al., 2003), they may be more reliant on cues from facial expressions that they are being judged for displaying flaws than those who avoid verbally revealing imperfection, who may be more focused on verbal interactions. Those who avoid displaying imperfection are also considered to be more motivated by a desire for acceptance than those who attempt to promote themselves as perfect (Hewitt et al., 2003). A desire to belong has been linked to increased attention to emotions in facial expressions (Pickett et al., 2004). Thus, those who want to avoid displaying imperfection may be more vigilant to potential scrutiny and rejection in facial expressions. The feeling that they are not being accepted by those with neutral faces may have then led to these participants feeling more alone. These findings suggest that the desire to conceal imperfection may leave individuals with IBD vulnerable to feeling isolated with difficulties, as a result of how they perceive facial expressions.

The desire to hide imperfection did not lead those who were shown negative rather than positive faces to feel more isolated, however. This may be due to the more obviously threatening nature of the negative faces. Some research has demonstrated an attentional bias away from threatening faces as an emotional regulation strategy. This same avoidance was not found for neutral faces (Bradley et al., 1997; Ehrlich et al., 2015), and there is evidence to suggest that neutral faces take longer to process and involve higher levels of cognitive functioning than faces showing emotion (Carvajal et al., 2013). Thus, processing neutral faces may have required more attention and cognitive resources, resulting in more negative emotion and an increased feeling of isolation.

Strengths and limitations

The findings should be interpreted in light of several strengths and limitations. The sample comprised of individuals across adulthood (Mean age: 42.49, range

: 19-78), thus increasing the validity and generalisability of the findings. The online nature of the study and the measures used were selected to reduce participant burden, an important consideration in research involving individuals with chronic illness (Noor et al., 2021).

Opportunity sampling, however, is susceptible to selection bias. This perhaps meant that certain populations were less able to participate in the research, for example, individuals with more debilitating symptoms and those without access to the internet (Gosling & Mason, 2015). Similarly, the sample was predominantly white females from the UK. Whilst this is not uncommon in IBD research (Cohen et al., 2022), the findings of this study may be more applicable to this group. Overall, these sampling limitations mean the generalisability of the findings is reduced.

A further recruitment limitation was that it was not possible to confirm participants had a diagnosis of IBD. However, this drawback was ameliorated through asking participants to confirm what medication they have been prescribed for IBD, a strategy that has been used in previous studies to increase confidence of diagnosis (Voth & Sirois, 2009). The majority of those who took part in this study, confirmed current or prior prescription of medications used to alleviate IBD symptomology. Furthermore, studies have demonstrated that self-report of IBD diagnosis is a reliable method of identifying eligible participants (Randell et al., 2014).

The use of an experimental design meant that stigma perception in those with IBD could be operationalised through use of a facial evaluation task. There are however limitations to this design. The task was hypothetical in nature and thus perhaps not sufficiently stigma-inducing to elicit feelings of isolation and reduce common humanity. Furthermore, the absence of a comparison group means that it is not possible to conclude from this study that the evaluations of the neutral faces is specific to those with IBD, or whether adults from the general population would make similar evaluations of these faces.

Clinical Implications and Recommendation for Future Research

Psychological therapies may help individuals with IBD cope more effectively in response to perceived negative judgement. For example, Cognitive Behavioural Therapies (CBT) have demonstrated efficacy in increasing the use of positive coping strategies, such as reframing negative thoughts, and reducing self-criticism in response to stigma (Tong et al., 2020; Tshabalala & Visser, 2011). This may help individuals with IBD use less maladaptive coping strategies such as concealment and isolation, that have been linked to poorer outcomes (Taft & Keefer, 2016). Treatments that reduce hypervigilance to perceived threats may also be beneficial. Social anxiety research indicates that attention training that encourages focus on non-threatening rather than threatening cues can help reduce hypervigilance to social threat (Bögels & Mansell, 2004). Those with IBD may therefore benefit from similar interventions that aim to reduce the sense of threat felt in the absence of discrimination.

Increased self-compassion has been associated with reduced psychological distress in IBD populations (Sirois et al., 2015; Trinidade & Sirois, 2021). This study did not, for the most part, find a link between increased stigma perception and the common humanity facet of self-compassion. However, future research would benefit from replicating the current study using a more true-to-life task that mimics a face-to-face social interaction, to further explore the links between stigma, perfectionism and common humanity. Such research may have implications for the use of therapies that have a self-compassion enhancing component such as Acceptance and Commitment Therapy (ACT) and Compassion Focused Therapy (CFT), in IBD populations and those with perfectionistic traits.

Depression has been linked to increased stigma perception through a heightened propensity to attend to negative interpersonal stimuli (Gotlib et al., 2004). Thus, it is important that clinicians working with individuals with IBD are alert to any depressive symptomology, such as maladaptive thinking styles, that reinforce the individual's beliefs that they are being negatively judged. This study did not measure depression levels in the sample; however, high depression levels may have led to the faces being perceived more negatively. Given the links between increased isolation and depression in those with IBD (Trinidade & Sirois, 2021), depression may have also impacted common humanity and isolation following the facial evaluation task. Thus, future research should consider whether IBD samples with depression perceive facial expressions as more stigmatising, and also whether these samples report reduced feelings of common humanity and increased feelings of isolation following stigma perception.

Perceived stigma in healthcare settings has been linked to treatment dropout and avoidance in various stigmatised populations including individuals with mental health difficulties (Gulliver et al., 2010; Sirey et al., 2001) and breast cancer (Pakseresht et al., 2021). Therefore, clinicians working with individuals with IBD should be aware of the potential impact of perceived stigma on treatment dropout and take measures to reduce the risk of patients viewing them as stigmatising.

Conclusions

Theory and research have indicated that perception of stigma and perfectionistic traits may have a role in reducing feelings of common humanity in those with IBD. However, whether those with IBD perceive facial expressions as stigmatising, how this is influenced by perfectionistic traits, and the impact this has on feelings of common humanity, has not previously been investigated. The study supports and extends previous findings that suggest IBD populations are hypervigilant to the possibility they are being negative evaluated. For the most part, perceiving facial expressions as stigmatising did not affect feelings of common humanity and isolation in this sample. The desire to conceal imperfection, however, may leave individuals with IBD vulnerable to feeling isolated, as a result of how they perceive facial expressions. Further research is required to understand whether social interactions that lead to the perception of stigmatisation negatively impact common humanity in those with IBD. This research indicates that perceived stigma would be useful for clinicians to consider during assessment, formulation, and intervention of individuals with IBD presenting with psychological distress.

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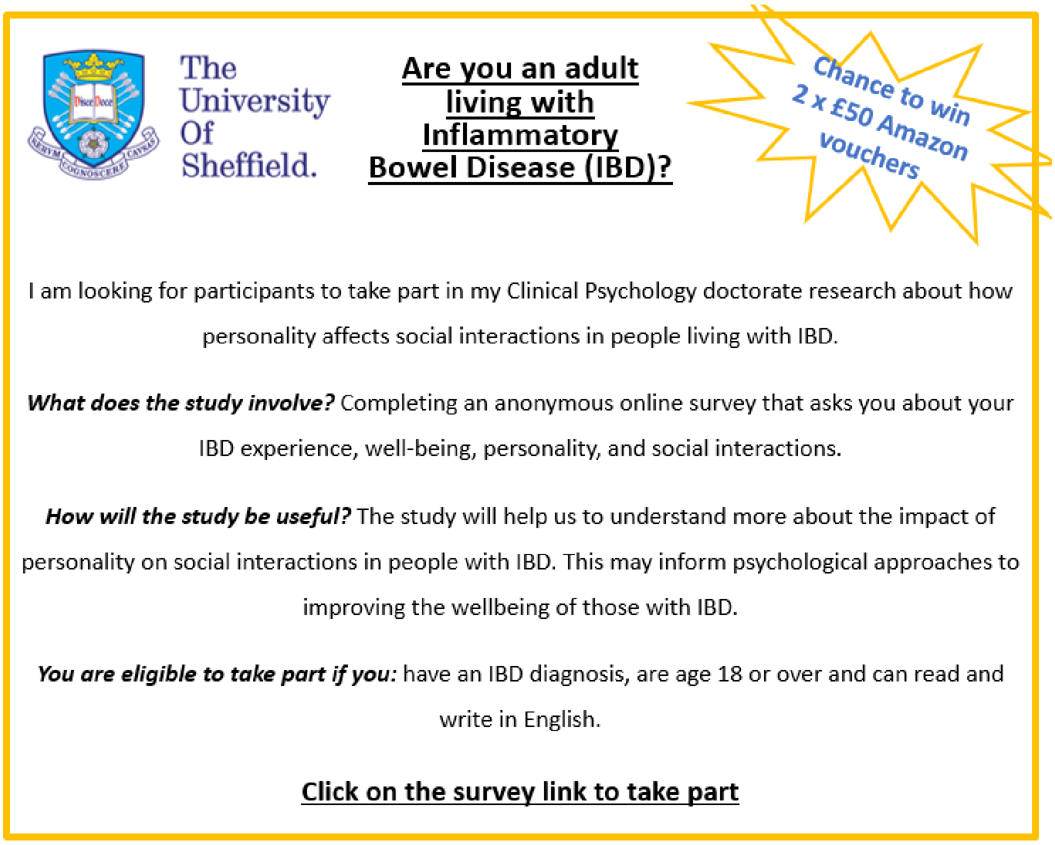
Appendices

Appendix A: Study advert



The University Of Sheffield.

Are you an adult living with Inflammatory Bowel Disease (IBD)?

Chance to win 2 x £50 Amazon vouchers

I am looking for participants to take part in my Clinical Psychology doctorate research about how personality affects social interactions in people living with IBD.

What does the study involve? Completing an anonymous online survey that asks you about your IBD experience, well-being, personality, and social interactions.

How will the study be useful? The study will help us to understand more about the impact of personality on social interactions in people with IBD. This may inform psychological approaches to improving the wellbeing of those with IBD.

You are eligible to take part if you: have an IBD diagnosis, are age 18 or over and can read and write in English.

Click on the survey link to take part

Appendix B: Demographic questionnaire

Age:

☐

Sex:

☐ Male ☐ Female ☐ Non-binary

Which best describes your ethnicity?

White

☐ English/ Welsh/ Scottish/ Northern Irish/ British
☐ Irish
☐ Any other White background, please specify: ________________________________
☐ Gypsy or Irish Traveller

Mixed/multiple ethnic groups

☐ White and Black Caribbean
☐ White and Asian
☐ Any other mixed/multiple ethnic background, please specify:____________________
☐ White and Black African

Asian/Asian British

☐ Indian
☐ Bangladeshi
☐ Any other Asian background, please specify: ________________________________
☐ Pakistani
☐ Chinese

Black/African/Caribbean/Black British

☐ African
☐ Any other Black/African/Caribbean background, please specify:_________________
☐ Caribbean

Other ethnic group:

☐ Arab
☐ Any other ethnic group, please specify:_______________________________________

In what country/continent do you currently live?

☐ United Kingdom
☐ Europe
☐ Canada
☐ USA
☐ Australia
☐ South America
☐ Other (please list) ______________________________________

Which best describes your highest level of education?

☐ some high school
☐ High school graduate
☐ some sixth form
☐ Sixth form graduate
☐ Some university
☐ University graduate

Which best described your current employment status?

☐ full-time
☐ part-time
☐ Unemployed
☐ retired
☐ Disabled/Sickness leave

Which best describes your marital status?

☐ Single
☐ Married / partner
☐ Divorced/separated
☐ Widowed

Clinical information

Which best describes your remission status?

☐ In remission
☐ Active

How long have you had symptoms of IBD (years)?

☐ 0-5
☐ 11-20
☐ 6-10
☐ More than 20

Have you had a flare up in the past year?

☐ Yes
☐ No

How long did your most recent flare up last (weeks)?

☐ Less than 2	☐ 2-6
☐ 7-10	☐ 11-20
☐ More than 20	

How frequently do you have flare ups?

☐ Less than once per year ☐ Once per year or more

Are you currently taking any prescribed medications to manage your IBD? YES NO

If YES, what medications are you prescribed for IBD?

………………………………………………………………………………………………
………………………………………………………………………………………………
………………………………………………………………………………………………
………………………………………………………………………………………………

Appendix C: Multi-dimensional Perfectionism Scale Short (MPS-Short)

This measure has been removed due to copyright.

Appendix D: Perfectionistic Self-Presentation Scale (PSPS)

This measure has been removed due to copyright.

Appendix E: The Self-Compassion Scale (SCS)

This measure has been removed due to copyright.

Appendix F: Facial evaluation task and stigma perception questions

Imagine that the person in the image is your new colleague at work. If you are currently not in employment, imagine that they have recently moved into a house on your street. They are someone you are likely to frequently encounter.

Please indicate to what extent you agree with the following statements:

1. This person would take my IBD seriously

Strongly disagree Disagree Neither agree/disagree Agree Strongly agree

2. This person would believe I am to blame for my symptoms of IBD

Strongly disagree Disagree Neither agree/disagree Agree Strongly agree

3. This person would be understanding towards me if they found out that I had IBD

Strongly disagree Disagree Neither agree/disagree Agree Strongly agree

4. I would want to hide my IBD from this person because they would view me negatively

Strongly disagree Disagree Neither agree/disagree Agree Strongly agree

5. I would want to try and appear ‘normal’ around this person

Strongly disagree Disagree Neither agree/disagree Agree Strongly agree

6. Please explain what led you to answer questions 1-5 in this way.

………………………………………………………………………………………
………………………………………………………………………………………
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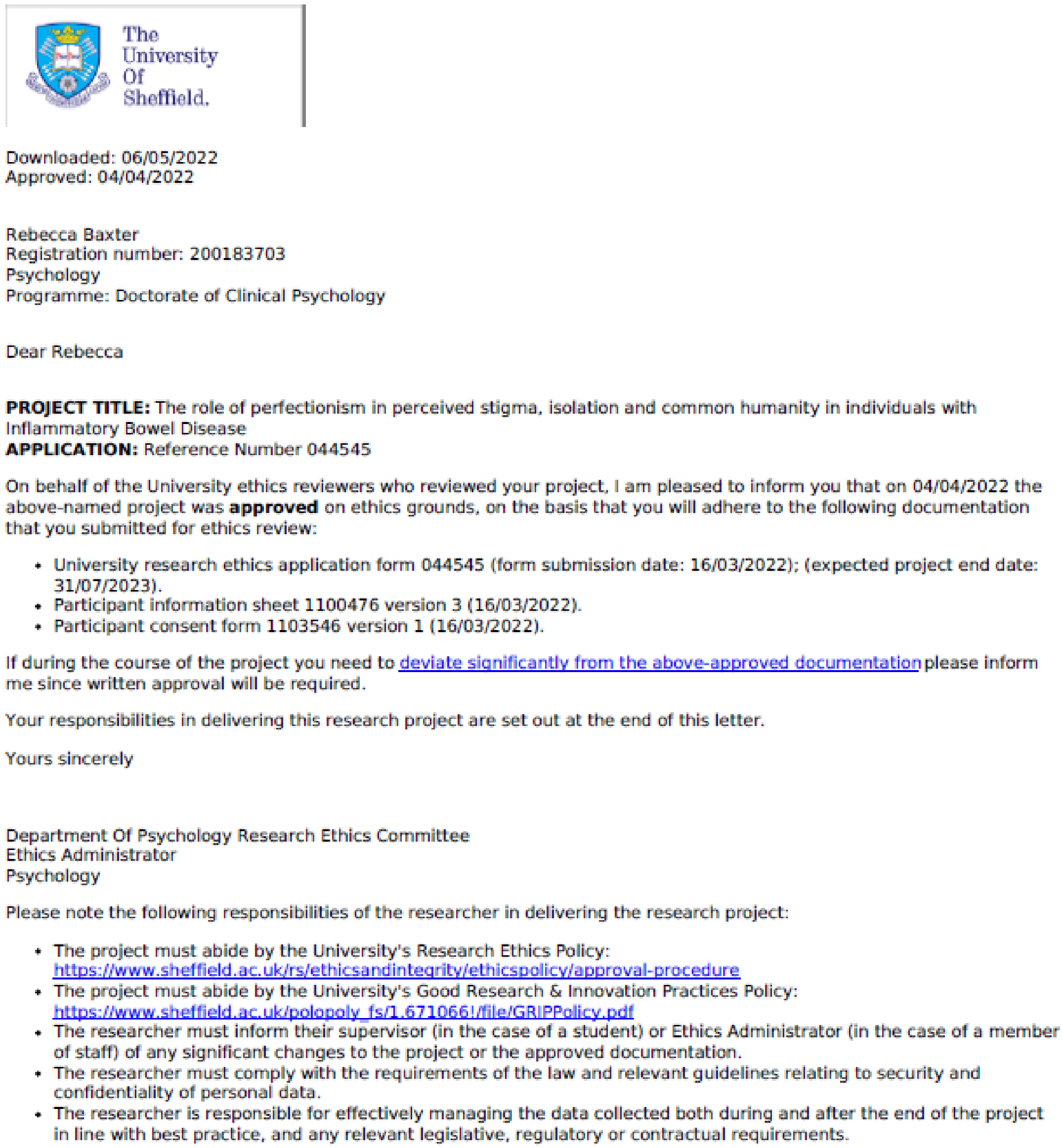
Appendix G: Common Humanity and Isolation subscales of the State Self-Compassion Scale – Long Version (SSCS-L)

This measure has been removed due to copyright.

Appendix H: Ethical approval letter



The University Of Sheffield.

Approved: 04/04/2022

Rebecca Baxter
Registration number: 200183703
Psychology
Programme: Doctorate of Clinical Psychology

Dear Rebecca

PROJECT TITLE: The role of perfectionism in perceived stigma, isolation and common humanity in individuals with Inflammatory Bowel Disease
APPLICATION: Reference Number 044545

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 04/04/2022 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 044545 (form submission date: 16/03/2022); (expected project end date: 31/07/2023).
- Participant information sheet 1100476 version 3 (16/03/2022).
- Participant consent form 1103546 version 1 (16/03/2022).

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

Department Of Psychology Research Ethics Committee
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 I: Participant Information Sheet

How does personality influence social interactions in Inflammatory Bowel Disease (IBD)?

What is the purpose of the study?
This study aims to investigate how personality traits are associated with social interactions in people with IBD.

Who can take part?
To be included in the study, you should be:

- Aged 18 or over,
- Have a diagnosis of Inflammatory Bowel Disease (IBD) from a doctor or physician
- Able to read and write in English
  If you do not match these criteria, you are unable to take part in this research.

What does participation in the study involve?
The entire study is conducted online, and is accessible on your smart phone, tablet and computer devices. If you decide to participate you will be asked to complete an online survey that includes questions about your background, diagnosis, current well-being, personality, and social interactions. You will also be presented with images of people and asked questions in relation to your IBD. The study will take approximately 15 -20 minutes to complete, although individual completion times may vary.

For completing all parts of the online study, you will be eligible to take part in a draw to win a £50 Amazon gift voucher. If you win the prize draw for this study, then you will be asked to electronically sign a form confirming that you have received this prize when you collect it. This form will be kept securely in a locked cabinet or as a digital copy for at 7 years after the end of the project, accessible by University finance and administrative staff for reference in the event of a financial audit

Do I have to take part?
You do not have to take part if you do not want to. If you decide not to, there will be no negative consequences. If you decide to take part, you can discontinue participation at any given time. You can simply close your Internet browser and exercise your right to withdraw.

Are there any risks involved?
There are no expected problems arising from participating in the study.

Some people may find some of the questions about social interactions upsetting. If you feel distressed or have been negatively impacted by participating in this study, please seek help from your local health service hot line.

What will happen to my information?

Your responses will be anonymous, and the numerical data you provide will be aggregated with that of other respondents, to give the researcher an idea about general trends, rather than individuals. The information you provide will be analysed, written up and submitted as part of a doctoral thesis for the Clinical Psychology Doctorate (DClinPsy) at the University of Sheffield. Any written information you provide may be anonymously quoted within the write up. Your data may also be used by the researchers for subsequent studies, or by other researchers e.g. through the University of Sheffield's Open Access platform, or alongside any scientific publications that arise from the data. However, if the data is used in this way, your responses will remain anonymous.The data controller is the University of Sheffield and the numerical and written data you provide will be stored in ORDA (The University of Sheffield online research data repository) so it can be used for future research and learning.

If you wish to be added into the prize draw you will be asked to provide your email address. This however this will be asked for separately and therefore will not be linked to your survey responses, ensuring your anonymity. All records of email addresses collected will be stored on a password protected computer by the researchers and deleted once the study has concluded and the draw is completed.

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. The project has been ethically approved and reviewed via ‘the University of Sheffield's Ethics Review Procedure, as administered by the Professional Services’. The University's Research Ethics Committee monitors the application and delivery of the University's Ethics Review Procedure across the University.

What happens if there is a problem?

This research is being conducted by Rebecca Baxter (rbaxter1@sheffield.ac.uk) Department of Psychology, the University of Sheffield, United Kingdom, and supervised by Professor Fuschia Sirois (fuschia.sirois@durham.ac.uk), Department of Psychology, the University of Durham, United Kingdom and Dr Mel Simmonds-Buckley (m.simmonds-buckley@sheffield.ac.uk) Department of Psychology, the University of Sheffield, United Kingdom and has received ethical approval from the Department of Psychology Ethics Committee at the University of Sheffield.

If you wish to raise a complaint, or have any questions regarding the study, its purpose, or procedures you should contact the project supervisor (fuschia.sirois@durham.ac.uk). If you feel your complaint is not handled to your satisfaction, you can then contact the Head of the Department of Psychology, Professor Elizabeth Milne (psy-hod@sheffield.ac.uk). If you have a complaint relating to how your personal data has been handled, information on how to raise a complaint can be found in the University's Privacy Notice: https://www.sheffield.ac.uk/govern/data-protection/privacy/general.

(Dated 19/07/2022)

Appendix J : Consent Questions

Consent Form

Please tick the appropriate boxes	**Yes**	**No**
Taking Part in the Project		
I have read and understood the project information sheet dated 19/07/2022 (If you will answer No to this question please do not proceed with this consent form until you are fully aware of what your participation in the project will mean.)	☐	☐
I have been given the opportunity to ask questions about the project.	☐	☐
I understand that by choosing to participate as a volunteer in this research, this does not create a legally binding agreement nor is it intended to create an employment relationship with the University of Sheffield.	☐	☐
I understand that my taking part is voluntary and that I can withdraw from the study anytime up to the point that I submit my survey. I do not have to give any reasons for why I no longer want to take part and there will be no adverse consequences if I choose to withdraw.	☐	☐
By taking part I confirm that I am age 18 or over, have received a diagnosis of Inflammatory Bowel Disease and have full or corrected partial vision	☐	☐
I agree to take part in the project. I understand that taking part in the project will include completing several questionnaires about my well-being, IBD, personality and social interactions.	☐	☐
How my information will be used during and after the project		
I understand my responses will be anonymous.	☐	☐
I understand and agree that my anonymous words may be quoted in publications, reports, web pages, and other research outputs.	☐	☐
I understand and agree that other authorised researchers will have access to this anonymous data only if they agree to preserve the confidentiality of the information as requested in this form.	☐	☐
I understand and agree that other authorised researchers may use my anonymous data in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.	☐	☐
I give permission for the numerical and written data that I provide to be deposited in ORDA (University of Sheffield online research data repository) so it can be used for future research and learning	☐	☐
So that the information you provide can be used legally by the researchers		
I agree to assign the copyright I hold in any materials generated as part of this project to The University of Sheffield.	☐	☐

Do you wish to continue? To acknowledge that you have read and understood this information and would like to continue with the research study, please click on “I agree”.

I agree

No, thank you

Appendix K: Debriefing form

Research has shown that people living with IBD perceive that their IBD symptoms are misunderstood by others. They may also be more sensitive to how others view them. Evidence suggests that this perception and sensitivity may lead to feelings of embarrassment, attempts to hide symptoms and social withdrawal.

We are interested in whether those with IBD are more sensitive to the facial expressions of others and whether this makes them feel more isolated. We are also interested in whether perfectionistic personality traits may play a role in this sensitivity. This is because research suggests individuals with these traits may feel more concerned about what others think about them and more inclined to conceal their personal flaws.

You completed various questionnaires measuring feelings of isolation and perfectionistic traits. You also completed a facial expression response task, where you saw either neutral, negative, or positive facial expressions and answered questions relating to stigma. We expect those who were presented with negative or neutral facial expressions to feel worse than those who saw positive facial expressions. We expected these feelings to be amplified in those with perfectionistic traits.

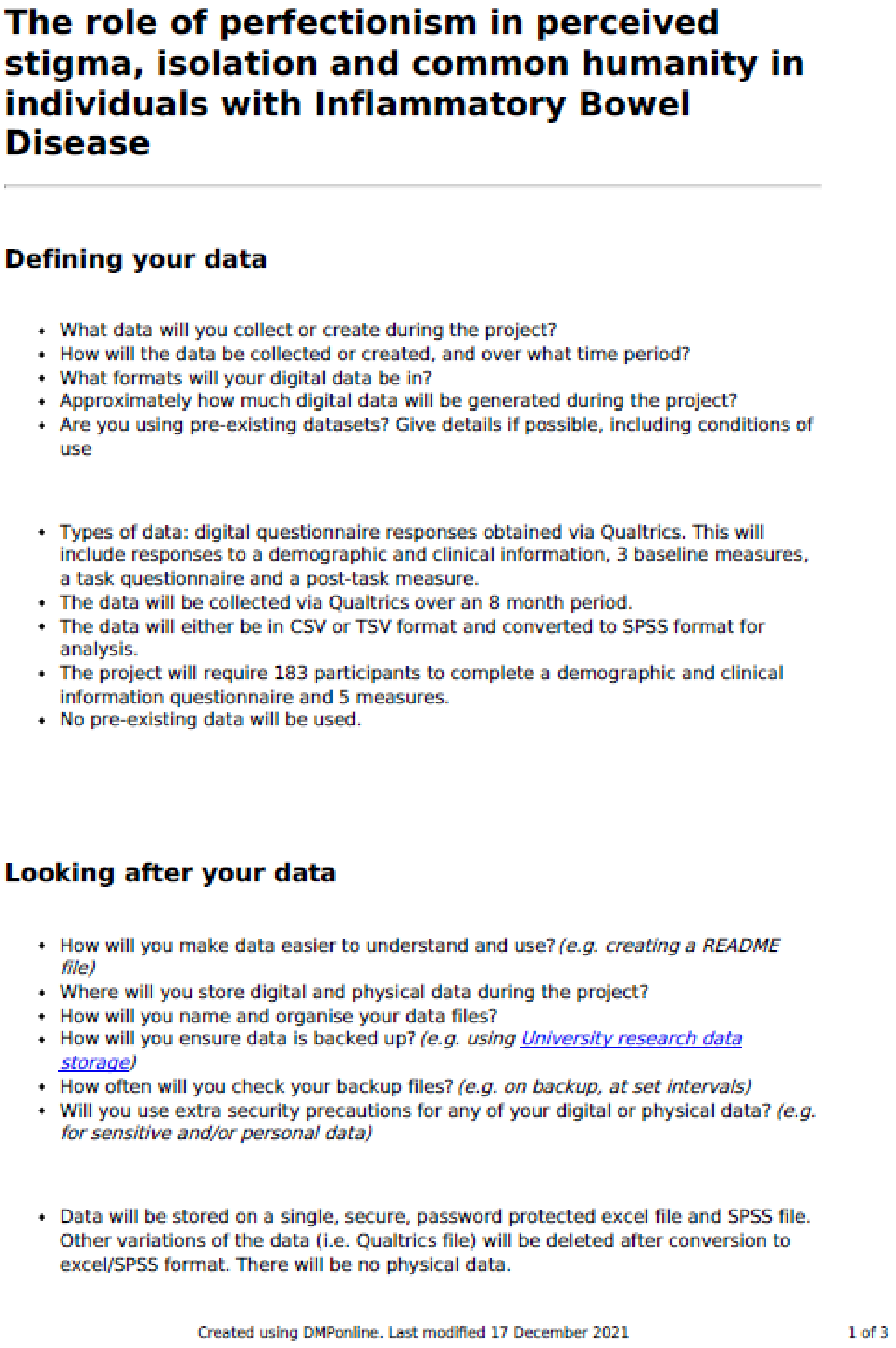
We would like to thank you for participating in this research. Your time is very much appreciated.

If participating in this study has raised any concerns for you, please contact your GP/ physician or call Samaritans on 116 123 (free 24-hour helpline). You can also contact the Crohn’s & Colitis UK helpline on 0300 222 5700.

Prize draw

If you would like to enter the prize draw for the opportunity to win one of two £50 Amazon vouchers, please provide your email address in the box below. Your email address will not be matched to your responses, which will remain anonymous.

Appendix L: Data Management Plan



The role of perfectionism in perceived stigma, isolation and common humanity in individuals with Inflammatory Bowel Disease

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Defining your data

- What data will you collect or create during the project?
- How will the data be collected or created, and over what time period?
- What formats will your digital data be in?
- Approximately how much digital data will be generated during the project?
- Are you using pre-existing datasets? Give details if possible, including conditions of use

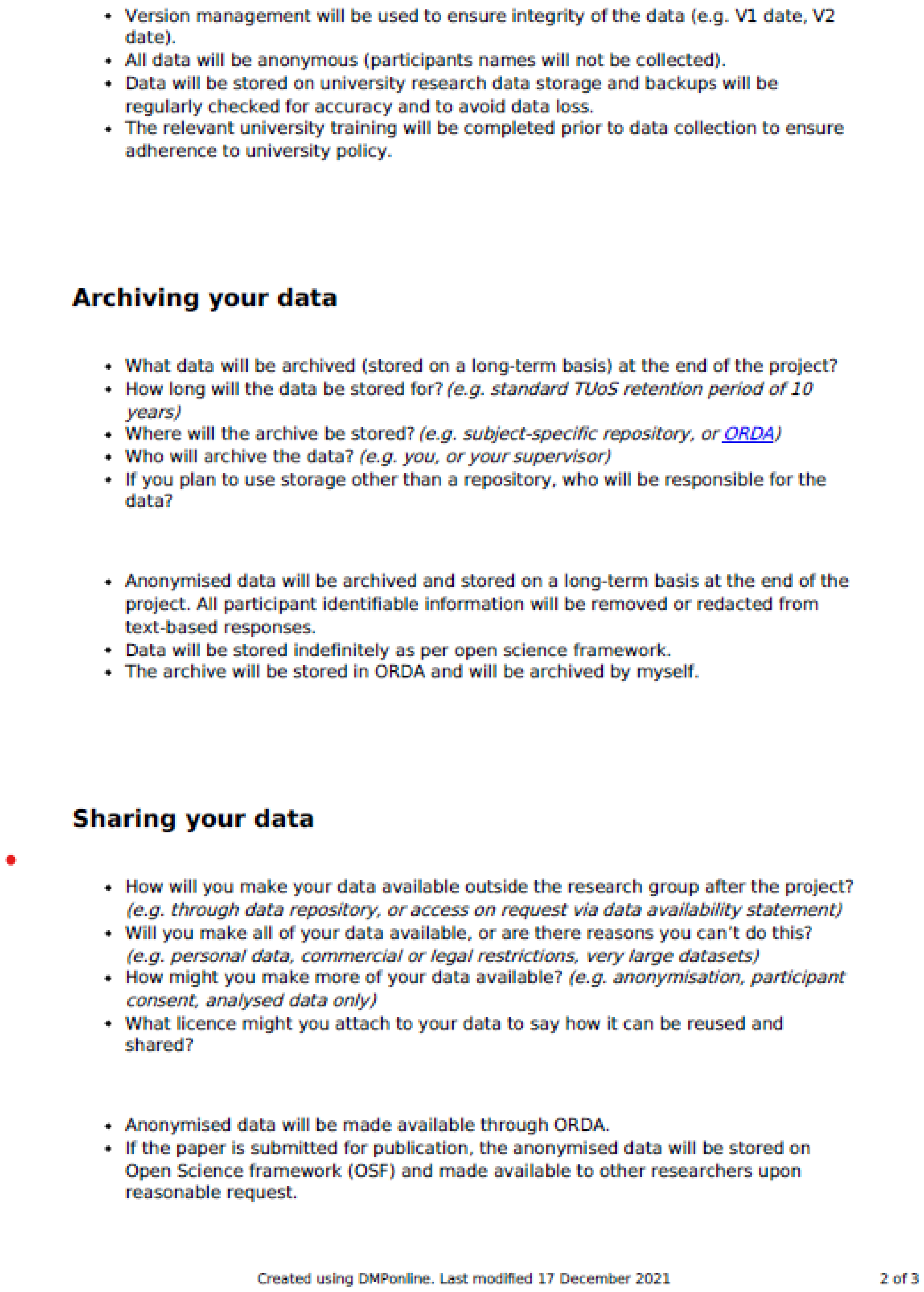
- Types of data: digital questionnaire responses obtained via Qualtrics. This will include responses to a demographic and clinical information, 3 baseline measures, a task questionnaire and a post-task measure.
- The data will be collected via Qualtrics over an 8 month period.
- The data will either be in CSV or TSV format and converted to SPSS format for analysis.
- The project will require 183 participants to complete a demographic and clinical information questionnaire and 5 measures.
- No pre-existing data will be used.

Looking after your data

- How will you make data easier to understand and use? *(e.g. creating a README file)*
- Where will you store digital and physical data during the project?
- How will you name and organise your data files?
- How will you ensure data is backed up? *(e.g. using University research data storage)*
- How often will you check your backup files? *(e.g. on backup, at set intervals)*
- Will you use extra security precautions for any of your digital or physical data? *(e.g. for sensitive and/or personal data)*

- Data will be stored on a single, secure, password protected excel file and SPSS file. Other variations of the data (i.e. Qualtrics file) will be deleted after conversion to excel/SPSS format. There will be no physical data.

Created using DMPonline. Last modified 17 December 2021 1 of 3



- Version management will be used to ensure integrity of the data (e.g. V1 date, V2 date).
- All data will be anonymous (participants names will not be collected).
- Data will be stored on university research data storage and backups will be regularly checked for accuracy and to avoid data loss.
- The relevant university training will be completed prior to data collection to ensure adherence to university policy.

Archiving your data

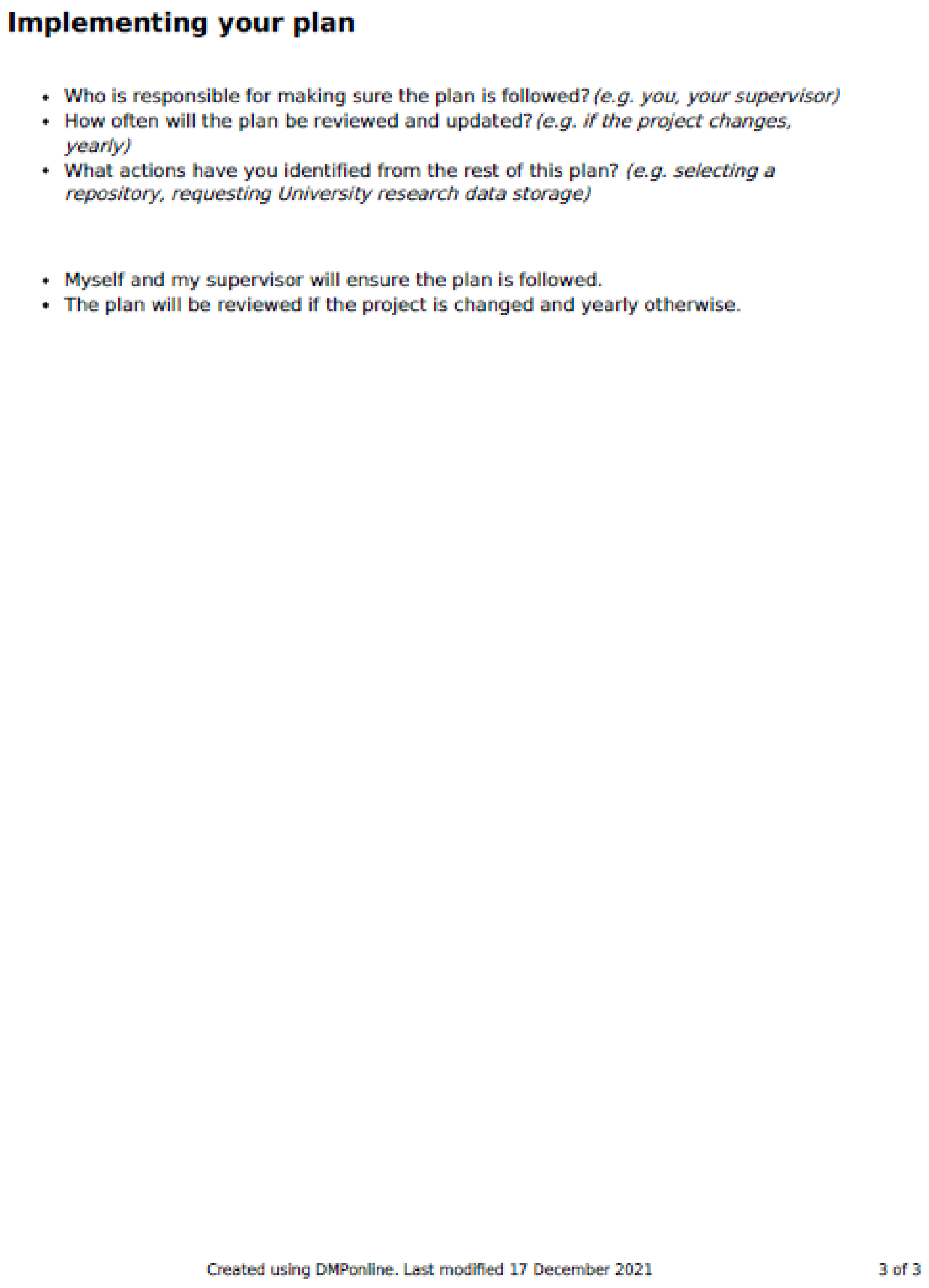
- What data will be archived (stored on a long-term basis) at the end of the project?
- How long will the data be stored for? *(e.g. standard TUoS retention period of 10 years)*
- Where will the archive be stored? *(e.g. subject-specific repository, or ORDA)*
- Who will archive the data? *(e.g. you, or your supervisor)*
- If you plan to use storage other than a repository, who will be responsible for the data?

- Anonymised data will be archived and stored on a long-term basis at the end of the project. All participant identifiable information will be removed or redacted from text-based responses.
- Data will be stored indefinitely as per open science framework.
- The archive will be stored in ORDA and will be archived by myself.

Sharing your data

- How will you make your data available outside the research group after the project? *(e.g. through data repository, or access on request via data availability statement)*
- Will you make all of your data available, or are there reasons you can't do this? *(e.g. personal data, commercial or legal restrictions, very large datasets)*
- How might you make more of your data available? *(e.g. anonymisation, participant consent, analysed data only)*
- What licence might you attach to your data to say how it can be reused and shared?

- Anonymised data will be made available through ORDA.
- If the paper is submitted for publication, the anonymised data will be stored on Open Science framework (OSF) and made available to other researchers upon reasonable request.



Implementing your plan

- Who is responsible for making sure the plan is followed? *(e.g. you, your supervisor)*
- How often will the plan be reviewed and updated? *(e.g. if the project changes, yearly)*
- What actions have you identified from the rest of this plan? *(e.g. selecting a repository, requesting University research data storage)*

- Myself and my supervisor will ensure the plan is followed.
- The plan will be reviewed if the project is changed and yearly otherwise.

Appendix M: Normality Analyses

Table M1

Skewness and kurtosis statistics and standard error for study variables

Variable	Skewness (SE)	Kurtosis (SE)
Socially prescribed perfectionism	0.24 (0.17)	-0.76 (0.35)
Other-orientated perfectionism	-0.24 (0.17)	-0.02 (0.35)
Self-orientated perfectionism	-0.62 (0.17)	- 0.260 (0.35)
Perfectionistic self-promotion	-0.07 (0.17)	-0.54 (0.35)
Non-display of imperfection	-0.18 (0.17)	-0.51 (0.35)
Non-disclosure of imperfection	0.23 (0.17)	-0.31 (0.35)
Trait Self-Compassion	0.23 (0.17)	-0.20 (0.35)
Trait Common humanity	- 0.15 (0.17)	-0.337 (0.35)
Trait Isolation	0.45 (0.17)	-0.48 (0.35)
Stigma perception	0.21 (0.17)	0.43 (0.35)
State Common humanity	-0.09 (0.17)	-0.52 (0.35)
State Isolation	0.27 (0.17)	-0.83 (0.35)

Figure M1

Histogram of socially prescribed perfectionism distribution

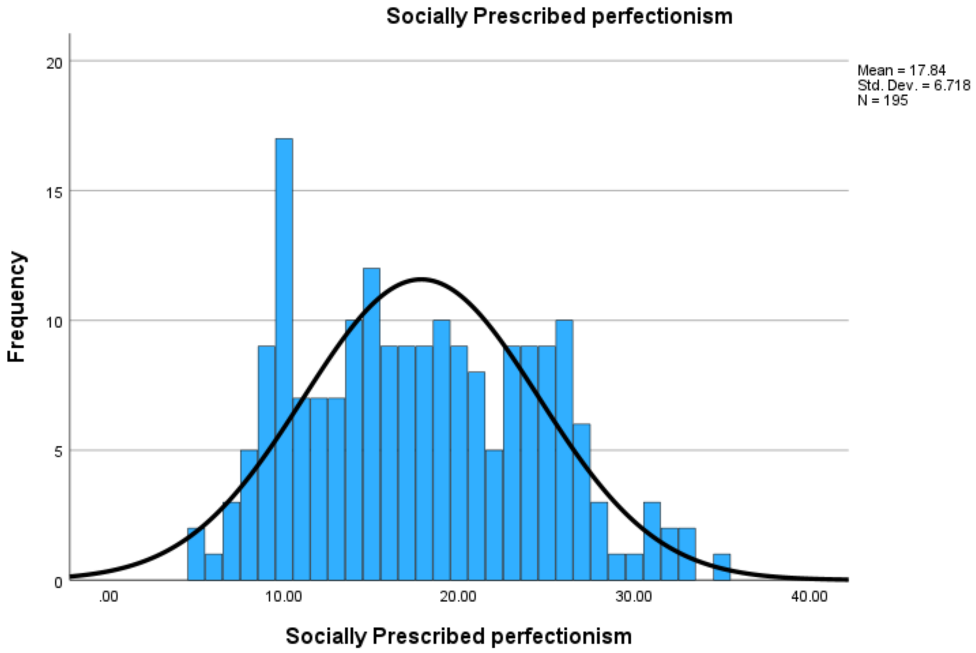


Figure M2

Histogram of other orientated perfectionism distribution

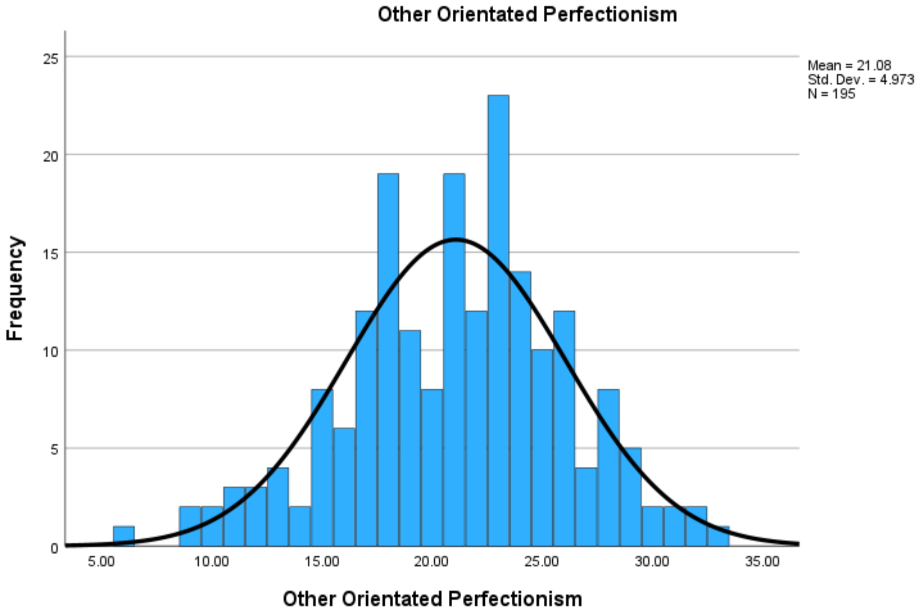


Figure M3

Histogram of self-orientated perfectionism distribution

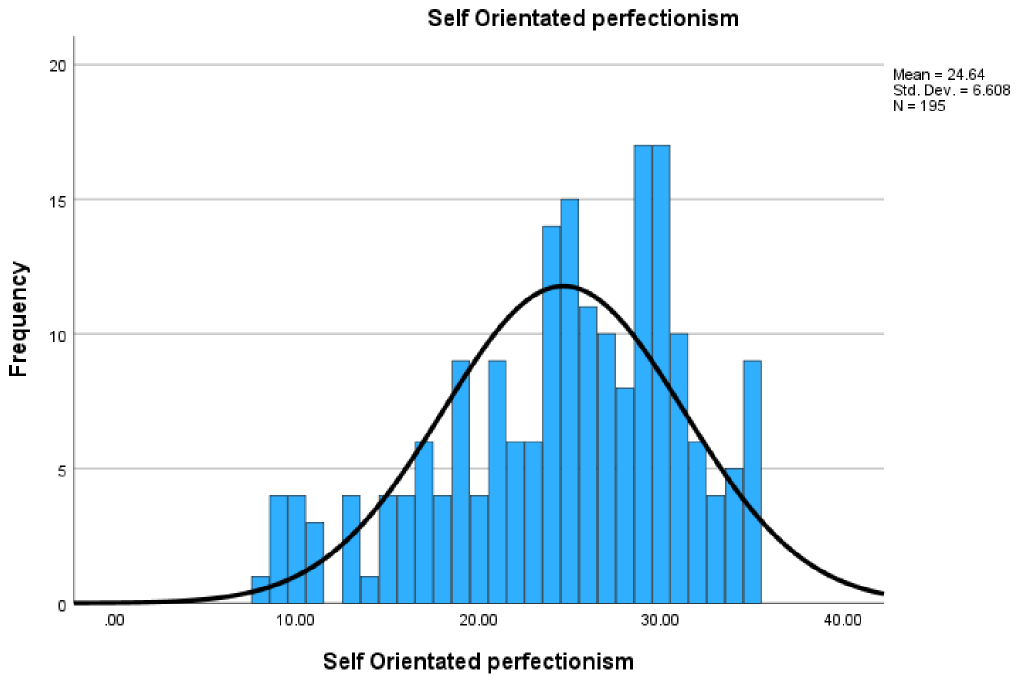


Figure M4

Histogram of overall self-compassion scale distribution

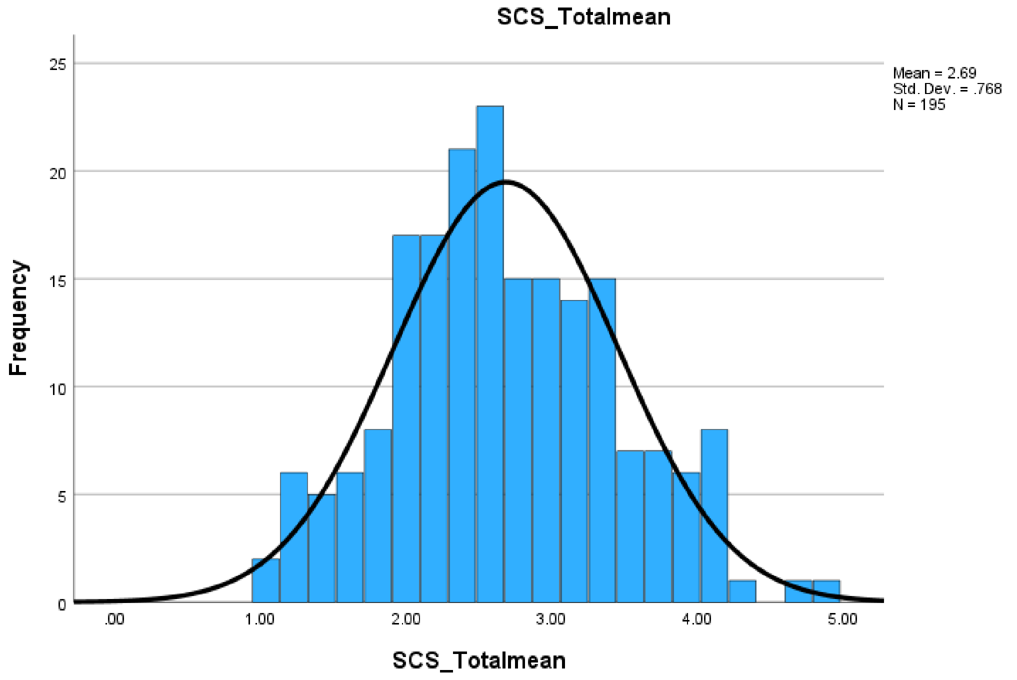


Figure M5

Histogram of perfectionistic self-promotion distribution

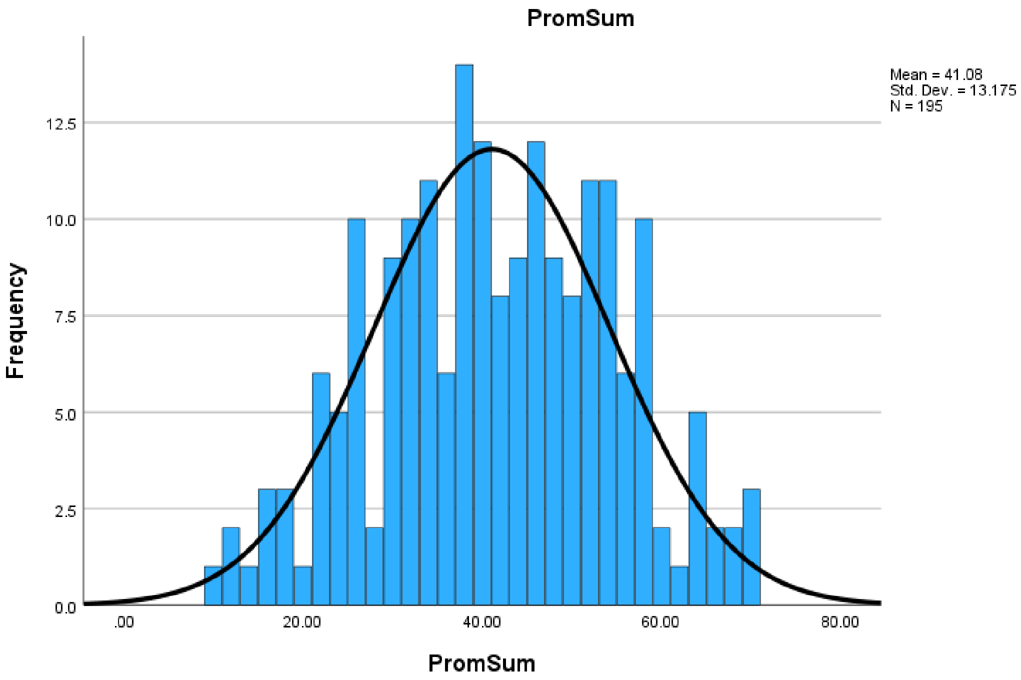


Figure M6

Histogram of non-display of imperfection distribution

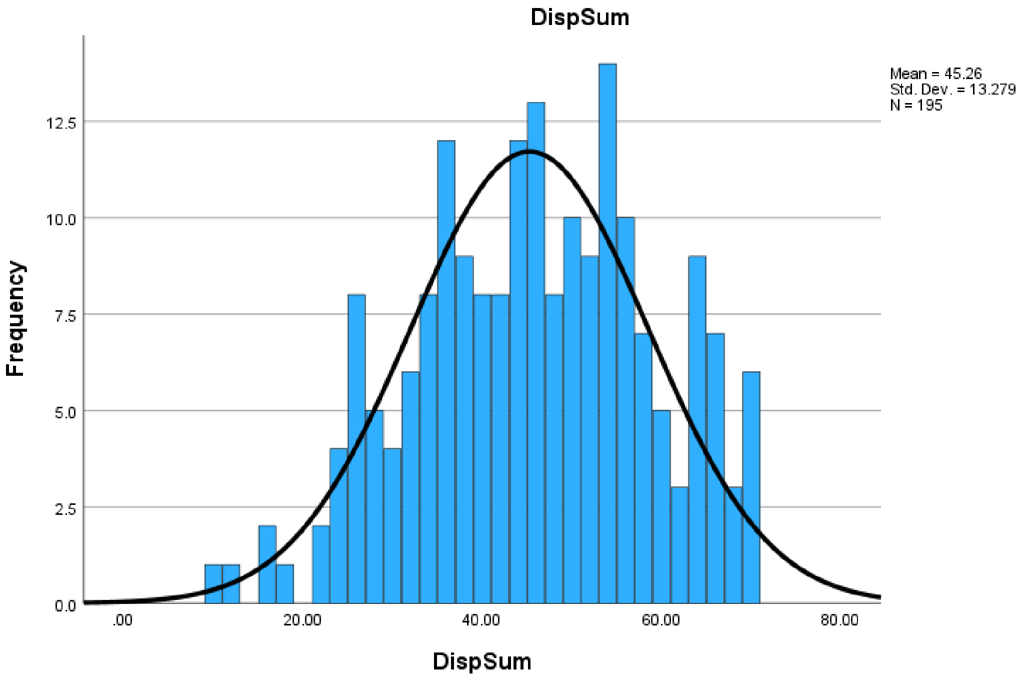


Figure M7

Histogram of non-disclosure of imperfection distribution

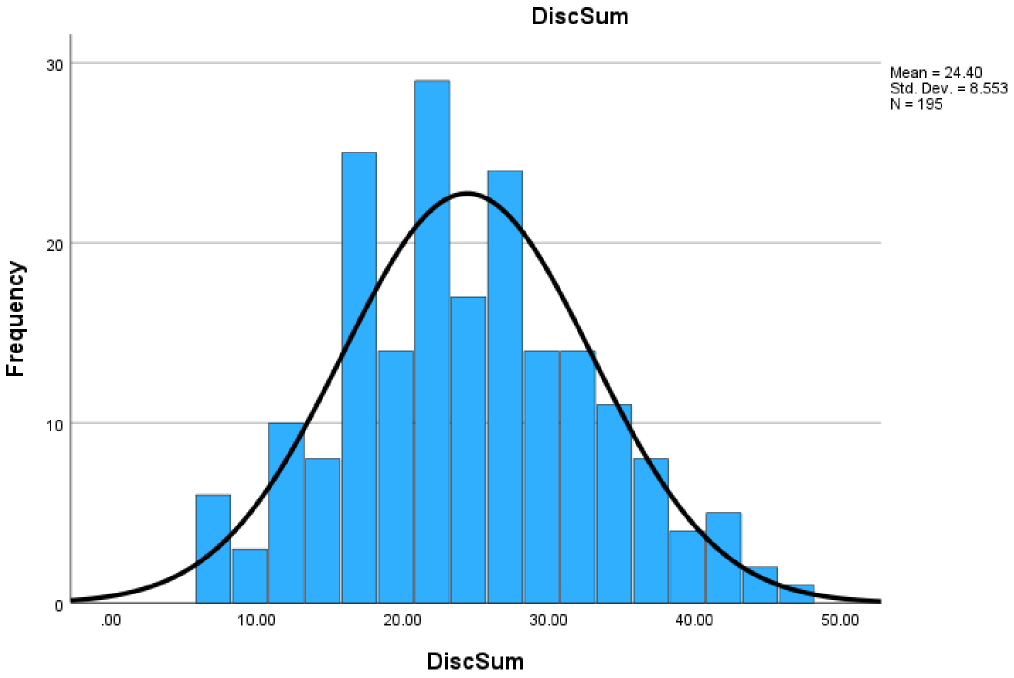


Figure M8

Histogram of trait common humanity distribution

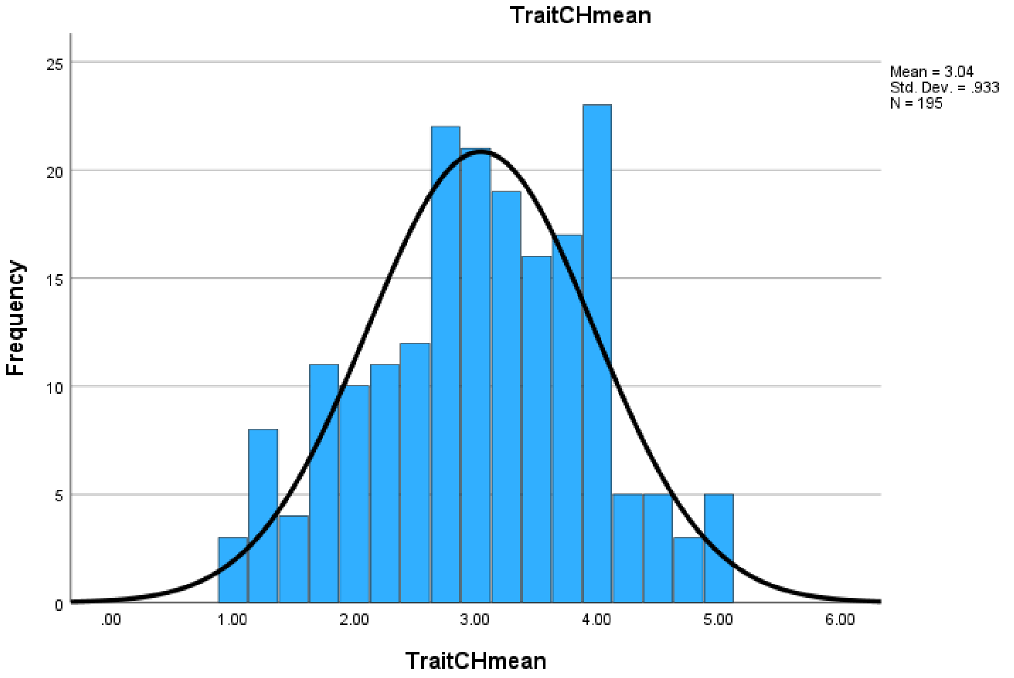


Figure M9

Histogram of trait isolation distribution

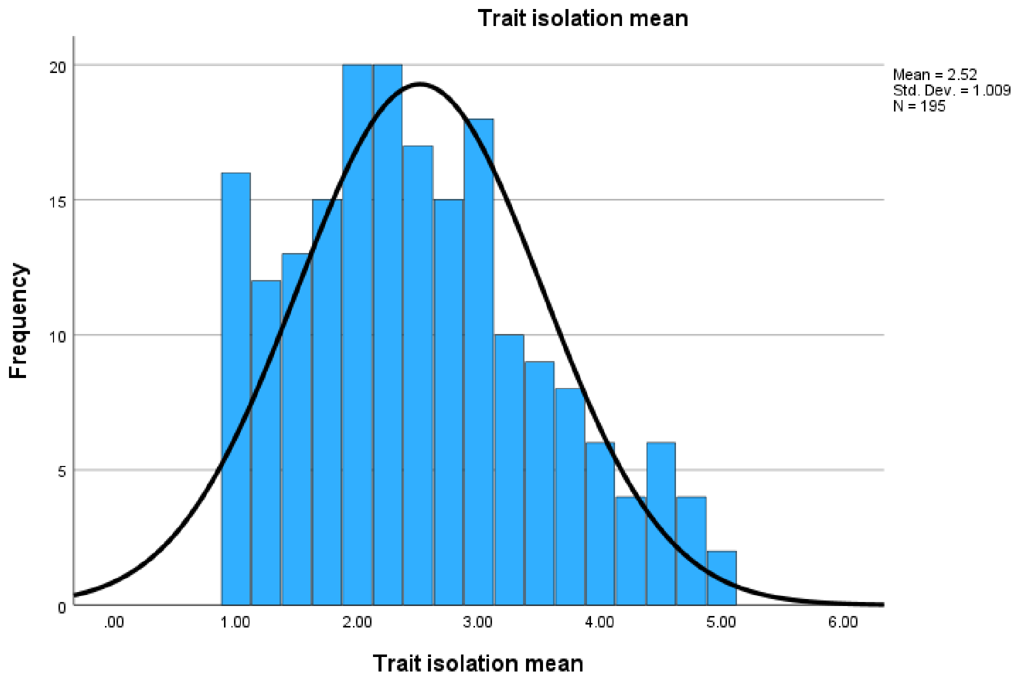


Figure M10

Histogram of stigma perception distribution

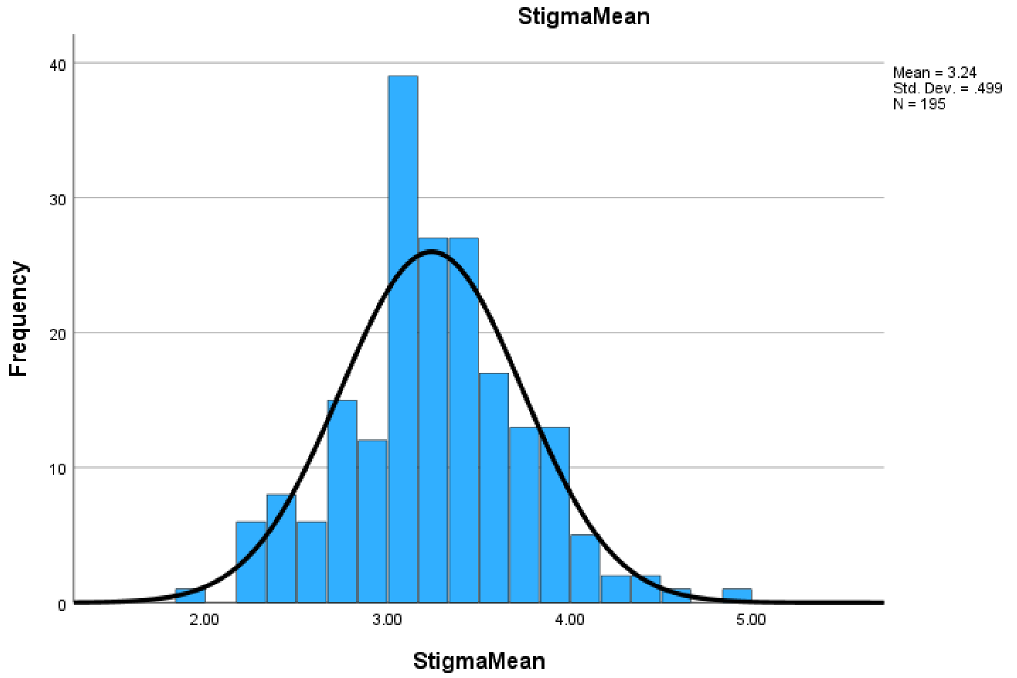


Figure M11

Histogram of state common humanity distribution

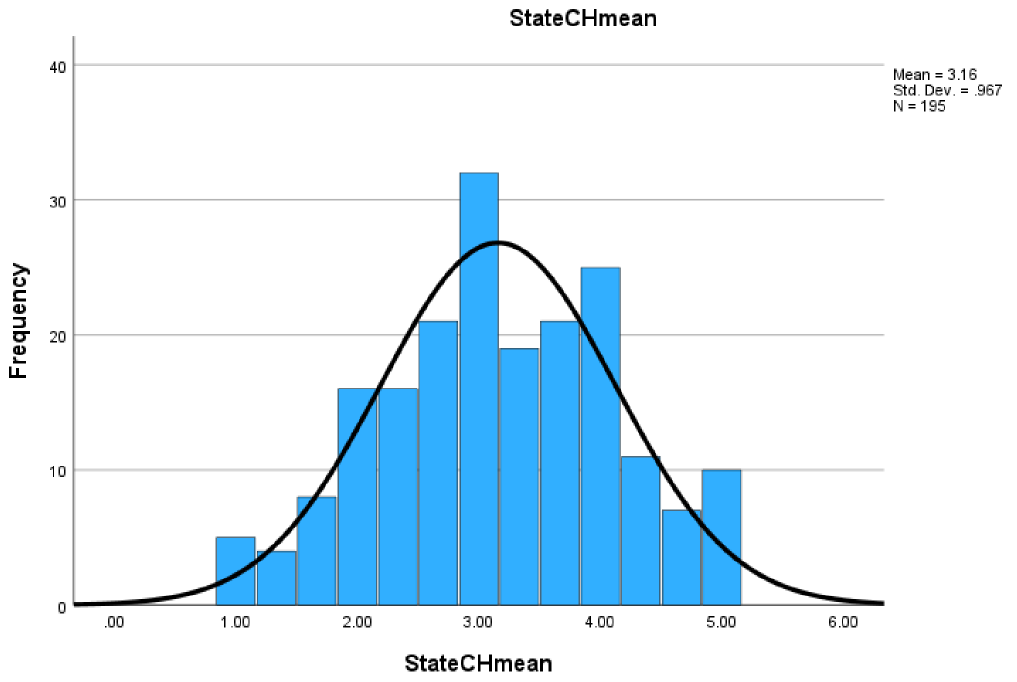


Figure M12

Histogram of state isolation distribution