A mixed methods study of the relationships between self-harm, suicidal behaviour, and disordered eating in BPD: the role of psychological factors

And Clinical Research Portfolio

Claire Allott

BA (Hons) Psychology

Submitted in partial fulfilment of the requirements for the degree of

Doctorate in Clinical Psychology

Institute of Health and Wellbeing

College of Medical, Veterinary and Life Sciences

University of Glasgow

September 2017

ACKNOWLEDGEMENTS

Firstly and most importantly, I am so grateful to all the individuals who took part in this research project: both those who completed the questionnaires, and those who were so willing to share their difficult, and highly personal, experiences with me, in the hopes they could help others in similar positions.

I would like to thank the people who supervised me in this project. To Professor Rory O'Connor for all his help, particularly in the last few months of write up. His expertise and knowledge in the area helped immensely, as did the calm reassurance that I was on track. To Dr Doug Hutchison for his support in getting this project off the ground, as well as supervising me clinically for two years. His unfailing encouragement that "one day, it will just be done" became somewhat of a mantra for me. I would also like to thank my colleagues in the Highlands who were always on hand to provide practical and emotional support, and to the various clinicians for their help with recruitment, without which this would not have been possible.

Finally, thank you to my family and friends. To my family, who have supported me through thick and thin: in particular my mum, Debbie. To my friends, whose understanding has never wavered: especially Kyle, Emma, and Julia. To both my trainee and Highland cohort, who have made the last three years unforgettable. To Florence, and lastly, to my fiancé Robin, for his unfaltering support and belief in me.

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CHAPTER 1 – SYSTEMATIC REVIEW

A systematic review into the psychological factors associated with self-harm and suicidal behaviour in eating disorders

Claire Allott*

Submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology

September 2017

Chapter word count (including references): 7,107

*Address for correspondence:
Claire Allott
Institute of Health and Wellbeing
College of Medical, Veterinary and Life Sciences
University of Glasgow
Gartnavel Royal Hospital
1st Floor Administration Building
1055 Great Western Road
Glasgow, G12 0XH

Email: claire.allott1@nhs.net

Prepared in accordance with the requirements for submission to Social Science and Medicine (see appendix 3)

Abstract

High rates of self-harm and suicide attempts have been found consistently in individuals with eating disorders, particularly when binge-purge behaviours are present. Psychological factors associated with elevated risk of self-harm and suicide attempts in this population are unclear and prior reviews have been somewhat limited in scope. The aim of this review was to appraise the evidence reporting psychological factors associated with self-harm and suicide attempts in eating disorders. A systematic search of ASSIA, CINAHL, EMBASE, MEDLINE, Psychology & Behavioural Sciences, and PsycINFO was conducted. Reference lists of related reviews and included articles were examined, identifying 26 relevant studies which were then quality assessed and results synthesised. In total, 26 papers were included in this review, examining 8,400 participants with various eating disorders diagnoses. The quality of assessment of self-harm and/or suicidal history was variable, and categorisation of eating disorders diagnoses was problematic in the majority of papers. A wide variety of psychological constructs were assessed using a wide variety of measures. There was evidence that self-criticism, social pressures, impulsivity, and trauma are associated with self-harm and suicide attempts. To conclude, there is a significant amount of research concerning psychological factors associated with elevated risk of self-harm and suicide attempts in eating disorders. However, given the wide variety of psychological measures utilised, and inconsistencies regarding assessment and categorisation of eating disorders and self-harm and/or suicidal histories, clear conclusions regarding risk factors are difficult. Nonetheless, factors relating to self-criticism, social pressures, impulsivity, and experience of childhood trauma appear to be important risk considerations in this population.

1. Introduction

Research has consistently demonstrated high prevalence rates of self-harm (SH) and suicidal behaviours in individuals with eating disorders (EDs) (Kostro, Lerman, and Attia, 2014). Suicide is one of the most commonly reported causes of death in this population, with an estimated increased risk 23 times that in the general population (Harris and Barraclough, 1997). In particular, prevalence of SH and suicidal behaviours differ by ED subtype: binge-purge behaviours, which cross diagnostic boundaries, are associated with higher rates of SH, suicidal ideation, and suicide attempts (SA) (Franko and Keel, 2006; Kostro et al., 2014). However, the specific factors associated with elevated risk in this population remain unclear.

1.1 Differences in prevalence of SH and SA across ED subtypes

Standardised mortality ratios (SMRs) represent the estimated risk of death by comparing the observed number of deaths to the expected number of deaths in a group, in comparison to the general population. Research indicates that SMRs are higher in anorexia nervosa (AN:31) than in bulimia nervosa (BN:7.5) (Preti et al., 2011). However, when considering rates of non-lethal SA and suicidal ideation across ED subtypes, a number of studies demonstrate these are higher among individuals with BN, followed by AN binge-purge subtype (ANbp), rather than the restrictive AN subtype (ANr) (Franko and Keel, 2006). SH, defined as the intentional, direct injuring of body tissue, done without suicidal intentions (Muehlenkamp, 2005), is highly prevalent in EDs: occurrence is estimated to vary between 13.6-68.1% (Svirko and Hawton, 2007). Again, there are differences in ED subtypes: prevalence of SH is estimated to be between 26-55% in BN, 26-61% in ANbp, and 13-42% in ANr (Kerr, Muehlenkamp, & Turner, 2010).

This suggests that binge-purge behaviours, versus restrictive EDs, are differentially associated with SH and suicidal behaviour. However, the majority of studies fail to distinguish between ED subtypes, yet such a distinction may be pivotal, especially in considering factors associated with increased risk. Furthermore, there is evidence to suggest high rates of conversion across diagnoses, and controversy surrounds whether these labels reflect clinical reality or not (Fairburn and Cooper, 2011). This further highlights the need for research to consider issues of diagnoses beyond basic DSM diagnostic categorisation in order to better inform our understanding of what contributes to increased risk.

1.2 Factors associated with risk of SH and SA

The majority of research concerning the increased risk of SH and SA in EDs has focused on prevalence and psychiatric comorbidities. Comorbid depression, anxiety, and borderline personality disorder are associated with risk of SH and suicide in patients with EDs, as is a history of substance abuse (Preti et al., 2011). Patients with EDs who SH also tend to present with higher levels of general pathology than those who do not (Claes et al., 2003). Less research however has focused on potential psychological risk factors.

1.3 Possible psychological risk factors

Research into the correlates of SH and SA in the general population has identified an array of risk factors related to personality and individual differences, cognitive factors, social factors, and negative life events (O'Connor and Nock, 2014). A number of these risk factors, such as perfectionism and self-criticism, are often found in those with EDs (Ferreira, Pinto-Gouveia and Duarte, 2014). A review by Svirko and Hawton (2007), concerning AN and BN only, identified potential risk factors for SH in EDs: emotion dysregulation, dissociation, self-criticism, and need for control. Poor problem solving, trauma history, impulsivity and dissociation have also been identified (Franko and Keel, 2006). However, no systematic appraisal of this research has been done in the last 12 years, and given the recognised difficulties with diagnostic categorisation, the scope of the present review extends beyond AN and BN only ED populations.

1.4 Rationale for, and aims of, the current review

Prior research concludes there is an increased risk of suicide and SH in those with EDs. However the majority of research has focused on prevalence and diagnostic comorbidities, with less clarity concerning possible underlying psychological mechanisms, which is essential in order to inform risk management and treatment planning. The aim of this review, therefore, is to systematically appraise the evidence regarding psychological factors associated with SH and SA in EDs.

1.5 Review Aims

To extend the current literature, this review targeted studies whereby associations between psychological factors and SH and/or SA were reported. The main aims of the review were to:

- Identify and describe the key characteristics of the research.
- Appraise the quality of this research, highlighting methodological strengths and limitations.
- Make recommendations for future research, based on the appraisal of the evidence.

2. Method

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was utilised in guiding this systematic review. Initial scoping searches were performed in order to assess the feasibility and utility of a review in this area (see appendix 1.1).

2.1 Search strategy

For the main search, systematic electronic searches were undertaken on: ASSIA, CINAHL, EMBASE, MEDLINE, Psychology & Behavioural Sciences, and PsycINFO. Search terms with appropriate quotation marks and truncation symbols were used in relation to each database in order to ensure the search gathered as many possible variations in terminology as possible. Related indexing terms (MeSH and thesaurus terms) for each database were also identified and used as part of the search strategy (see appendix 1.2).

2.2 Inclusion criteria

The inclusion criteria were as follows:

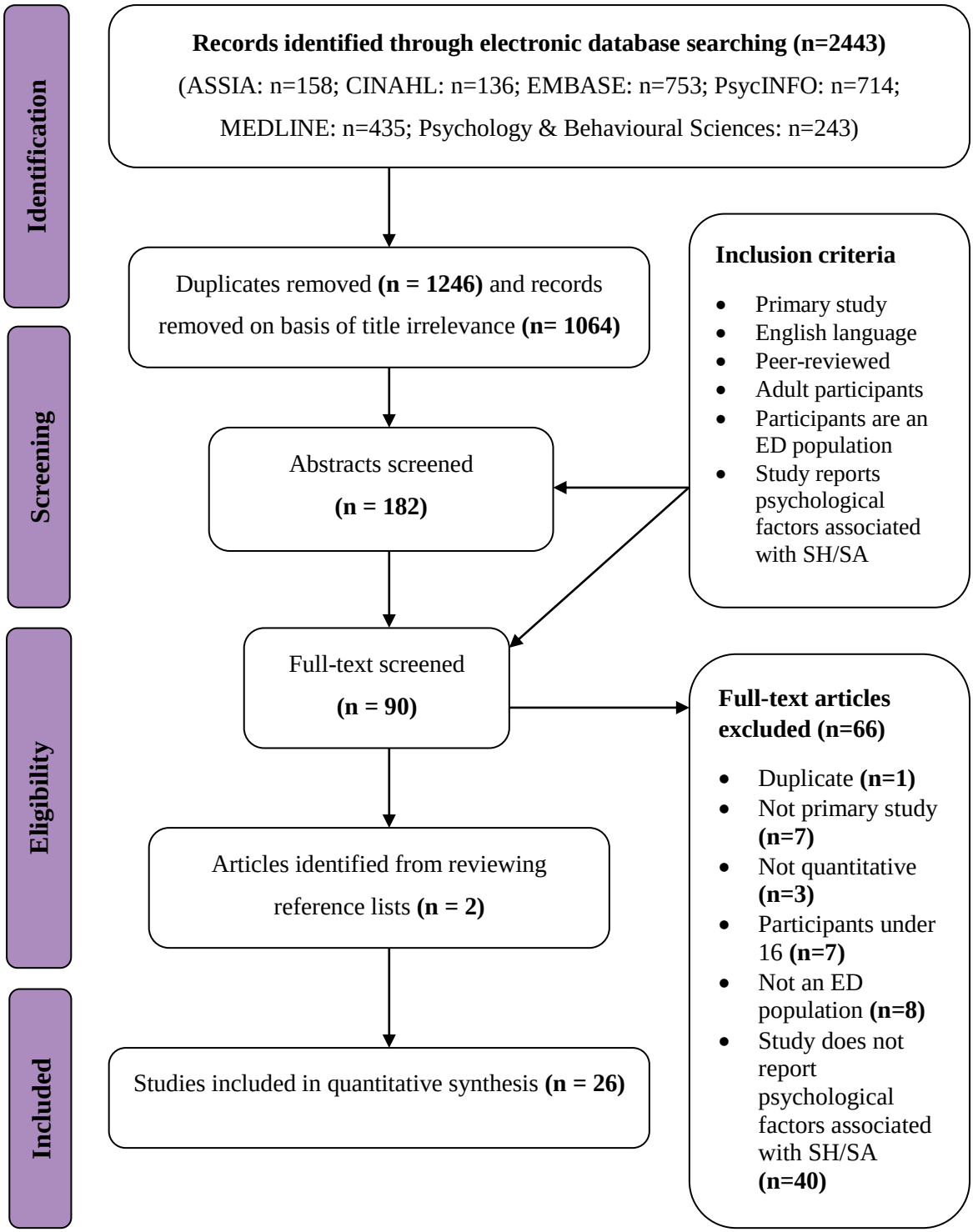
- Study reported primary quantitative data.
- Published in English in a peer reviewed journal.
- Adult participants (aged over 16 years).
- Participants had a diagnosis of an eating disorder.
- Studies reported association/s between psychological factors and SH and/or SA.

Review papers or qualitative studies were excluded, as were studies in which it was unclear whether or not the population had an ED diagnosis. Studies with a principal focus on medical risk factors, diagnostic comorbidities, or prevalence of SH/SA were not included in this review.

2.3 Screening process

An overview of the screening process is provided in figure 1. Searches resulted in 2443 records; 1246 duplicates were excluded as were an additional 1064 papers on the basis of title irrelevance. 182 abstracts were systematically evaluated according to the inclusion criteria; 90 full text articles were retrieved and further assessed; and 24 were identified as meeting criteria. The reference lists of these articles, as well as the reference lists of related reviews, were examined to identify further relevant research. Eleven abstracts, and subsequently four full text articles, were obtained and examined, and two additional studies were included in the synthesis. In total, 26 articles were subject to data extraction and quality appraisal.

Figure 1: *PRISMA flow diagram of the screening process and study selection*



2.4 Data extraction

In order to standardise the extraction of information across the 26 included studies, a data extraction table was compiled (see appendix 1.3).

2.5 Quality Appraisal

Articles were reviewed using a quality rating tool developed by the researcher (see appendix 1.4) following consultation of the CONSORT 2010 guidelines, a tool developed by O'Connor et al. (2016), and an experienced researcher. The tool included specific questions regarding the assessment of psychological factors; SH and/or SA; and ED diagnosis (and subsequent categorisation). Each study was awarded points in relation to rationale and aims, methods, assessment, statistical analysis and findings, confounding variables, and discussion. A maximum of 30 points could be awarded. To categorise the overall quality of the papers, it was determined that a score of <17 would be considered poor (C); 18-23 moderate (B), and 24-30 considered good (A). In order to ensure validity and reliability of the quality rating process a second researcher rated 20% of the articles independently. The overall quality ratings by both researchers for the six papers did not differ by more than 3 points in either direction, and discussion took place to reach agreement.

3. Results

Table 1 presents key study information and results regarding psychological factors associated with SH and SA. These results are summarised below, with psychological factors of SH and SA presented separately; studies are referred to by their corresponding number in table 1. A summary of psychological factors associated with SH and SA separated by ED diagnosis can be found in appendix 1.7, and appendix 1.6 summarises the allocated quality appraisal scores for each study: nine studies were 'good' quality, eleven 'moderate' quality, and six 'poor'.

3.1 Overview of included studies

3.1.1 Sample characteristics

Twenty-six papers, reporting twenty-five studies, were included in this review (see table 1). Two papers using one sample (n=70) were included as they focused on different aspects. In total, 8400 participants (3.9% male; n=331) with various ED pathologies were examined across nine countries: Sweden (n=3), USA (n=4), New Zealand (n=1), Spain (n=7), Italy (n=1), Belgium (n=2), Germany (n=1), France (n=1), and Japan (n=1). Five papers did not explicitly state where their sample was from. Mean age of the sample was 26.9 years (based on 19/26 papers reporting mean age) and mean age range was 18-51 (based on 8/26 papers reporting range). Six studies included male ED participants, one of which was a male-only population.

3.1.2 Research design

Twenty five studies used a cross-sectional design, and one used a prospective design. Four studies employed a control group: three used a general population sample (studies 1, 21 and 26; 26 matched their control group), and one used a matched clinical sample of individuals with major depression (study 3). However, only studies 3 and 26 used their control group in relation to psychological analyses.

3.2 Assessment of SH and/or SA

Eleven studies focused on SH behaviour only; nine studies focused on SA only; one study examined suicidal ideation specifically (study 5). Five studies examined both SH and SA, and one included both SH and SA as a single variable (study 1).

Seven studies assessed SH/SA via clinical interview; nine through validated questionnaires; and one through justified use of a non-validated questionnaire (study 19). Five papers used the SIQ (Self-Injury Questionnaire, Claes et al., 2001; studies 9, 10, 11, 12 and 17). One study used the SIQ-TR (Self-injury Questionnaire-Treatment related, Claes and Vandereycken, 2007; study 8). Two studies used suicide questions from validated measures (studies 3 and 4). One paper used the SSI (Scale of Suicide Ideation, Beck at al., 1979; study 5). Two papers used a non-validated questionnaire: one of these justified this and used a comprehensive alternative (study 19); the other was neither justified nor comprehensive (study 26). Three studies assessed SH/SA via patient

records and registers (studies 1, 21 and 23), and four used a single question (studies 8, 20, 22 and 24). One study assessed inappropriately (study 18).

3.3 Categorisation of ED diagnosis

Three studies employed an AN only sample (studies 4, 5, and 13); five used a BN (studies 2 and 22), or BN spectrum (studies 14, 15 and 24), sample; one study used a binge-eating disorder (BED) sample (study 5); eight studies used a sample comprising both AN and BN (study 1, 3, 9, 10, 11, 12, 25 and 26); and the remaining nine studies had a mixture of ED diagnoses. Eleven studies gave additional consideration of issues beyond basic DSM-IV or DSM-5 criteria to diagnose and categorise participants, e.g. purging- and non-purging subtypes retained in analysis, or controlling for severity of ED symptoms (studies 6, 8, 12, 13, 14, 20, 21, 22, 23, 24, and 26). Two studies did not consider confounding variables in regards to their ED categorisation (studies 3 and 16). The remaining studies used only basic DSM categorisation with minimal consideration of diagnostic issues, or evidenced additional consideration in describing their sample but then collapsed into one generic group in analyses.

3.4 Psychological factors associated with SH

3.4.1 Emotional factors and psychopathology

On the SCL-90-R (Symptom Checklist-90 Revised), SH was associated with higher scores on most or all subscales across ED diagnoses (studies 7, 10, 11, 15, and 16). There was some evidence of an association between SH and anxiety (studies 12 and 25) and depression (study 25) in AN and BN. Those with SH tended to experience more anger (study 11) and more obsessive-compulsive thoughts and behaviours than those without (study 19). SH in AN and BN was also associated with higher neuroticism and lower extraversion (study 12).

3.4.2 Personality and individual differences

SH was associated with impulsivity in AN and BN sample (studies 11 and 10). Three studies demonstrated higher impulsivity in BN in comparison to ANr (study 12) and other ED diagnoses (study 19). Study 8 demonstrated that, while there were no differences in self-report measures between those with and without SH (in AN), those with SH made more perseverative errors on performance based measures of impulsivity. On the TCI (Temperament and Character Inventory), SH in a mixed ED population was associated with higher harm avoidance and self-transcendence (in males only; studies 7 and 16) and lower reward dependence, self-directedness and cooperativeness (study 16). Higher self-transcendence was also associated with SH in a BN population (study 2).

3.4.3 Self-criticism and identity

SH was associated with intropunitive hostility (hostility directed at self) in AN and BN, as well as negative body attitude (study 11) and body dissatisfaction (study 25). Self-esteem, along with

psychopathology and dissociation, acted as a mediating factor in the relationship between SH and childhood abuse (study 17). Higher levels of identity confusion, and lower identity synthesis, were linked to SH in a mixed ED population (study 8).

3.4.4 Trauma and dissociation

SH was associated with a significantly higher number of traumatic events compared to those without SH (study 19) and those with a history of SA (studies 2 and 9). Those who had experienced trauma and SH had higher levels of self-criticism and dissociative symptoms, relative to those who had experienced trauma but reported no history of SH (study 10). SH was associated with high scores of dissociation across a number of studies (studies 10, 11, 18, and 19), and dissociation was a significant vulnerability factor for SH (study 17). One study found that a particular aspect of dissociation, imaginative experience, differentiated BN patients from ANr (study 19).

3.4.5 Eating Disorder Inventory (EDI-2)

Study 16 found lower scores on all EDI-2 subscales for those with SH compared to those without SH. Poor interoceptive awareness (the ability to discriminate between sensations and feelings) and ineffectiveness was linked to recent SH in a BN-spectrum population (study 15), a mixed ED population (study 18) and a male only ED population (study 7). Poor interoceptive awareness was also linked to SH in BN (study 2) and in AN and BN along with higher levels of interpersonal distrust (study 25).

Table 1: *Summary of results*

Author/s, year, country	What the study examined	SH or SA	Participants*	Measures used****	Key results**	Quality rating ***
1. Ahren-Moonga et al. (2008) Sweden	Differences in personality traits in 'self-injurious behaviour'	Both (as one variable)	38 AN+BN	KSP	(No personality traits measured by KSP associated with SH/SA)	C
2. Anderson et al. (2002) USA	Differences in personality traits in SH and/or SA	Both	152 BN	EDI-2 TCI	SH: report more sexual abuse than SA/ neither; higher self-transcendence (TCI). SH & SA: higher body dissatisfaction and interoceptive awareness (EDI) . SA: higher harm avoidance, lower persistence (TCI).	B
3. Bulik et al. (1999) New Zealand	Relationship between TCI and SA	SA	68 AN (lifetime); 152 BN; 59 MD	TCI	High persistence, low self-directedness and high self-transcendence; higher harm avoidance (AN and BN).	B
4. Bulik et al. (2008) USA	Differences in personality traits in SA	SA	413 (22 male) current (70)/ lifetime AN	TCI BIS-11	Lower self-directedness, higher harm avoidance (TCI); higher cognitive impulsivity (BIS).	B
5. Carano et al. (2012) Italy	Differences in alexithymia and suicidal ideation	Suicidal ideation	80 (38 male) BED	TAS-20 MADRS Ham-A	Higher alexithymia = more SI, high number of previous SA; higher depression scores (MADRS).	A
6. Claes et al. (2015) Spain	Differences in impulsivity in SH (self-report and performance based)	SH	60 AN	BIS-11 SCWT WCST IGT	BIS: no differences. Performance based: SH more perseverations and perseveration errors.	B
7. Claes et al. (2012) Spain	Differences in personality traits and impulse control	SH	130 male mixed ED	EDI-2 SCL-90-R TCI	Higher total score, interoceptive awareness, and ineffectiveness (EDI); higher harm avoidance (TCI); higher on subscales and total SCL.	B

Author/s, year, country	What the study examined	SH or SA	Participants*	Measures used****	Key results**	Quality rating ***
8. Claes et al. (2015) (unclear)	Association between identity formation and SH	SH	99 AN/ BN/ BED	EPSI identity HADS	Higher identity confusion and lower identity synthesis.	A
9. Claes et al. (2007) (unclear)	Association between SH, trauma, self-esteem, impulsivity and dissociation	SH	70 AN+BN	TEQ DIS-Q LIS HDHQ	Higher rates of sexual and physical abuse. SH+trauma: higher identity confusion, amnesia and self-absorption (DIS-Q); higher self-criticism (HDHQ).	C
10. Claes et al. (2001) (unclear)	Associations between SH, pain, dissociation and impulsivity	SH	134 AN+BN	SCL-90-R DIS-Q LIS	Higher psychopathology (SCL-90); more dissociative experiences (DIS-Q); more impulsivity (LIS).	C
11. Claes et al. (2003) Belgium	Associations between SH and psychopathology severity	SH	70 AN+BN	SCL-90-R LIS, TEQ, DIS-Q, BAT,STAS AX/ AQ HDHQ BPAQ	Higher psychoneuroticism, general anxiety, phobic anxiety, depression, hostility and interpersonal distrust (SCL); trait and state impulsiveness (LIS); state & trait anger (STAS); dissociation (DIS-Q); punitive and intropunitive hostility (HDHQ); negative body attitude (BAT); angry feelings (BPAQ); and report more trauma experiences.	C
12. Claes et al. (2004) Belgium	Differences in personality traits in SH	SH	178 AN+BN	NEO-FFI	Higher neuroticism, lower extraversion; more anxious, more willing to please, less cheerful efficient and ambitious. BNnp higher impulsivity than ANr.	C
13. Forcano et al. (2011) Spain	Differences in personality in SA	SA	172 AN	SCL-90-R TCI EDI-2	Higher on depression scale (SCL-90). ANr: higher scores of phobic anxiety (SCL-90).	A
14. Forcano et al. (2009) Spain	Associations between SA, ED severity and psychopathology	SA	566 BN + subthreshold	EDI-2 SAD SCL-90-R TCI	Higher SCL; higher interpersonal distrust, ineffectiveness, impulsivity, social insecurity (EDI); social avoidance and distress; higher harm avoidance, lower reward dependence, self-directedness, cooperativeness (TCI).	A

Author/s, year, country	What the study examined	SH or SA	Participants*	Measures used****	Key results**	Quality rating ***
15. Gomez-Exposito et al. (2016) Spain	Differences in personality traits, impulsivity and emotion regulation in SH and SA	Both	122 BN-spectrum	EDI-2 SCL-90-R TCI UPPS/BIS DERS	SA/SH: higher ineffectiveness and interoceptive awareness (EDI-2); higher total SCL; higher DERS. SA: higher impulsivity (BIS), lack of premeditation and lack of perseverance (UPPS).	A
16. Islam et al. (2015) Spain	Differences in psychopathology and personality traits in SH	SH	1649 (134 male) mixed ED	EDI-2 SCl-90-R TCI	Worse on TCI, EDI and SCL other than TCI novelty seeking. Regression: SH higher on TCI harm avoidance and self-transcendence (men only), lower on reward dependence, self-directedness and cooperativeness.	B
17. Muehlen-kamp et al. (2011) Belgium	Associations between trauma, self-esteem, dissociation, and body dissatisfaction	SH	422 mixed ED	TEC SCL-90-R EDI-2 BAT DIS-Q	Significant association with childhood abuse, mediated by low self-esteem, psychopathology and dissociation. Dissociation vulnerability factor for SH.	B
18. Noma et al. (2015) Japan	Association between SH, SA, dissociation and attachment style	Both	76 mixed ED	DES J-RQ	Recent SH: higher dissociation; recent SA more preoccupied attachment style. ED with no comorbidities: recent SH linked to ineffectiveness and poor interoceptive awareness.	C
19. Paul et al. (2002) Germany	Differences in trauma, dissociation, and obsessive-compulsive behaviour in SH	SH	376 mixed ED	EDI-2 BIS-11 YBOCS DES TLEQ	Report more instances of trauma; higher dissociation on 2/3 scales: imaginative experience (higher in BN vs ANr) and depersonalisation/derealisation, more obsessive-compulsive thoughts and behaviours, and BN higher on impulsivity.	B
20. Pisetsky et al. (2017) USA	Associations between SH, SA, and emotion regulation	Both	110 (7 male) 'probable' mixed ED +subthreshold	DERS	(Emotion regulation scores did not differ between SA vs no SA nor SH vs no SH)	B

Author/s, year, country	What the study examined	SH or SA	Participants*	Measures used****	Key results**	Quality rating ***
21. Pisetsky et al. (2013) Sweden	Associations between SA, personality traits, psychopathology and temperament	SA	392 mixed ED	MDPS EPQ TCI	(No personality features significantly associated with SA)	A
22. Pisetsky et al. (2015) USA	Associations between SA and personality traits	SA	337 BN	DAPP-BQ IDS MOCI BDI	Higher cognitive dysregulation, identity problems, anxiousness, insecure attachment, and depression symptoms.	A
23. Runfola et al. (2014) Sweden	Associations between SA and self-image	SA	2269 mixed ED	SAB Self-image	Prior SA in ANr and EDNOS, and later SA in BN, associated with negative self-image. SA in BN predicted by low self-affirmation.	A
24. Smith et al. (2016) USA	Associations between childhood abuse and SA	SA	204 BN+ subthreshold	CTQ	SA associated with emotional and sexual childhood abuse	B
25. Solano et al. (2005) Spain	Psychological differences in SH	SH	109 AN+BN	EDI-2 BDI BSQ RSES	Higher depression, anxiety, and body dissatisfaction. Higher interpersonal distrust, and interoceptive awareness.	B
26. Youssef et al. (2004) France	Differences in personality traits in SA	SA	152 AN and BN	BDI MMPI	Risk factors: ANr: 'antisocial practices' as risk factor; ANp: 'shyness/self-consciousness', 'antisocial practices', 'obsessiveness' , 'low self-esteem' and 'psychopathic deviate' BNp: 'anger' and 'fears'	A

*All participants female unless otherwise stated **Only significant results reported ***Quality rating key: A: Good, B: Moderate, C: Poor

ED (Eating disorder), AN/r/bp/bn (Anorexia Nervosa /restrictive subtype /binge-purge subtype /bulimia nervosa (those who have met both criteria)), BN/p/np (Bulimia Nervosa /purging subtype /non-purging subtype), BED (Binge-eating disorder)

**** KSP (Karolinska Scales of Personality), EDI-2 (Eating Disorder Inventory), TCI (Temperament and Character Inventory), BIS-11 (Barratt Impulsivity Scale), TAS-20 (Toronto Alexithymia Scale), BES (Binge Eating Scale), MADRS (The Montgomery-Asberg Depression Rating Scale), Ham-A (Hamilton Anxiety rating scale), SCWT (Stroop Colour and Word Test), WCST (Wisconsin Card Sorting Task), IGT (Iowa gambling task), SCL-90-R (Symptom Checklist-90-Revised), EPSI (Erikson Psychosocial stage inventory), HADS (Hamilton Anxiety and Depression Scale), TEQ (Traumatic Experiences Questionnaire), DIS-Q (Dissociation Questionnaire), LIS (Leiden Impulsiveness Scale), HDHQ (Hostility and

Direction of Hostility Questionnaire), BAT (Body Attitude Test), STAS (State-Trait Anger Scale), AX (Anger Expression Scale), AQ (Aggression Questionnaire), HDHQ (Hostility and Direction of Hostility Questionnaire), BPAQ (Buss-Perry Aggression Questionnaire), NEO-FFI (NEO-Five Factor Inventory), SAD (social avoidance distress scale), UPPS (Impulsive behaviour scale), DERS (Difficulties in Emotion Regulation Scale), TEC (Traumatic Experiences Checklist), DES (Dissociative Experiences Scale), J-RQ (Japanese-relationship questionnaire), YBOCS (Yale-Brown Obsessive Compulsive Scale), TLEQ (Traumatic life events questionnaire), MDPS (Multidimensional Perfectionism Scale), EPQ (Eysenck personality inventory), DAPP-BQ (The Dimensional Assessment of Personality Pathology), IDS (Inventory for Depressive Symptomatology), MOCI (Maudsley Obsessive-Compulsive Inventory), BDI (Beck Depression Inventory), SAB (Structural Analysis of Social Behaviour), CTQ (Childhood Trauma Questionnaire), BSQ (Body Shape Questionnaire), RSES (Rosenberg Self-Esteem Scale), MMPI (Minnesota Multiple Personality Inventory)

3.5 Psychological factors associated with SA

3.5.1 Emotional factors and psychopathology

SA were associated with higher general pathology (as measured by the SCL-90-R) in a BN-spectrum population (studies 13 and 15). SA in BN were associated with higher interpersonal distrust, ineffectiveness, and social insecurity (study 14), emotion dysregulation (study 15) and cognitive dysregulation (study 22). However study 20 found no differences in emotion regulation scores in a mixed ED sample. SA were associated with higher overall impulsivity (study 14) and lack of premeditation and perseverance in BN (study 15), and with cognitive impulsivity in AN (study 4). Depression was associated with SA in both AN and BN (studies 13 and 22). SA were associated with anxiousness (study 22), social avoidance and distress (study 13) in BN, and phobic anxiety in ANr (study 13).

3.5.2 Personality and individual factors

SA were associated with harm avoidance (BN: studies 14 and 2; AN: study 4; both AN/BN: study 3), lower self-directedness (AN and BN: study 3) and persistence (BN: study 2). SA were also associated with higher scores of alexithymia (difficulties identifying and describing emotions) (study 5). SA in BN were associated with insecure attachment style (study 22) and preoccupied attachment style in a mixed ED population (study 18). Negative self-image was associated with prior SA in ANr and eating-disorder-not-otherwise-specified (EDNOS), and with later SA in BN; SA in BN were predicted by low self-affirmation (study 23). SA in BN were associated with identity problems (study 22). Two studies found no association between personality and SA as measured on the KSP (study 1), TCI, MDPS, or EPQ (study 21). Several forms of childhood abuse (both emotional and sexual abuse) were significantly associated with lifetime SA (study 24).

3.5.3 Eating Disorder Inventory (EDI-2)

SA were associated with: lack of interoceptive awareness (study 2) and ineffectiveness (studies 14 and 15) in BN-spectrum; along with interpersonal distrust, social insecurity (study 14) and body dissatisfaction (study 2).

4. Discussion

One of the aims of this review was to identify and describe key psychological factors associated with SH and SA in EDs. As evident in the results, existing research has utilised a wide variety of measures assessing various psychological constructs. This, alongside issues relating to the categorisation of EDs and assessment of SH/SA, makes it difficult to come to clear conclusions concerning the most important risk factors in this population.

4.1 Psychological risk factors associated with SH and SA

There were a number of psychological factors associated with both SH and SA. Broadly speaking, both SH and SA were associated with greater levels of general psychopathology, with some evidence of associations with depression and anxiety. In various studies using measures such as the TCI (temperament and character inventory), SCL-90-R (symptom checklist), and EDI-2 (eating disorder inventory), the majority of subscales were associated at some point with SH and SA across ED subtypes. In particular, deficits in interoceptive awareness (clarity about what one is feeling and acceptance of emotional experiences) and harm avoidance were associated with both SA and SH across ED diagnoses (e.g. studies 2, 4, and 16), and SH and SA in BN was specifically associated with ineffectiveness (feelings of inadequacy and worthlessness – studies 14 and 15).

Factors relating to self-criticism, such as negative self-image and body dissatisfaction, were associated with SH/SA across ED subtypes (e.g. studies 2 and 11). These suggest higher negative feelings related to body and self-image may underlie, and potentially motivate, SH behaviour, supported by the association between SH and hostility directed at oneself (intropunitive hostility: study 11) across ED diagnoses. Social factors, such as higher interpersonal distrust, social insecurity, and identity confusion, were also associated with increased risk of SH/SA (e.g. studies 8, 11, and 14) which may be compounded by higher levels of self-criticism. These findings are consistent with general population data where socially-prescribed perfectionism has been identified as a risk factor for suicide (O'Connor, 2007).

Consistent with previous findings, a number of studies demonstrated an association between impulsivity and SH/SA, particularly in BN (e.g. studies 4, 15, and 19). Study 6, however, examining self-report impulsivity in AN, found no differences in those with SH compared to those without. It seems that, in general AN is much less strongly associated with impulsivity than BN, and this study did not differentiate between binge-purge versus restrictive AN which may have resulted in different associations. Childhood trauma was also significantly associated with both SH and SA, but a number of studies suggested that those with SH reported higher instances of childhood abuse than those with SA (e.g. study 9).

4.2 Assessment of SH and SA

The majority of studies assessed SH/SA via clinical interview or validated measures, which likely resulted in valid comparator groups. Studies 1, 21, and 23 however assessed SH/SA through patient records and registers. This meant that only behaviours severe enough to warrant hospitalisation were gathered, which likely underestimates the potential amount of SH/SA that *does not* result in hospitalisation: subsequently groups defined by presence/absence of SH/SA may not be as independent as assumed. These studies found no association between SH/SA and personality traits, suggesting the chosen method of assessment may have invalidated these findings. Four studies (studies 8, 20, 22, and 24) relied on a single item question to assess SH/SA: this similarly risks gathering too little information regarding an individual's history to be able to confidently assert that the 'free from SH/SA' group is indeed so. However, use of one question is common to research in this area, and has been shown to render consistent estimates of prevalence (e.g. Muehlenkamp et al., 2012).

A number of studies included in this review compared groups with and without 'non-suicidal self-injury' (NSSI): the 'direct and deliberate destruction of one's own body without suicidal intent' (Nock, 2009). NSSI has been included in the new DSM 5 as a potential diagnosis requiring further study. However this is not without controversy: suicidal intent is suggested to be dimensional rather than binary; motivation and intent can change within an episode of SH; and NSSI itself has been shown to be an important risk factor for SA (Kapur, Cooper, O'Connor and Hawton, 2013). However, in these studies (e.g. studies 9, 12 and 17) it is not clear whether individuals are explicitly asked about suicidal intent in completing measures supposedly assessing NSSI. Given the complexities and difficulties involved in the assessment of SH/SA behaviour, the use of a structured clinical interview to assess SH/SA history is recommended.

4.3 Categorisation of EDs

In order to assess associations between SH/SA in EDs, distinguishing between ED subtypes is essential - particularly binge-purge subtypes, given the evidence to suggest that these behaviours are differentially associated with SH/SA. However, only eleven of twenty-six papers gave additional consideration to issues beyond basic DSM criteria, and retained these subcategories, or controlled for ED symptomatology, in analyses. Six studies evidenced additional considerations in describing their sample; however, they then collapsed subcategories into one generic 'ED' group. The remaining studies gave minimal or no consideration to these additional issues. While it is recognised that retaining subcategorisation depends on large sample sizes which is not always possible, lack of clarity of findings is perhaps not surprising given a lot of the research is based on a heterogeneous pool of ED diagnoses. As demonstrated by Danner et al. (2014), while specific correlational patterns within ED subcategories may not reach statistical significance, running analyses in mixed ED groups precludes the identification of subtype-specific relationships, and runs the danger of drawing incorrect conclusions which do not hold true for all ED subtypes. For

example this can be seen in studies 1 and 21, in which no associations between psychological factors and SH/SA was found: these studies which also were scored down based on poor assessment and subsequent categorisation of either SH/SA or ED.

4.4 Methodological limitations and recommendations for future research

There are a number of limitations with the existing evidence base, a number of which have already been discussed: the use of a vast range of psychological measures which precluded the ability to come to clear conclusions; assessment of SH/SA was not always appropriate; and lack of adequate ED subcategorisation. Additionally, the majority of studies did not provide adequate details on basic socio-demographic information, and in a number of papers, age ranges were not included which meant it was unclear whether the sample were all aged over 16 or not. These issues limit confidence in generalisablity.

4.5 Review limitations

A strength of the current review is also its main limitation: its wide scope of studies focused on SH and SA across all ED diagnoses possibly limited the ability to describe results in detail. While a review focusing specifically on either SH or SA would allow a more in-depth examination of studies, it is also acknowledged that this would perhaps be an arbitrary distinction given the evidence to suggest SH and SA are on a continuum of self-destructive behaviour. This review is limited however in its aim to review research concerning all psychological factors: this was perhaps too broad an area to cover, limiting the ability to describe and conclude results. Further reviews in this area should consider narrowing down the scope of 'psychological factors'.

5. Conclusion

There is a substantial amount of research concerning potential psychological factors associated with the increased risk for SH and suicidality in EDs. However, it is difficult to come to clear conclusions regarding specific risk factors: existing research uses a wide disparate array of psychological measures; assessment of SH/SA history is often less than adequate; and few studies give the required consideration to classification and subsequent categorisation of ED diagnoses. Nonetheless, factors relating to self-criticism, social pressures, impulsivity, and experience of childhood trauma appear to be important risk considerations in this population.

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CHAPTER 2 – MAJOR RESEARCH PROJECT

A mixed methods study of the relationships between self-harm, suicidal behaviour, and disordered eating in BPD: the role of psychological factors

Claire Allott*

Submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology

September 2017

Chapter word count (including quotes): 8,589

*Address for correspondence:
Claire Allott / Professor Rory O'Connor
Institute of Health and Wellbeing
College of Medical, Veterinary and Life Sciences
University of Glasgow
Gartnavel Royal Hospital
1st Floor Administration Building
1055 Great Western Road
Glasgow, G12 0XH

Email: claire.allott1@nhs.net

Prepared in accordance with the requirements for submission to Social Science and Medicine (see appendix 3)

Plain English summary

A mixed methods study of the relationships between self-harm, suicidal behaviour, and disordered eating in borderline personality disorder: the role of psychological factors

Background

Borderline personality disorder (BPD) is a diagnosis marked by recurrent self-harm and suicide attempts. Self-harm and suicidal behaviour are also common in individuals with eating disorders (EDs). In particular, binge and/or purge behaviours, which occur in a number of ED diagnoses, are associated with a higher prevalence of suicide attempts and self-harm (Franko and Keel, 2006). Research demonstrates that BPD and EDs occur together approximately 50% of the time, and that the combination of these two diagnoses leads to a greater risk for suicide attempts and self-harm. Binge-purge EDs seem to be particularly associated with BPD, possibility due to commonalities such as impulsivity and problems coping with emotions. However, the nature of the relationship between EDs and BPD, and psychological factors associated with this relationship, remains unclear.

Aims and questions

This study aimed to examine the rate at which disordered eating and self-harm and/or suicide attempts are present within a sample of individuals with BPD. A second aim was to investigate what psychological factors may be associated with increased severity of disordered eating in those with BPD and a history of self-harm or suicide attempts. A third aim was to interview individuals with BPD, disordered eating and self-harm and/or suicidal history, in order to better understand their experiences of these difficulties.

Methods

52 individuals with a diagnosis of BPD accessing mental health services in NHS Highland completed questionnaires assessing depression, emotional regulation, perfectionism, impulsivity, resilience, and self-disgust. Seven of these individuals, who reported a history of self-harm *and* suicide attempts *and* met a threshold on the disordered eating questionnaire, were interviewed about their experiences. Interviews were analysed using interpretative phenomenological analysis.

Results

All participants reported a history of self-harm or suicide attempts, and the majority reported high levels of disordered eating symptoms. Analysis of the questionnaires demonstrated that social perfectionism, difficulties with regulating emotions, depression, and low resilience were associated with higher severity of eating difficulties. Three main themes emerged from the interviews: ‘self as defective’, in which participants described feeling that they were not good enough to meet their own or others’ expectations; ‘need for control’, in which they described feeling powerless in controlling their emotions, and that self-harm and disordered eating behaviour helped them feel

more in control; and ‘friend and foe’, in which they described the positive and negative aspects to their experiences of self-harm and disordered eating.

Conclusions

Experiences of self-harm, suicidal behaviour and disordered eating are very common in individuals with BPD: more attention needs to be given to these issues in treatment. Psychological factors associated with increased severity of disordered eating in those with BPD and self-harm and/or suicide attempts were social perfectionism, emotion regulation difficulties, depression, and low resilience.

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Abstract

Co-occurring borderline personality disorder and eating disorders confer a greater risk for self-harm and suicide attempts than either diagnosis alone. The nature of, and possible reasons for, the relationships between disordered eating, borderline personality disorder, and self-harm behaviour remains unclear. This study used a cross-sectional mixed methods approach to examine the prevalence of self-harm, suicide attempts, and eating disorder symptoms in borderline personality disorder; investigate the effect of psychological factors on these relationships; and to explore lived experiences of self-harm, suicidal behaviour, and disordered eating in borderline personality disorder. 52 individuals with borderline personality disorder in NHS Highland completed questionnaires assessing various psychological factors. A subset of these (n=7) took part in semi-structured interviews exploring experiences of self-harm/suicide attempts, and disordered eating, analysed using interpretative phenomenological analysis. Results demonstrated that self-harm and/or suicide attempts were reported by all participants, and the mean scores on the EDE-Q were high. Social perfectionism, emotional dysregulation, depression, and low resilience were associated with eating disorder severity; social perfectionism uniquely so. Three superordinate themes describing participants' experiences of self-harm, suicide attempts and disordered eating emerged from the analysis: 'self as defective'; 'need for control'; and self-harm as 'friend and foe'. These findings highlight that high rates of self-harm, suicide attempts, and disordered eating are reported by individuals with borderline personality disorder. Social perfectionism in particular appears to be a risk factor in those with co-occurring borderline personality disorder and disordered eating, alongside emotion dysregulation, depression, and low resilience. More attention needs to be given to assessing and treating eating disorder symptomatology and self-harm/suicide attempts in individuals with borderline personality disorder.

1. Introduction

Borderline personality disorder (BPD) is a clinical diagnosis characterised by instability in emotions, impulse control, and interpersonal relationships; it is also marked by recurrent self-harm and suicide attempts. An estimated 75% of patients with BPD attempt suicide, with approximately 10% eventually dying by suicide (Black, Blum, Pfohl and Hale, 2004). Self-harm, defined in the national institute for health and care excellence guidelines (2013) as "intentional self-poisoning or self-injury, irrespective of the apparent purpose of the act", occurs in approximately 90% of patients with BPD (Gunderson and Ridolfi, 2001). Eating disorders (EDs) are another diagnostic category in which suicide attempts and self-harm are highly prevalent (Kostro, Lerman and Attia, 2014). A meta-analysis of the risk of suicide in EDs demonstrated a standardised mortality ratio (SMR) of 31 in Anorexia Nervosa (AN), and a SMR of 7.5 in Bulimia Nervosa (BN) (Preti et al., 2011); prevalence of self-harm varies between 13.6 and 68.1% (Svirko and Hawton, 2007). Multiple studies have demonstrated that BPD and EDs commonly co-occur: approximately half of treatment-seeking women with BPD have a comorbid ED (Zimmerman and Mattia, 1999). Furthermore, co-occurring BPD and EDs, BN in particular, seem to confer a unique greater risk for suicidal and self-injurious behaviours than either diagnosis alone (Reas et al., 2014).

1.2 Co-occurring BPD and BN

BN is the most commonly co-occurring ED in patients with BPD, followed by binge-eating disorder and the 'binge-purge' subtype within AN (ANbp), whereas the restrictive form of AN (ANr) co-occurs at a much lower rate (Cassin and von Ranson, 2005). This suggests that binge-purge behaviours, behaviours which cross diagnostic boundaries, have a particular association with BPD. Research has consistently demonstrated associations between binge-purge behaviours and self-harm and suicidal ideation: prevalence rates are highest in BN, followed by ANbp, with lower prevalence in ANr (Kostro et al., 2014). These differences in prevalence are often attributed to increased impulsivity in binge-purge ED subtypes compared to restrictive EDs (e.g. Claes et al., 2002). Research has mostly supported the hypothesis that individuals who self-harm are more impulsive than those who do not (Janis and Nock, 2009). As well as a shared diagnostic criterion of binge-eating across BPD, BN, and other binge-purge subtypes, impulsivity, along with a high prevalence of self-harm and suicide attempts, are also shared features of these diagnoses (Anderson et al., 2002).

1.3 Classification of eating disorder sub-diagnoses

Existing research concerning associations between EDs and self-harm is problematic in terms of the extent to which ED subtypes are differentiated. Few studies do so, yet drawing such distinctions may be pivotal to understanding the complex nature of these relationships (Danner, Sternheim, and Evers, 2014). There is also controversy surrounding the extent to which ED labels reflect clinical reality, and high rates of conversion across diagnoses have been reported (Fairburn and Cooper,

2011). As such, consideration of transdiagnostic factors associated with increased risk in those with problematic eating may be more appropriate than comparisons across basic diagnostic categories.

1.4 Psychological factors associated with an increased risk for suicidal and self-harm behaviour

The research is clear in demonstrating that co-occurring BPD and binge-purge EDs confer a greater risk for suicidal and self-harm behaviour. The reasons for this association, however, are not clear. The majority of research concerning risk factors in these two populations focuses on prevalence and psychiatric comorbidities, with limited research on the potential psychological factors associated with this increased risk.

Risk factors for suicide and self-harm in those with BPD are similar to those in the general population: comorbid major depressive disorder, substance use disorder, impulsivity, and prior suicide attempts have been identified (Black et al., 2004). Potential risk factors in EDs, meanwhile, include: impulsivity, affect dysregulation, dissociation, self-criticism, self-disgust, and trauma (Chu et al., 2015; Svirko and Hawton, 2007). Possible transdiagnostic psychological characteristics in people with BPD and BN who self-harm may include impulsivity (Anderson et al., 2002) and difficulties in emotion regulation. Indeed, emotion dysregulation is considered a core feature of BPD, and is also found in those with BN-spectrum disorders who have either self-harmed or attempted suicide (Gomez-Exposito et al., 2016). Common risk factors across BPD and ED more broadly may include: poor problem-solving, dissociation, self-hatred, need for control, and childhood trauma (Chen et al, 2009; Franko and Keel, 2006).

1.5 Rationale for the current study

Given the increased risk of self-harm and suicide in populations with co-occurring BPD and disordered eating, further research into the underlying mechanisms associated with this risk is necessary. To gain a deeper understanding of the relationships between self-harm, suicidality, and disordered eating, this study aimed to complement quantitative self-report data with in-depth interviews concerning individuals' experiences of self-harm, suicidality, and disordered eating. As suggested by Fitzpatrick (2011), many of the relational and wider contextual factors which would help develop understanding of suicidality are not easily categorised or quantified. Few studies have used qualitative approaches to investigate the relationships between eating disorders and self-harm; even less so in those with co-occurring BPD. As a result, we employed interpretative phenomenological analysis (IPA), a qualitative approach which aims to understand how individuals make sense of major life experiences (Smith et al., 2013). IPA emphasises understanding experiences from an individual's perspective (i.e., the phenomenology), and it is committed to dual hermeneutics (that is, the researcher's efforts to interpret how the individual makes sense of their experiences), making it an ideal approach to conduct an in-depth exploration of individuals' personal experiences.

1.6 Research aims

The primary aim of this study is to examine the extent to which disordered eating and self-harm and/or suicidal behaviours are associated within a sample of patients with BPD, through self-report questionnaires as well as interviews, in order to explore the lived experience among adults with a history of these difficulties. A secondary aim is to identify possible psychological factors associated with greater severity of symptoms in those with BPD.

1.7 Research questions

a) What percentage of a BPD population report co-occurring disordered eating, self-harm and suicidal behaviour?
b) In those with BPD endorsing a self-harm and suicidal history, to what extent are psychological factors (depression; impulsivity; emotional regulation; social perfectionism; self-disgust; and resilience) associated with the severity of disordered eating?
c) In those with BPD, how do experiences of self-harm, suicidal behaviour, and disordered eating behaviour relate to each other?

2. Method

2.1 Design

The study used a cross-sectional, mixed methods design.

2.2 Ethics

Ethical approval for the study was obtained from the East of Scotland Research Ethics Committee and NHS Highland Research and Development Department (see appendix 2.1).

2.3 Participants and sample size

The study sought to recruit as many individuals as possible with a diagnosis of BPD in contact with mental health services in NHS Highland, a subset of which took part in the interview part. People with this diagnosis could be in contact with services in a number of ways: on the caseload of a clinician within Adult Mental Health (AMH); the Personality Disorders Service (PDS); Community Psychiatric Nurses (CPNs) within Community Mental Health Teams (CMHTs); or through attendance at one of three group based treatments for BPD in NHS Highland. These are: STEPPS and STAIRWAYS (successive, manualised group programmes for treating BPD; Blum et al., 2002); or DBT (Dialectical Behaviour Therapy; a combination of group and individual treatment for BPD; Linehan et al 1999). Inclusion criteria for participation were: a current diagnosis of BPD; aged sixteen or over. Exclusion criterion: a co-morbid dissocial personality disorder (an exclusion criterion for STEPPS, extended for all participants).

2.4 Recruitment procedure

Recruitment began in October 2016 and ended May 2017. A number of recruitment sources were employed (a flow diagram further detailing recruitment can be seen in appendix 2.3):

i. Five of seven STEPPS groups running during the recruitment period were attended, with group consent (one group did not consent for the researcher to attend - facilitators distributed research materials instead; one CMHT refused involvement). The research was briefly explained and materials left for those wishing to take part.

ii. The STAIRWAYS group was inactive during the recruitment period. Those on the waiting list were sent research materials with a covering letter from the group facilitator.

iii. The DBT group was attended in February 2017 with group consent. The research was briefly explained, and materials left at the group.

iv. Clinicians within AMH and PDS distributed materials to those on their caseload meeting criteria.

v. Seven of nine CMHTs distributed materials to those on their caseload meeting criteria, in order to access those either not receiving input from AMH or PDS, or

on the waiting list for STEPPS (one CMHT did not respond; one CMHT refused involvement).

2.5 Part one: questionnaires

Participants completed eight self-report questionnaires (approximately 10-15 minutes to complete). Socio-demographic information was recorded for each participant, including age, gender, ethnicity, occupation, marital status, current psychiatric diagnoses, and postcode. Questionnaires were returned either via the clinician who provided the materials or by freepost.

Measures

Brief version of the Difficulties with Emotion Regulation Scale (DERS-16; Bjureberg et al., 2015), a 16-item measure assessing emotion regulation. The authors report excellent internal consistency (α=.92) and good test-retest reliability (ρI=0.85; p<.001). Internal consistency in this study was α=.88.

Multidimensional Perfectionism Scale (MPS; Hewitt and Flett, 1990), a 45-item measure assessing various aspects of perfectionism, reported by the authors to have adequate internal consistency (α=.82-.87) and test re-test reliability (r=.60-.69). Items assessing socially prescribed perfectionism only were used (internal consistency in this study was α=.89).

Self-disgust Scale (SDS; Overton et al., 2008), an 18-item measure assessing aspects of self-disgust. The authors reported excellent internal consistency (α=.91) and test–retest reliability (r=.94). Internal consistency in this study was α=.87.

Self-Injurious Thoughts and Behaviors Interview – short form (SITBI; Nock et al., 2007), a 72-item schedule assessing characteristics of self-injurious thoughts and behaviours. 26 questions concerning self-harm and suicidal thoughts and behaviours were used and the phrasing of questions was modified to be suitable for self-report rather than administered via interview.

Brief Resilience Scale (BRS; Smith et al., 2008), a 10-item measure assessing the ability to "bounce back" or recover from stress. The authors reported good internal consistency (α = .80-.91) and test-rest reliability (r=.62-.69). Internal consistency in this study was α=.82.

Patient Health Questionnaire (PHQ-9), a widely used 9-item measure assessing symptoms of depression that has demonstrated excellent internal reliability (α=.86-.89) and test-retest reliability (r=.84). Internal consistency in this study was α=.86.

Barratt Impulsiveness Scale short form (BIS-15; Spinella, 2007), a widely used 15-item measure assessing impulsivity. The authors reported have high test-retest reliability (r=.79) and very good internal consistency (α=.82). Internal consistency in this study was α=.81.

Eating Disorders Examination Questionnaire (EDE-Q; Fairburn and Beglin, 1994), a 41-item measure assessing eating behaviour. The global scale (EDE-Q global; α=.92) reflects overall severity of disordered eating related to restraint, eating, weight, and shape concerns. It also produces count variables for the frequency of binge-eating episodes, self-induced vomiting episodes, laxative use, and driven exercise.

2.6 Part two: Interviews

Participants provided contact details as part of completing questionnaire packs if they consented to take part in interviews. A purposive sampling method was used:

i. Those indicating a history of both self-harm and suicide attempt; and
ii. Those scoring above 4 on the global EDE-Q (indicative of significant disordered eating behaviours).

Those meeting inclusion criteria were phoned by the researcher and interviews arranged at a place and time convenient for them. Recruitment continued until data saturation was achieved (seven participants). Interviews were conducted in a clinical setting by the researcher, lasting between 47 minutes and 1 hour 10 minutes. At the outset of each interview, a brief introduction to the study was provided; the information sheet revisited; confidentiality explained including limits regarding risk to self and others; and written consent obtained. The sensitive nature of the research topic was acknowledged; participants were advised they did not have to answer questions they did not wish to, could take a break at any time, and were free to withdraw at any point. Interviews were conducted in line with an interview schedule (see appendix 2.8). The schedule was piloted on a small number of the final sample (n=2) to assess the appropriateness of proposed questions. No issues emerged during this phase and no substantive changes were made. The interview explored participants' experience of self-harm, suicidal behaviour, and disordered eating behaviour. How these experiences may be related, and whether they considered eating difficulties as a form of self-harm were also explored. The interview schedule was used as a guide, allowing the participant to prioritise their experiences, and allowing the researcher to probe into specific topics to gain more insight into the participants understanding of their experiences. No participants were identified at imminent risk of suicide during or after the interviews, and all were provided with a list of contacts for further support, including Breathing Space and Samaritans. All interviews were recorded on a digital recorder, with participants' permission, and transcribed verbatim.

2.7 Data analysis

Details concerning data analysis (both quantitative and qualitative) can be found in appendix 2.10.

2.8 Research reflexivity

In using an IPA framework, a double hermeneutic is created as the researcher attempts to make sense of the participants' experiences. As such, the role of the researcher in the process of analysis is explicitly recognised in IPA: undergoing a process of reflexivity is necessary in order to ensure assumptions are limited. Throughout the process of conducting and analysing the interviews, the researcher was aware of ways in which her own professional and personal experiences may have had an impact on these processes. As both a trainee clinical psychologist and experience prior to this, the researcher had five years of clinical experience which involved working psychologically with individuals experiencing acute distress, including working with people with severe eating disorders and suicidal behaviours. Throughout the process of the interviews, the researcher kept a reflective account in order to help her recognise her subjective views and emotional responses in relation to the content of the interviews, as well as ensuring adequate time and space was taken to distance herself from the research. As suggested by Smith et al. (2013), this assisted the process of 'bracketing off' beliefs and expectations that a researcher brings to the process, particularly during data analysis. One of the study's supervisors also independently identified emergent themes in a sample of interview excerpts to verify the reliability of the analysis.

3. Results

Socio-demographic characteristics of the final sample are presented first, followed by the results from part one (questionnaires), then the results from part two (interviews).

3.1 Sample characteristics

In total, 52 participants completed the questionnaires. 48 were female (92%) and four were male. T-test analyses indicated gender significantly affected a number of measures including EDE-Q total score. As there were only four men in the sample and thus not enough to perform separate analyses, males were excluded from all further analyses. Participants were aged between 17-65 years (mean=31.6 years, SD=12.25), with all reporting a diagnosis of BPD and 16 reporting at least one comorbid diagnosis. The majority of participants were white British (n=47) and one was Polish. 10 reported being employed full-time (21%), 13 part-time (27%), 20 were unemployed (42%), four were volunteers (8%), and one was a student (2%). 25 were single (52%), eight were married or civil partnered (17%), nine were cohabiting (19%), five were divorced (10%), and one was widowed (2%). No significant differences relating to age, ethnicity, marital status, or employment status were found on any variables following chi-square analyses for categorical variables and correlational analyses for scale variables.

3.2 Part one results: Questionnaires

3.2.1 Eating disorder severity and self-harm and suicide attempts

The first research question was to identify what percentage of a BPD population report co-occurring disordered eating, self-harm, and suicidal behaviour. Mean score on the global EDE-Q was 3.69 (*SD*=1.39). The average number of binge episodes occurring over a 28-day period was nine (range=0-50); average number of purge episodes was 15 (range=0-50). All participants endorsed a history of either self-harm or suicide attempts, with 85% reporting both (n=41). 96% (n=46) indicated they had self-harmed at some point in their lives. Three participants reported they had self-harmed once or twice; eight participants between 10-50 times; remaining participants ranging from ‘hundreds’ to ‘thousands’ to ‘too many to count’. 85% (n=41) indicated they had attempted suicide at least once in their lives. The number of times people reported having attempted suicide was once or twice (n=10), three times (n=10), four times (n=4), five times (n=5), six to nine times (n=3), 10+ (n=6), with two people indicating over 30 and two reporting ‘too many to count’.

3.2.2 Correlations

To establish what psychological factors are associated with higher severity of disordered eating in a self-harming BPD population, correlational analyses were conducted examining associations between the EDE-Q global score and the six psychological measures. Results are presented in table 1 (see appendix 2.10 for associated scatterplots). Results showed that higher severity of disordered eating behaviour was significantly associated with difficulties in emotion regulation (DERS-16

total score: r=.496, p<.01), higher scores of social perfectionism (MPS-SPP total score: r=.353, p<.05), lower levels of resilience (BRS total score: r=.371, p<.05) and higher depression scores (PHQ-9: r=.324, p<.05).

Table 1: *Correlational matrix, means, and inter-quartile ranges of all (n=48)*

Variables	Median & Inter-quartile range	1 [a]	2 [a]	3	4 [a]	5	6	7
1. Disordered eating[a]	4.16 (3.28-4.1)	-						
2. Difficulties in emotion regulation[a]	66 (61.17-67.09)	.496**	-					
3. Social perfectionism	73 (66.58-76.23)	.353*	.477**	-				
4. Self-disgust [a]	68 (61.01-69.28)	.244	.574**	.551**	-			
5. Resilience	26 (23.01-27.12)	.372*	.679**	.391**	.632**	-		
6. Depression	20 (17.26-20.53)	.324*	.441**	.278	.584**	.575**	-	
7. Impulsivity	42 (40,26-44.93)	.174	.352*	.030	.372**	.329*	.438**	-

*p<.05 **p<.01

[a]Spearman's correlation coefficients - remaining values represent Pearson's correlation coefficients. Disordered eating (EDE-Q total score); Difficulties in emotion regulation (DERS-16 total score); Social perfectionism (MPS-SPP total score); Self-disgust (SDS total score); Resilience (BRS total score); depression (PHQ-9 total score); Impulsivity (BIS-15 total score).

EDE-Q frequency data (number of binges, laxative use, or episodes of vomiting) were not positively correlated with any scores outside of those on the EDE-Q, other than number of times over exercised which was significantly correlated with DERS (r^a=.301, p=.036).

3.2.3 Regression

A multiple regression was conducted using severity of disordered eating (EDE-Q total score) as the outcome variable and those variables significantly correlated with the EDE-Q as predictors: difficulties in emotion regulation (DERS-16), social perfectionism (MPS-SPP), resilience (BRS) and depression (PHQ-9). Results indicated that the overall model was significant, F(4,42)=4.19, p=.006, R^2 *adj*=.22. However, as shown in table 2, social perfectionism was the only significant predictor thereof (β=.31, p=.045). DERS, BRS and PHQ-9 were not significantly associated with disordered eating behaviour.

Table 2: *Multiple regression with total score of the EDE-Q as dependent variable and DERS-16, social perfectionism, BRS and PHQ-9 as predictors*

Predictor Variable	***B***	**SE B**	**β**	**T**	**sig**
Constant	-1.003	1.219		-.823	.415
Difficulties in emotion regulation	.041	.024	.298	1.733	.090
Social perfectionism	.026	.013	.308	2.063*	.045
Resilience	-.011	.036	-.056	-.304	.762
Depression	.026	.040	.104	.650	.519

*p<.05

3.3 Part two results: Interviews

3.3.1 Sample characteristics

46 out of 48 participants consented to take part in the interview; 23 met interview inclusion criteria (history of both self-harm and suicide attempt and EDE-Q global score of 4 or above); seven took part in the final interviews at which point data saturation was achieved. Participants were seven white British females aged between 18-36 years (mean=27, *SD*=6.8). All reported a diagnosis of BPD with one reporting comorbid bipolar disorder. One was married; four were single; and two were co-habiting. Further participant details are provided in table 3.

Table 3: *Interview Sample characteristics*

Pseudonym	Age	Psychiatric Diagnoses	DEPCAT Score[b]	Global EDE-Q score out of 6[c]	Number of episodes of self-harm	Number of lifetime suicide attempts
Nora	36	BPD[a]	3	4.16	'Numerous'	'2'
Heather	25	BPD	1	5.33	'Daily for past 7-10 years'	'2 or 3'
Louise	22	BPD	1	4.18	'20 or more'	'3'
Isla	18	BPD	2	4.28	'Maybe over 100'	'3'
Murdina	36	BPD & bipolar	7	4.82	'50 plus'	'3 or 4'
Cara	21	BPD	5	5.85	'Too many to count'	'5 (ish)'
Charlotte	31	BPD	4	4.88	'Hundreds'	'6'

[a]*Borderline Personality Disorder*
[b]*Scottish Index of Deprivation Decile: A higher score denotes a greater degree of deprivation.*
[c]*EDE-Q (Eating Disorders Examination Questionnaire): a higher score indicates higher severity of disordered eating*

3.3.2 IPA analysis

The aim of the interviews was to explore participants' experiences of self-harm, suicidal behaviour, and disordered eating behaviour, and how these experiences may be related. Three superordinate themes and seven interrelated subthemes emerged from the analysis and are summarised below in table 4.

Table 4: *Superordinate and emergent subthemes identified during analysis.*

Superordinate themes	**Subthemes**
Self as defective	Internal influences
	External influences
Need for control	Defenceless and powerless
	Taking back control
	Psychological saturation
Friend and Foe	Self-harm as an ally
	Self-harm as foe

These themes essentially represent how participants perceived and made sense of their experiences of self-harm, suicidal, and disordered eating behaviour, and how these experiences may be related. Quotations from participants have been used to illustrate each theme.

Theme one: self as defective

The first superordinate theme characterises the overarching negative sense of self described by participants. Two interrelated subthemes emerged regarding influences on this self-view: 1) Internal influences, and 2) External influences.

Internal influences

Participants reported that self-injury, either through disordered eating or self-harm, was often motivated by their perception of self, with self-disgust and punishment for perceived failings particularly clear themes. All participants powerfully conveyed feelings of unhappiness, not only with their physical reflection (i.e. in a mirror) but with how they regarded themselves as a person:

> *"I always feel pain about being overweight, and being ugly and hating myself, like not being able to look at myself in the mirror" [Murdina]*

Murdina's emphasis on the word 'always' indicated these feelings were enduring, a theme present across accounts. This negative self-view was described as a direct trigger to cutting, restricting and vomiting in all participants:

> *"Yeah like probably if I see myself in the mirror and I really don't like it it's not going to end well, probably would harm myself…or at least make myself sick" [Cara]*

When describing the function fulfilled by self-harm in this context, four participants spoke of cutting and restricting as a way of punishing themselves for not being good enough. In Cara's case, punishment was through restriction of intake:

> *"Probably like punishment. But I can't do it that well, like I can't not eat. I've tried, I've tried so hard to just not eat but I can't do it…" [Cara]*

The repeated use of the word 'tried' indicates that Cara's restrictive punishment routine inevitably leads to repeated failure. It is possible that this contributes further to a self-perceived sense of failure. For Murdina, Heather, and Charlotte however, restricting intake alone was not sufficient punishment, stating there was a need for blood and pain sensation during self-harm:

> *"Because...I don't know, I don't see that I'm punishing myself enough. Cause I think it's like cause I don't see blood, and things like that, that...that I just think I'm not hurt" [Murdina]*

External influences

This sense of worthlessness arose not only from being unable to meet their own expectations: six participants described the feeling of not being good enough as being amplified by others around them:

> *"My friends didn't want to leave their friends to speak to me… Cause I like lost everyone. So...and no-one really wanted to speak to me and then, even if they would speak to me, but as soon as one of them would come, they would kinda pretend that they didn't talk to me and things like that?" [Isla]*

For some, it was directly confirmed:

> *"From being 14, erm, the thoughts around my family and stuff that I wasn't, that I wasn't worth anything, I wasn't ever going to do anything with myself, err, I didn't amount to, err, just everything, just feeling like nothing" [Nora]*

For Nora, receiving messages of inadequacy was further compounded by feeling unfavoured in comparison to her siblings. Four other participants described a similar sense of feeling unimportant from a young age:

> *"Erm…yeah so I think it was a feeling of maybe loneliness? [I: Mmhmm] And...not being wanted, and feeling abandoned. [I: Right, okay]. Erm...yeah. I think it was abandonment and isolation that, that started it" [Murdina]*

> *"I think at that age I probably just needed someone to look after me as well [I: Yeah]. Erm…but everyone was busy always so… yeah" [Cara]*

For some, self-harm began from a young age and was directly linked to feelings of inadequacy. For Isla and Heather, self-harming also served as a test to see whether or not people cared:

> *"I don't normally admit it, but it wasn't like a...it was more like a cry for help. But it wasn't that I wanted necessarily wanted people to see it but I just didn't care if they did [I: Yeah]. And if they did, sorta like wanted them to show they care [I: Mmhmm, yeah] cared about me, sort of thing?" [Isla]*

> *"I'm not gonna eat cause then you're not gonna notice that I'm here" [Heather]*

Theme two: Need for control

The second superordinate theme encapsulates the seemingly ongoing battle for control that participants experienced. Three interrelated subthemes emerged that may be reflective of the different psychological phases participants experience: 1) Defenceless and powerless, 2) Taking back control, and 3) Psychological saturation.

Defenceless and powerless

Participants described their emotions as overwhelming, intense, and unpredictable:

> *"I'm just not able to manage that particular situation. And overwhelming emotion comes [I: Mmhmm] and I literally I don't know how to deal with it." [Murdina]*

This quote illustrates the participant's experience of being at a loss and unable to manage overwhelming emotions; a theme common across all seven participants. These comments indicated that they felt as if they were at the mercy of their emotions and were powerless in being able to cope with, or affect change in, their feelings:

"When I get that way, I don't know what to do, I don't know how to pull myself out of that, there's no distraction, there's no nothing...it's just a complete slump" [Louise]

Participants seemed to expect failure, and in five participants this sense of powerlessness was also evident in relation to eating:

"I just can't keep weight off, no matter what I do, I just can't seem to do it. It always goes back on, I always get back into a bad routine" [Cara]

"I'm going to the fridge constantly, opening and closing it, thinking (fast breathing), like panicking sometimes you know. And it's not right, the way I eat" [Nora]

Four participants described their diagnosis of BPD as an additional challenge:

"I keep trying to tell myself it's a disorder, it's a disorder, it is part of you...so when these things are happening it's sort of how do you stop yourself from acting in a sort of way...I don't know like what you're supposed to feel" [Isla]

Comments such as the above indicated a feeling that they had even less control over intense and unpredictable mood changes, as this was part of their diagnosis and therefore an unchangeable part of them. For Isla however, being defenceless to her emotions also had a positive side in that it allowed her and others to be more accepting of her flaws:

"Kinda...lot of things that people don't like about me, are actually part of the disorder, it's not...it's easier for me to think that people don't hate these parts of me just because it's me [I: Mmhmm], like it's not kinda like, och it is my fault, but it's not my fault" [Isla]

Taking back control

All seven participants described the act of cutting, and the associated pain, as allowing them to have some distraction and to control overwhelming emotions:

"So…having the pain and the distraction…brings you out of that [I: Yeah]…focus your attention and do something else." [Charlotte]

"I can see blood on me, then it's more real, and I can feel the release of pain and emotion" [Murdina]

Four participants described the act of restricting their intake as allowing them additional control. For Isla and others, this sense of control gained through eating behaviour also afforded a sense of achievement and agency:

> *"I just wanted to...I loved feeling hungry. I felt like...I'd achieved something" [Isla]*

A recurring theme in five participants' accounts was that from a young age, others had control over the direction their life had taken. For three, cutting and eating behaviours were explicit attempts to retake control from others:

> *"I like the fact I'm making myself feel like awful. (…) It's sort of like people bring pain to me, people leave me and leave me in pain and I can't control that. But when I'm physically doing something to myself, I can feel the pain of it, and it's me that's inflicting it on myself" [Isla]*

> *"And, ehh, it was a control thing for me as well, if er, there's anything that I can control, I can control what I put in my body...And erm, the more I put in, the more control they have, I thought, over me" [Nora]*

For two participants, the ultimate taking back of control was in making their decision to end their life:

> *"I felt so stuck, because I was like I don't want to live any more, I've nothing...there's nothing that I want more than to just not exist. I don't want to wake up in the morning, I hate life, it's not for me, you know? [I: Mmhmm] And I was very defensive of 'this is my decision, I didn't ask to be born" [Louise]*

Psychological saturation

All seven participants conveyed a sense of hopelessness for change:

> *"Yeah, I feel like it's probably gonna be forever. Like…the way I look at myself" [Cara]*

> *"I still do it all. I still do it, and I still have the same feelings towards it….and I'm still the way I am" [Murdina]*

Others that life was a continual struggle for them:

> *"But I don't feel fun inside. I just feel... heavy. Heavy-hearted, all the time" [Nora]*

These quotes illustrate a sense of saturation that participants seemed to express with their situation, which was further reflected in comments regarding a desire to escape and just not wake up:

> *"I was trying to sleep the day away, and then the night away, just to not have to get up and exist. I didn't want to" [Louise]*

For six participants, these feelings of things will not get better, and the need to escape, had culminated in a suicide attempt:

> *"You're so done, you're so exhausted, you're so empty, that you just can't take any more and that's it. You want it just to stop" [Murdina]*

> *"I just wanted to die, yeah. I'd just had enough, I wanted it to end." [Charlotte]*

Theme three: Friend and foe

The third superordinate theme characterises a paradoxical quality to the participants' accounts at times: 1) Self-harm as an ally, and 2) Self-harm as foe.

Self-harm as an ally

Participants spoke of self-harm as something they could rely on to make themselves feel better:

> *"Yeah, yeah, like at the start it was kinda whenever I felt down, or whenever something had happened, it's what I would turn to." [Isla]*

> *"I know myself that if everything was fine again and I felt fine, and I felt I could eat these, that I would go back to doing it again [I: Okay]. Cause that just what I know how to do" [Louise]*

Isla describes being able to 'turn to' self-harm as a way of coping, suggesting there is something soothing about the relationship with self-harm. Participants often spoke about the relief that self-harm brought, suggesting reinforcement through not only a reduction in negative emotions – some described enjoying the feeling of pain and control:

> *"I liked the pain, I liked the pain as a distraction so that I didn't have to think about anything else" [Charlotte]*

> *"I'm going to get rid of this pain and I will do it at this time'. It kinda calms me down a little bit. If I'm planning that, I don't mind waiting 'til the kids…I can plan it hours before the kids even go to bed" [Heather]*

This is reinforced by three participants who describe self-harm as part of their identity, one in which they appear to seek comfort:

> *"That I was still a person [I: Mmhmm], erm, and that I had something. It wasn't that I wasn't alone, it was something that I had." [Murdina]*

> *"Well this wasn't a horrible thing, it was my thing that I liked doing [I: Aha, okay], it was me, mine." [Cara]*

Self-harm as foe

As well as the positive reinforcement participants described gaining from harming themselves, five participants also described a struggle in being able to control their self-harm. Three participants spoke explicitly about instances of extreme self-harm and punishment in which the function had gone beyond just relief and coping, into destruction. This is illustrated below (in relation to a less extreme example):

> *"I think I just wanted to feel pain at first [I: okay]. I just...wanted to...distract myself, just start to self-destruct in some sort of way, punish myself…and it was the only way I had, so…I just did that" [Isla]*

Four participants described self-harm as over-time becoming more compulsive, with two describing it as 'addiction-like'.

> *"Err...some, like as it went on I kinda got like addicted to it, but even if I wasn't like really upset and n'hin was going on I'd just like do it anyway." [Charlotte]*

This is most striking in the cases of Louise and Nora. Both participants describe a conflicting situation in which self-harm via bingeing remained their main way of coping, but to the extreme detriment of their physical health:

> *"Yeah I know I'm going to kill myself with the eating, over-eating, it's not just one mars bar, you know?" [Nora]*

> *"Now I'm having constant constant constant pain, every day. I'm having to take pain killers all the time that are not of much help. But I'm still on the odd occasion like having the odd thing to test myself...through my over-eating I've myself to have gastritis, inflammation of the, the stomach lining" [Louise]*

Both described requiring increased medical intervention for serious physical consequences relating to diabetes and food allergies, but that these negatives were far outweighed in comparison to the relief and sense of comfort they gained through eating.

4. Discussion

This mixed methods study examined the extent to which self-harm, suicidal behaviour, and disordered eating were associated within a sample of patients diagnosed with BPD, and the role of psychological factors to understand these relationships. Analyses of self-report questionnaires demonstrated that social perfectionism, emotional dysregulation, depression, and low resilience were correlated with ED severity. A subset of this sample provided personal accounts about whether self-harm, suicidal behaviour, and disordered eating difficulties were related. This part of the research complemented results from the questionnaires, affording insights into individual experiences. Important patterns emerged from the IPA analysis with three superordinate themes being identified: self as defective; need for control; and self-harm as friend and foe. For brevity, only key findings are discussed here.

4.1 Self-harm, suicidal behaviour and ED symptom severity in BPD

All participants reported a history of either self-harm or suicidal behaviour, with 85% of participants reporting both. This finding is in line with a number of studies demonstrating a high prevalence of self-harm and suicide attempts in patients with BPD (e.g. Gunderson and Ridolfi, (2001); Black et al., 2004). Participants also reported high levels of disordered eating symptoms. EDE-Q global score norms in undergraduate women are reported as 1.74 (Luce et al., 2008), and 2.83 in AN samples (Passi et al., 2003). In this study, the mean global score was 3.66, indicating high levels of eating difficulties. Despite this, none of the sample had a comorbid diagnosis of an ED. Whilst it is not suggested this is necessary given the diagnostic criterion overlap, it is worth considering whether the severity of disordered eating is fully recognised or given due attention with regards to treatment.

4.2 Associated psychological factors

Results from the questionnaires demonstrated that a number of psychological factors were associated with disordered eating severity: emotional dsyregulation, social perfectionism, depression, and low resilience. No significant associations were found with impulsivity or self-disgust. Emergent themes from the IPA analysis are incorporated in discussion of the findings below.

4.2.1 Emotion dysregulation

Emotion dysregulation, the inability to flexibly respond to and manage emotions, was significantly associated with ED severity in this study. Given the sample, this is perhaps not surprising: difficulties in emotion regulation are considered central in individuals with BPD, and emotion dysregulation has been associated with self-harm in a BN population (Gomez-Exposito et al., 2016). As such these results support the hypothesis that emotion regulation may be a comorbid risk factor in those with BPD and co-occurring eating difficulties (Franko and Keel, 2006).

This relationship between emotion regulation and self-harm is illuminated in the superordinate theme 'need for control'. Participants made clear the extent to which they felt defenceless and powerless to cope with overwhelming emotions. Both self-harm and eating restriction gave them a way to cope, serving as distraction from emotions: gaining emotional relief is one of the most commonly reported functions of self-harm (Klonsky, 2007). Participants also described these behaviours as having some form of control over feelings, thereby supporting the literature which suggests that both eating behaviours and self-harm serve as emotion regulation strategies (Muehlenkamp et al., 2009). However, emotional regulation was not the only function served by self-harm and eating behaviours. Participants described positive and adaptive functions of comfort, soothing, and identity, as well as a sense of achievement which was further reflected in the subordinate theme, 'self-harm as an ally'. Positive functions tend to be overlooked in discussions of self-harm (Edmonston, Brennan and House, 2016) and they may be important in furthering our understanding of these behaviours.

4.2.2 Social perfectionism

Social perfectionism was the only measure uniquely associated with disordered eating severity. Perfectionism has long been associated with EDs, and along with self-criticism, has been shown to be predictive of ED severity (Ferreira, Pinto-Gouveia and Duarte, 2014). Evaluative concerns perfectionism, described as the tendency to doubt whether one's behaviour is meeting the expectations of others, has been demonstrated as a risk factor for self-harm in ED (Claes et al., 2011). As such, the findings from this study suggest that striving for perfectionism in relation to how one is seen socially may be a psychological factor associated with self-harm and disordered eating in BPD.

This concept of social perfectionism was also reflected in the subtheme 'external influences', in which participants described the impact of others on their sense of inadequacy: feeling different from others, unimportant, and being unable to meet others' expectations. This was further elucidated in the 'taking back control' subtheme, in which acts of self-harm, suicide attempts, and disordered eating behaviours were an explicit way to retake control that others had over them. The 'internal influences' subtheme within 'self as defective' described the extent to which participants' negative self-view and high levels of self-criticism acted as direct triggers to self-harm. The combination of perfectionism and self-criticism may contribute to an increased risk in this population (Ferreira, Pinto-Gouveia and Duarte, 2014). Participants also described self-harm and disordered eating as meeting a need for punishment, which supports research demonstrating a relationship between perfectionism and self-punishing functions of self-harm in EDs (Claes et al., 2011). Interestingly, participants noted that restricting and vomiting were not punishment enough, and described a need for pain sensation and the sight of blood. This perhaps suggests that those with BPD and disordered eating may be at a greater risk for severe self-harm when control of eating behaviour no longer fulfils the required need.

4.2.3 Other factors

Symptoms of depression were associated with severity of disordered eating in this study, supporting a number of studies suggesting depression as a risk factor for self-harm and suicidality in EDs (Kostro et al., 2014). Low resilience was also associated with ED severity and can be seen in the 'defenceless and powerless' subtheme. Surprisingly, impulsivity was not related to severity of ED symptoms, which is at odds with findings from other studies suggesting impulsivity as a comorbid factor in BPD and EDs (Anderson et al., 2002). However, it is possible that impulsivity was not a risk factor over and above an already impulsive population, but further research would be useful to clarify this finding. Self-disgust was also not related to ED severity, contradicting findings suggesting this as a risk factor for self-harm in EDs (Chu et al., 2015). However, elements of self-disgust were evident in interviews, particularly in the 'internal influences' subtheme, although it is possible that the association with social perfectionism better explains the relationship between investigated factors. Despite prior validation and high internal consistency of the SDS in this study, response inconsistencies were noted repeatedly in participant responses. Further research on the validity of this measure would be beneficial.

4.3 Strengths and limitations

A strength of this study was the addition of an interpretative component. This allowed additional insight into the relationships between self-harm, suicidal behaviour, and disordered eating, and helped elucidate the quantitative findings. Another strength was its assessment of self-harm and suicidal behaviour. While use of single-item questions are common in this type of research (Muehlenkamp et al., 2012), detailed assessment allowed more insight than just prevalence alone, i.e. behaviour severity.

A limitation of this study is that, given its cross-sectional design, causality between psychological factors cannot be inferred. This study is also limited in its lack of a clinical or non-clinical comparator group. The original aim of the study was to compare those with a self-harm and suicidal history to those without: however given the severity of the sample in terms of these behaviours this was not possible. A comparator group would allow further clarification about which psychological factors are unique to this population. A final limitation is in the potential sample bias: whilst a lot of effort was invested in recruiting as many participants as possible with a diagnosis of BPD accessing services, NHS Highland covers one of the largest, most sparsely populated areas in the UK which meant that recruitment relied on the support of other clinicians. One CMHT opting out meant a very large area was precluded from the outset. Similarly, those with BPD who were not accessing services in the health board could not be included due to inability to initiate contact. The broad criteria for inclusion and sampling procedure may have resulted in a more heterogeneous sample than intended; however this was necessitated by a sparse population.

4.4 Clinical implications

This study indicates that it may be beneficial for clinicians to consider additional assessment of self-harm and suicidal behaviour in individuals with a diagnosis of BPD and comorbid disordered eating symptoms. Additionally, it is possible that due to diagnostic overshadowing, comorbid EDs are not given due attention in assessment nor treatment. Interviews indicated that alongside emotion regulation functions of self-harm and disordered eating, positive and adaptive functions relating to comfort, soothing and identity were a common theme across all participants, and should not be overlooked. As suggested by Bulik and Kendler (2000), when difficulties with self-harm and EDs are tied up with issues of identity, focusing on helping a client establish an identity independent of disordered eating behaviour and self-harm may be essential in treatment. As well as this, interviews suggested that those with BPD, high levels of disordered eating, and self-harm may be at greater risk when self-punishment is the function fulfilled by these behaviours. On the basis of these findings, it would be worthwhile considering targeted treatment, specifically addressing issues relating to social perfectionism, identity, and self-criticism alongside the traditional emotion regulation focused treatments for BPD.

5. Conclusion

Self-harm and suicidality are highly prevalent in individuals with BPD, and this population also reports high levels of disordered eating symptoms, over and above those expected for not only a normal population but those with an ED diagnosis. Social perfectionism in particular appears to be a risk factor in those with co-occurring BPD and disordered eating, alongside emotion regulation difficulties, depression and low resilience. More attention needs to be given to assessing and treating disordered eating symptomatology and self-harm and suicidal behaviour in individuals with BPD.

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APPENDIX 1: SYSTEMATIC REVIEW

Appendix 1.1: Initial scoping search

Initial scoping searches were performed on Cochrane and MEDLINE in order to provide an indication of the existing evidence base, and to assess the feasibility and utility of a review in this area. This indicated that, while there was a large body of evidence concerning medical risk factors and prevalence of self-harm and suicidality in eating disorders, there was a relatively small body of growing evidence in relation to psychological factors. The scoping exercise identified a number of existing reviews related to the risk of suicide and self-harm in eating disorders. Four of these primarily focused on prevalence rates and psychopathological comorbidities, with one paper briefly discussing additional risk factors. The remaining paper by Svirko and Hawton (2007) reviewed research published 1989-2005, including summaries of psychological and behavioural risk factors. However the review only included studies relating to AN or BN, and a substantial number of studies concerning psychological factors have been published since this date.

Appendix 1.2: *Systematic review electronic search strategy and results*

Database	**Search terms/ fields**	**Results**
ASSIA	["eating disorder*" OR anorex* OR bulim* OR "binge-eat*" OR ednos OR SU.EXACT ("Anorexia nervosa" OR "Binge eating" OR "Bulimia nervosa" OR "Compulsive eating" OR "Eating disorders" OR "Purging")] **AND** [(SU.EXACT ("Suicide" OR "Parasuicide" OR "self harm*" OR "selfharm" OR "self injur*" OR "self mutil*" OR NSSI OR suicid*)] [**Limits**: English; Peer reviewed]	158
CINAHL	["eating disorder*" OR anorex* OR bulim* OR "binge-eat*" OR EDNOS OR (MH "Eating Disorders+") OR (MH "Bulimia Nervosa") OR (MH "Binge Eating Disorder") OR (MH "Anorexia") OR (MH "Anorexia Nervosa")] **AND** ["self harm*" OR "selfharm" OR "self injur*" OR "self mutil*" OR "NSSI" OR suicid* OR (MH "Suicide+") OR (MH "Suicide, Attempted") OR (MH "Suicidal Ideation") OR (MH "Injuries, Self-Inflicted") OR (MH "Self-Injurious Behavior")] [**Limits:** English; Peer reviewed; Adults]	136
Embase	[((anorex* or bulim* or "binge-eat*" or ednos).ti. OR .ab.) OR (exp bulimia/ or exp eating disorder/ or exp anorexia nervosa/)] **AND** [("self harm*" or "self injur*" or "self mutil*" or NSSI or suicid*).ti. OR .ab.] **[Limits: English; Adults]**	753
Medline	[(("eating disorder*" or anorex* or bulim* or "binge-eat*" or ednos).ti. OR .ab.) OR exp Anorexia Nervosa/ or exp Anorexia/ or exp Bulimia Nervosa/ or exp Bulimia/ or exp "Feeding and Eating Disorders"/] **AND** [("self harm*" or "selfharm" or "self injur*" or "self mutil*" or NSSI or suicid*).ti. OR .ab.] **[Limits: English; Adults]**	435
Psychology & Beh.Sciences	["eating disorder*" OR anorex* OR bulim* OR "binge-eat*" OR EDNOS] **AND** ["self harm*" OR selfharm* OR "self injur*" OR "self muti* OR "NSSI" OR suicide*]	243
PsycINFO	["eating disorder*" OR anorex* OR bulim* OR "binge-eat*" OR ednos OR DE "Eating Disorders" OR DE "Anorexia Nervosa" OR DE "Bulimia" OR DE "Purging (Eating Disorders)" OR DE "Binge Eating Disorder"] **AND** ["self harm*" OR "selfham*" OR "self injur*" OR "self mutil*" OR NSSI OR suicid* OR DE "Suicide" OR DE "Attempted Suicide" OR DE "Suicidal Ideation" OR DE "Self-Injurious Behavior" OR DE "Self-Mutilation"] [**Limits**: English; Peer reviewed; Adults]	714

Appendix 1.3: *Systematic review data extraction tool*

Data extraction

In order to standardise the extraction of information across the 26 included studies, a data extraction table was compiled. This includes a concise description of each study in regard to its authors, year of publication and country from which the population was sampled; relevant study aims; design; sample; psychological factors assessed; how self-harm and/ or suicidal behaviour was assessed; methods of analyses; and main result. Terminology used to refer to self-harm and/ or suicidal behavioural varied across papers: for the purposes of this review, the terms self-harm (SH) and suicide attempt (SA) are used from here on. Aims, analyses and results irrelevant to this review, i.e. those relating to medical risks, prevalence, and diagnostic co morbidities, were not extracted from the papers.

Paper Title:
Author/s: Location:
Year:
Journal:

Study characteristics
Study purpose/ aims:

Method
Design:

Control group:

Sample characteristics: Participants with eating disorders
Size, demographics:

Recruitment:

How ED diagnosis was ensured/ categorised:

Inclusion/ exclusion criteria:

Non ED population (if applicable)
Size, demographics:

Recruitment inc inclusion/ exclusion:

Measures
Self-harm and suicidal behaviours (*How were these defined/ measured?)*

Details of psychological measures used (*Are these validated?*)

Results
Type of analysis used:

Confounding variables:
What has been controlled/adjusted for? *(Either in statistical analysis, matched groups or excluded for)*

Main findings

Discussion

Limitations

Additional notes

Appendix 1.4: *Quality rating tool*

1. Introduction			
1.1	Is a scientific background and rationale provided?	2 – Well covered 1 – Adequately covered 0 – Poorly/ not covered	
1.2	Are the aims/hypotheses clearly described?	2 – Well covered 1 – Adequately covered 0 – Poorly/ not covered	
2. Methods			
2.1	Is the study design appropriate for the research question?	2 – At least one study/analytical comparison group free from SH/suicide *e.g. no history of ideation, harm or attempts* **and** matched to clinical population 1 – At least one comparison group free from SH/suicide, but not matched 0 – No comparator group, or, comparator group but not used in relation to psychological factors analyses	
2.2	Is the method of recruitment well described; are issues such as sources of bias, % agreeing to participate, and inclusion/ exclusion criteria explicit and appropriate?	2 – Well covered 1 – Adequately covered 0 – Poorly/ not covered	
2.3	Is there a clear rationale for the sample size e.g. power calculation?	2 – Well covered 1 – Adequately covered 0 – Poorly/ not covered	
2.4	How was an eating-disorder-specific population ensured and subsequently categorised?	2 – Use of DSM or ICD criteria to categorise; consideration of issues around use of diagnostic categories *e.g. consideration of crossover of behaviours/ sub categories (AN-binge subtype. AN-purge, BN-purging, BN-non-purging, EDNOS-AN vs EDNOS-BN etc)* 1 – Use of DSM or ICD criteria used **but** minimal consideration of issues 0 – No consideration of additional issues/ something other than DSM used	
3. Assessment			
3.1	Are the main outcomes to be measured clearly defined?	2 – Well covered 1 – Adequately covered 0 – Poorly/ not covered	
3.2	How was history of self-harm and/or suicidal behaviours assessed?	2 - Clinical interview/ validated self-harm suicide scale/ suicide items from a validated diagnostic or mood rating scale/ justified use of non-validated scale 1 – Non-justified use of non-validated scale or other means of self-report *e.g. single question* 0 - No description of how self-harm/ suicide was assessed.	
3.3	How were psychological factors assessed?	2 - Use of validated, reliable measures, with validity/reliability reported 1 - Use of validated measures but no description of validity/ reliability 0 – Use of non-validated or low reliability	

		measures (unless justification provided)	
4. Statistical analysis and findings			
4.1	Was the precision of association given or calculable? Are confidence intervals, effect sizes, power etc reported where appropriate?	2 – Reports effect size or odds ratio 1 – Adequate 0 – Not appropriate	
4.2	Were the main findings of the study clearly described?	2 – Well covered 1 – Adequately covered 0 – Poorly/ not covered	
5. Confounding variables			
5.1	Are basic and additional confounding variables accounted for either during recruitment or analysis *e.g. diagnoses, comorbidities, physical illness, family factors*	2 – Consideration of various confounding variables 1 – Accounts for only basic confounding variables *e.g. age, gender* 0 – No attempted to account for potential confounding variables in recruitment or analysis	
6. Discussion			
6.1	Are the limitations and weaknesses of the study described?	2 – Well covered 1 – Adequately covered 0 – Poorly/ not covered	
6.2	Are the findings generalisable to the source population (i.e. externally valid)? Are there enough details about the study to determine generalisability?	2 – Well covered *(explains enough to determine generalisability)* 1 – Adequately covered *(somewhere in between 2 and 0, OR, 0 but considers issues of generalisability in limitations)* 0 - poorly/not covered (*only gender/age and does not consider issues in limitations*)	
6.3	Are the conclusions drawn linked directly to the results? Are they interwoven with previous findings?	2 – Well linked 1 – Adequately linked 0 – Poorly/ not linked	
Total score (out of 30)			

Appendix 1.5: *Comparisons studies used in analysis*

Author/s, year,	SH or SA	Comparisons used in analysis	Author/s, year	SH or SA	Comparisons used in analysis
1. Ahren-Moonga et al. (2008)	Both (as 1 variable)	ED as one group: SIB vs. no SIB	**14**. Forcano et al. (2009)	SA	BN as one group: SA vs no SA
2. Anderson et al. (2000)	Both	BN as one group: SH vs SA vs neither	**15**. Gomez-Exposito et al. (2016)	Both	BSD as one group: SH vs SA vs neither
3. Bulik et al.(1999)	SA	3 groups: SA vs no SA across AN, BN, MD	**16**. Islam et al. (2015)	SH	ED as one group: SH vs no SH
4. Bulik et al. (2008)	SA	AN as one group: SA vs no SA	**17**. Muehlen-kamp et al. (2010)	SH	Structural equation modelling
5. Carano et al. (2012)	Suicidal ideation	BED as one group: SI vs no SA	**18**. Noma et al. (2015)	Both	ED as one group: SH vs SA
6. Claes et al. (2015)	SH	AN as one group: SH vs no SH	**19**. Paul et al.(2002)	SH	4 groups: SH vs no SH across ANr, ANbp, BN, and EDNOS
7. Claes et al. (2012)	SH	ED as one group: SH vs no SH	**20**. Pisetsky et al. (2017)	Both	ED as one group: SH vs no SH, and SA vs no SA
8. Claes et al. (2015)	SH	ED as one group: SH vs no SH	**21**. Pisetsky et al. (2013)	SA	6 groups: SA vs no SA across ANr, ANbp, ANBN, BN, BED, and PD
9. Claes et al. (2007)	SH	ED +trauma subsample: SH vs no SH	**22**. Pisetsky et al. (2015)	SA	BN as one group: SA vs no SA
10. Claes et al. (2001)	SH	3 groups: SH vs no SH across ANp, ANbp, BN	**23**. Runfola et al. (2014)	SA	5 groups: SA vs no SA in ANr, ANbp, BN, BED, EDNOS
11. Claes et al. (2003)	SH	ED as one group: SH vs no SH	**24**. Smith et al. (2016)	SA	BN as one group: SA vs no SA
12. Claes et al. (2004)	SH	4 groups: SH vs no SH across ANr, ANbp, BNp, BNnp	**25**. Solano et al. (2005)	Self-harm	ED as one group: SH vs no SH
13. Forcano et al. (2011)	SA	2 groups: SA vs no SA inANr vs ANbp	**26**. Youssef et al. (2004)	SA	5 groups: SA vs no SA in ANp vs control, ANbp vs control, and BN vs control

Appendix 1.6: *Quality rating scores by study*

Criteria		Ahren-Moonga et al. (2008)	Anderson et al. (2000)	Bulik et al. (1999)	Bulik et al. (2008)	Carano et al. 2012)	Claes et al. (2015)	Claes et al. (2012)	Claes et al. (2015)	Claes et al. (2007)	Claes et al. (2001)	Claes et al. (2003)	Claes et al. (2004)	Forcano et al. (2011)
Introduction	Scientific background and explanation of rationale provided	1	2	1	1	2	2	2	2	2	2	1	1	2
	Clear description of aims/hypotheses	2	1	1	2	2	2	2	2	1	2	1	2	2
Methods	Appropriate study design including use of control groups	1	1	1	1	1	1	1	1	0	1	1	1	2
	Clarity of recruitment methods	2	2	2	2	2	0	1	1	0	0	0	0	2
	Clarity of rationale for sample size	0	0	0	0	0	0	0	0	0	0	0	0	0
	Categorisation of ED diagnosis including consideration of diagnostic issues	1	1	0	1	1	2	1	2	1	1	1	2	2
Assessment	Overall clarity of outcomes assessed	2	1	1	2	2	2	2	2	2	2	2	2	2
	Assessment of self-harm and/or suicidal behaviour	1	2	2	2	2	1	2	2	2	2	2	2	2
	Assessment of psychological factors	1	1	1	2	2	1	2	2	1	1	1	1	2
Stats and findings	Reporting of precision of association	1	1	2	2	2	2	1	2	1	0	1	1	1
	Clarity of main findings	1	2	2	1	2	2	2	2	2	1	0	1	2
Confounding variables	Consideration of basic and additional confounding variables	1	2	2	2	2	2	0	2	0	0	2	0	2
Discussion	Description of limitations and weaknesses	0	2	2	2	2	2	2	2	0	0	0	0	2
	Quality of details to determine generalisability	1	1	0	1	1	2	0	2	1	0	0	0	2
	Linking of conclusions to results; interwoven with previous findings	1	2	2	2	2	2	2	2	1	1	2	1	2
	Total scores	16	21	20	23	25	23	19	26	14	13	15	14	27
	Quality classification*	**C**	**B**	**B**	**B**	**A**	**B**	**B**	**A**	**C**	**C**	**C**	**C**	**A**

*Quality rating key: A: Good, B: Moderate, C: Poor

Criteria		Forcano et al. (2009)	Gomez-Exposito et al. (2016)	Islam et al. (2015)	Muehlenkamp et al. (2010)	Noma et al. (2015)	Paul et al (2002)	Pisetsky et al. (2017)	Pisetsky et al. (2013)	Pisetsky et al. (2015)	Runfola et al. (2014)	Smith et al. (2016)	Solano et al. (2005)	Youssef et al. (2004)
Introduction	Scientific background and explanation of rationale provided	2	2	2	2	1	2	2	2	2	2	2	2	2
	Clear description of aims/hypotheses	2	2	2	2	2	2	2	2	2	2	1	2	2
Methods	Appropriate study design including use of control groups	1	2	1	0	0	1	1	1	1	1	1	1	2
	Clarity of recruitment methods	2	2	1	2	1	2	2	2	2	2	2	0	2
	Clarity of rationale for sample size	0	0	0	0	0	0	0	0	0	0	0	0	2
	Categorisation of ED diagnosis including consideration of diagnostic issues	2	2	0	1	1	1	2	2	2	2	1	1	2
Assessment	Overall clarity of outcomes assessed	2	2	2	2	2	2	2	2	2	2	2	2	1
	Assessment of self-harm and/or suicidal behaviour	2	2	1	2	0	2	1	1	1	1	1	1	1
	Assessment of psychological factors	2	2	2	2	1	1	2	1	2	2	2	2	1
Stats and findings	Reporting of precision of association	2	2	2	1	1	1	2	2	2	2	2	1	1
	Clarity of main findings	2	2	1	2	2	1	2	2	2	2	2	2	1
Confounding variables	Consideration of basic and additional confounding variables	2		1	0	0	2	0	2	2	2	1	0	2
Discussion	Description of limitations and weaknesses	2	2	2	2	2	2	2	2	2	2	1	1	2
	Quality of details to determine generalisability	2	2	2	1	1	2	1	2	2	2	2	2	2
	Linking of conclusions to results; interwoven with previous findings	2	2	2	2	2	2	2	2	2	2	2	2	1
	Total scores	27	28	21	21	16	23	23	25	26	26	22	19	24
	Quality classification*	**A**	**A**	**B**	**B**	**C**	**B**	**B**	**A**	**A**	**A**	**B**	**B**	**A**

Appendix 1.7: *Summary of psychological factors associated with SH and SA by ED diagnosis*

Psychological factors associated with SH

The majority of studies examining psychological factors in those with SH and those without used a mixed sample of ED diagnostic categories. In these mixed samples, SH was associated with: higher general psychopathology; anger; obsessive-compulsive thoughts; identity confusion; higher levels of self-criticism and lower self-esteem; harm avoidance; poor interoceptive awareness; ineffectiveness; emotional dysregulation; and dissociation. Those with SH in a mixed ED group also reported a higher number of traumatic events and childhood sexual abuse than a mixed ED group with history of SA.

In both AN and BN, SH was associated with anxiety, depression, neuroticism, hostility directed at oneself, body dissatisfaction, and impulsivity.

In AN only, only a higher number of perseverative errors on performance based tasks of impulsivity were associated with SH.

In males only, SH was associated with higher self-transcendence and harm avoidance, poor interoceptive awareness and ineffectiveness.

In BN, SH was associated with higher levels of impulsivity (in one study higher impulsivity in BN was found in comparison to restrictive AN). SH was also associated with higher self-transcendence, poor interoceptive awareness, and feelings of ineffectiveness. Lastly, a particular aspect of dissociation (imaginative experiences) differentiated BN from restrictive AN patients.

Psychological factors associated with SA

In a mixed ED population, SA were associated with emotional and sexual childhood abuse, preoccupied attachment, negative self-image, and higher levels of alexithymia. In both AN and BN, SA were associated with harm avoidance, lower self-directedness, and depression.

Only cognitive impulsivity was related to AN alone, although it is worthwhile noting this study used a mixture of current and lifetime AN diagnoses and did not differentiate AN subtypes. SA in ANr were associated with phobic anxiety and negative self-image.

In a BN spectrum population, SA were associated with higher general pathology; depression and anxiety; emotional and cognitive dysregulation; impulsivity; insecure attachment; poor interoceptive awareness; ineffectiveness; harm avoidance. Other related factors were social avoidance and distress, social insecurity and higher interpersonal distrust, along with Identity problems, body dissatisfaction and low self-affirmation, and negative self-image.

APPENDIX 2: MAJOR RESEARCH PROJECT

Appendix 2.1: NHS ethics approval: *2.1.1 Initial approval letter*

North of Scotland Research Ethics Committee
Summerfield House
2 Eday Road
Aberdeen
AB15 6RE

Telephone: 01224 558458
Facsimile: 01224 558609
Email: nosres@nhs.net

NHS Grampian

27 September 2016

Miss Claire Allott
Department of Psychological Services
Drumossie Unit
New Craigs Hospital
Leachkin Road
INVERNESS
IV3 8NP

Dear Miss Allott

Study title:	**Psychological factors associated with self-harm and problem eating: an exploratory study.**
REC reference:	**16/NS/0098**
Protocol number:	**N/A**
IRAS project ID:	**207863**

Thank you for your letter of 14 September 2016 and e-submitting the revised documents. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 12 September 2016

Documents received

The documents received were as follows:

Document	Version	Date
IRAS Checklist XML		20 September 2016
Consent Form 1 V2	2	13 September 2016
Consent Form 2 V2 - Interviews	2	13 September 2016
Invitation and consent to contact form	V2	14 September 2016
Covering letter re changes	1	14 September 2016
Participant info sheet V3	3	15 September 2016
Group invitation and consent to contact V2	V2	20 September 2016
Project proposal	V8	20 September 2016

Approved documents

The final list of approved documentation for the study is therefore as follows:

Document	Version	Date
GP/consultant information sheets or letters	1	26 June 2016
Interview schedules or topic guides for participants: Interview guide	1	26 June 2016
IRAS Checklist XML		20 September 2016
Letters of invitation to participant: Invitation and consent to be contacted	1	26 June 2016
Doug Hutchison CV	1	09 May 2016
Comments from reviewers	1	24 February 2016
Consent Form 1 V2	2	13 September 2016
Consent Form 2 V2 - Interviews	2	13 September 2016
Invitation and consent to contact form	V2	14 September 2016
Covering letter re changes	1	14 September 2016
Participant info sheet V3	3	15 September 2016
Group invitation and consent to contact V2	V2	20 September 2016
Project proposal	V8	20 September 2016
REC Application Form	207863/999 688/1/694	19 August 2016
Referee's report or other scientific critique report: Proposal review approval letter	1	13 May 2016
Summary CV for Chief Investigator (CI): Claire Allott CV	1	09 May 2016
Summary CV for supervisor (student research): Rory O'Connor CV	1	02 June 2016
Validated questionnaire: EDE-Q	1	01 July 2016
Validated questionnaire: DERS-15 Difficulties in emotional regulation scale	1	05 June 2013
Validated questionnaire: Self-injurious thoughts and behaviours	1	09 May 2016
Validated questionnaire: PHQ-9	1	10 April 2009
Validated questionnaire: Social perfectionism scale	1	09 May 2016
Validated questionnaire: BRS Brief resilience scale	1	12 October 2012
Validated questionnaire: BIS-15 barratt impulsiveness scale	1	01 January 2015
Validated questionnaire: Self-disgust scale	1	01 January 2008

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

16/NS/0098	Please quote this number on all correspondence

Yours sincerely

Sarah Lorick.

Ms Sarah Lorick
Assistant Ethics Co-ordinator

Copy to: Frances Hines, NHS Highland

Appendix 2.1: NHS ethics approval: *2.1.2 Approval letter following major amendment 1 (changes to the method of recruitment)*

North of Scotland Research Ethics Service
Summerfield House
2 Eday Road
Aberdeen
AB15 6RE

Telephone: 01224 558458
Facsimile: 01224 558609
Email: nosres@nhs.net

NHS Grampian

29 November 2016

Miss Claire Allott
Department of Psychological Services
Drumossie Unit
New Craigs Hospital
Leachkin Road
INVERNESS
IV3 8NP

Dear Miss Allott

Study title:	**Psychological factors associated with self-harm and problem eating: an exploratory study.**
REC reference:	**16/NS/0098**
Protocol number:	**N/A**
Amendment number:	**1 (AM01 REC Ref Only)**
Amendment date:	**28 November 2016**
Amendment summary:	**Changes to the method of recruitment**
IRAS project ID:	**207863**

Thank you for submitting the above amendment, which was received on 29 November 2016. I can confirm that this is a valid notice of a substantial amendment and will be reviewed by the Sub-Committee of the REC by correspondence.

Documents received

The documents to be reviewed are as follows:

Document	*Version*	*Date*
Notice of Substantial Amendment (non-CTIMP)	1 (AM01 REC Ref Only)	28 November 2016
Research protocol or project proposal	7	28 November 2016

Notification of the Committee's decision

The Committee will issue an ethical opinion on the amendment within a maximum of 35 days from the date of receipt.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval for the research.

We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at http://www.hra.nhs.uk/hra-training/

16/NS/0098:	Please quote this number on all correspondence

Yours sincerely

Carol Irvine

Carol Irvine
Senior Ethics Co-ordinator

Copy to: Frances Hines, NHS Highland

Appendix 2.1: NHS ethics approval: *2.1.2 Approval letter following major amendment 2 (changes to the interview topic guide)*

North of Scotland Research Ethics Service
Summerfield House
2 Eday Road
Aberdeen
AB15 6RE

Telephone: 01224 558458
Facsimile: 01224 558609
Email: nosres@nhs.net

NHS Grampian

22 December 2016

Miss Claire Allott
Department of Psychological Services
Drumossie Unit
New Craigs Hospital
Leachkin Road
INVERNESS
IV3 8NP

Dear Miss Allott

Study title:	**Psychological factors associated with self-harm and problem eating: an exploratory study.**
REC reference:	**16/NS/0098**
Protocol number:	**N/A**
Amendment number:	**2 (AM02 for REC Ref Only)**
Amendment date:	**12 December 2016**
Amendment summary:	**Changes to the Interview Topic Guide**
IRAS project ID:	**207863**

The above amendment was reviewed by the Sub-Committee in correspondence.

Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	*Version*	*Date*
Interview schedules or topic guides for participants: Interview Topic Guide	2	12 December 2016
Notice of Substantial Amendment (non-CTIMP)	2 (AM02 for REC Ref Only)	12 December 2016

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

Working with NHS Care Organisations

Sponsors should ensure that they notify the R&D office for the relevant NHS care organisation of this amendment in line with the terms detailed in the categorisation email issued by the lead nation for the study.

Statement of compliance

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

We are pleased to welcome researchers and R & D staff at our Research Ethics Committee members' training days – see details at http://www.hra.nhs.uk/hra-training/

16/NS/0098:	**Please quote this number on all correspondence**

Yours sincerely

Professor Nigel Webster
Chair

Enclosures: List of names and professions of members who took part in the review

Copy to: Ms Frances Hines, NHS Highland Research and Development Manager

Appendix 2.2: *NHS Highland R&D approval*

Professor Angus Watson
Research & Development Director
NHS Highland Research & Development Office
Room S101
Centre for Health Science
Old Perth Road
Inverness
IV2 3JH

Tel: 01463 255822
Fax: 01463 255838
E-mail: angus.watson@nhs.net

NHS Highland

11 October 2016

NHS Highland R&D ID: **1240**
NRSPCC ID: **NA**

Ms Claire Allott
Trainee Clinical Psychologist
Department of Psychological Services
Drumossie Unit
New Craigs Hospital
Leachkin Road
Inverness
IV3 8NP

Dear Ms Allott,

Management Approval for Non-Commercial Research

I am pleased to tell you that you now have Management Approval for the research project entitled: **'Psychological Factors Associated With Self-harm and Problem Eating: An Exploratory Study'. [Protocol V8 20/09/16].** I acknowledge that:

- The project is sponsored by NHS Highland.
- The project does not require external funding.
- Research Ethics approval for the project has been obtained from the North of Scotland Research Ethics Committee, (Reference Number: 16/NS/0098).
- The project is Site-Specific Assessment exempt.

The following conditions apply:

- The responsibility for monitoring and auditing this project lies with NHS Highland. This study will be subject to ongoing monitoring for Research Governance purposes and may be audited to ensure compliance with the Research Governance

Framework for Health and Community Care in Scotland (2006, 2nd Edition), however prior written notice of audit will be given.

- All amendments (minor or substantial) to the protocol or to the REC application should be copied to the NHS Highland Research and Development Office together with a copy of the corresponding approval letter.
- The paperwork concerning all incidents, adverse events and serious adverse events, thought to be attributable to participant's involvement in this project should be copied to the NHS Highland R&D Office.
- Monthly recruitment rates should be notified to the NHS Highland Research and Development Office, detailing date of recruitment and the participant trial ID number. This should be done by e-mail on the first week of the following month.

Please report the information detailed above, or any other changes in resources used, or staff involved in the project, to the NHS Highland Research and Development Manager, Frances Hines (01463 255822, frances.hines@nhs.net).

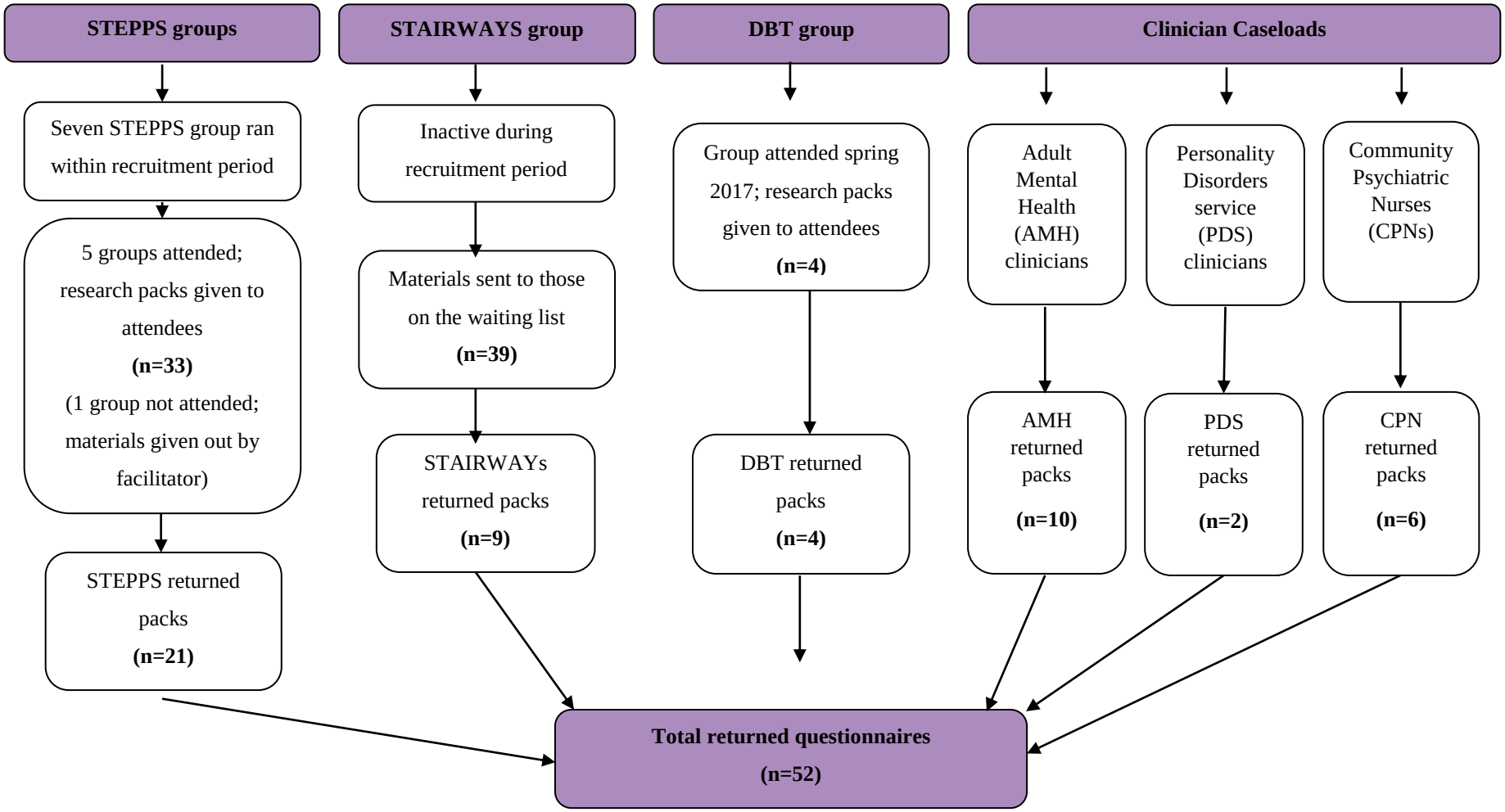
Yours sincerely,

Frances Hines

Frances Hines
Research and Development Manager

cc Frances Hines, R&D Manager, NHS Highland Research & Development Division, Centre for Health Science, Old Perth Road, Inverness, IV2 3JH

Appendix 2.3: *Flow diagram of recruitment procedure*



Appendix 2.4: *Participant invite cover letter*

[Participant address]

Researcher contact information:
Claire Allott, Trainee Clinical Psychologist
Department of Psychological Services
Drumossie Unit
New Craigs Hospital
6-16 Leachkin Road
Inverness IV3 8NP
01463 253 697
Email: c.allott.1@research.gla.ac.uk

Dear #,

I am writing to invite to you take part in a research study: *Psychological factors associated with self-harm and problem eating in those with borderline personality disorder: an exploratory study.*

This research is being completed by a final year Trainee Clinical Psychologist, Claire Allott, working in NHS Highland, who is completing the research study as part of her doctoral degree at the University of Glasgow. I am inviting you to take part in this study as you meet the eligibility criteria.

Please find enclosed an information sheet which contains all the details concerning the research. Please take the time to read this, and consider whether or not you would be happy to take part. If you have any questions, contact details are provided at the top of this letter, and at the end of the information sheet.

The first part of this study involves completing 8 brief questionnaires, which are enclosed. If you decide you would like to take part in this research, please complete all of the enclosed questionnaires and the consent form and return in the free post envelope provided.

The second part of this study involves inviting a small number of people to take part in an interview. These interviews would take place either at your local GP practice or New Craigs hospital, at a time convenient for you, and would last around 1 hour. If you would be happy to be contacted to take part in this second part of the research, please return the slip at the bottom of this letter with your contact details. You can complete the questionnaires without having to take part in an interview.

Thank you for taking the time to read this letter
Yours sincerely
<Clinician> <telephone number>

PLEASE RETURN THIS SLIP ALONG WITH YOUR COMPLETED QUESTIONNAIRES

I consent to being contacted by the researcher, Claire Allott, if I am chosen to take part in the interviews
Name: _____
Date: _____
Contact phone number 1: _____
Contact phone number 2: _____
Signature: _____

Appendix 2.5: *Participant information sheet*

Researcher contact information:

Claire Allott, Trainee Clinical Psychologist

Department of Psychological Services
Drumossie Unit
New Craigs Hospital
6-16 Leachkin Road
Inverness IV3 8NP

PARTICIPANT INFORMATION SHEET

Psychological factors associated with self-harm and problem eating in those with borderline personality disorder: an exploratory study.

We would like to invite you to take part in a research study. Before you decide if you would like to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Talk to others about the study if you wish and please ask if there is anything that is not clear or if you would like more information.

Who is conducting the research?

The research is being carried out by Claire Allott, Trainee Clinical Psychologist, from The University of Glasgow. It is being supervised by Professor Rory O'Connor from The University of Glasgow, and Dr Doug Hutchison from Psychological Services at New Craigs Hospital, Inverness.

What is the purpose of the study?

The purpose of the study is to try to better understand the relationship between self-harm and suicidal thoughts and behaviours and problem eating, and what psychological factors may affect this relationship. The study will involve asking people to complete a set of brief questionnaires. It will also involve speaking to some people who have thoughts about self-harm or suicide about the experiences they have had. The aim of the study is to understand more about factors which may lead people being more likely to self-harm or feel suicidal, and used to help people who may be at risk of suicide.

Why have I been invited?

We are looking for people who are aged over 16 years old, who have a diagnosis of borderline personality disorder. We are hoping to recruit as many people as possible who fit these criteria.

What does taking part involve?

If you decide to take part, you will be asked to complete a set of self-report questionnaires. These will ask you questions relating to self-harm or suicidal thoughts or behaviours, your mood, your eating behaviours, the way you cope with your emotions, and your attitudes towards yourself.

Some of the questions may be difficult to answer at times, but it is important that you try to answer all questions as accurately and honestly as possible.

If completing the questionnaires raises issues that cause you distress or upset, or you experience suicidal thoughts, please contact your GP, your allocated clinician, or family and friends. You can also contact helpline services such as Samaritans (116 123) or Breathing Space (0800 83 85 87).

Depending on the results of questionnaires, we would like to contact around 8 people to participate in an additional part of the research which will involve an interview. These interviews would take place either at your local GP practice or New Craigs Hospital, Inverness, at a time arranged to be convenient for you, and will last around 1 hour. This will feel like an informal discussion with the researcher about your experiences of self-harm. You do not have to answer any questions that you don't want to, and you can take breaks during the interview if you wish. If you disclose anything during the interview that causes the researcher concern, such as reason to believe you may harm yourself or others, the researcher will have a duty to report this but will try to discuss this with you before doing so.

The interview will be audio recorded so that the researchers can listen back to the discussion and identify the key points that you made. Some quotes from your interview may be included in the research paper, however all information will be anonymised. If you are happy to be contacted after you have completed the questionnaires to take part in this interview, please indicate this on the consent form.

With your written consent, we would like to write to your GP to tell them that you are taking part in this study and provide them with a copy of this information sheet.

Do I have to take part?
No. **It is up to you to decide** if you want to take part in the study or not. If you agree to take part, you will be asked to sign a consent form before completing the questionnaires to show that you have agreed to take part in the study. You are free to withdraw from the study at any time until the research is written up, without giving a reason. Withdrawing from the study would not affect the standard of care you receive or your future treatment in any way.

What happens to the information?
Your identity and personal information will be completely confidential and held in accordance with the Data Protection Act, which means that we keep it safely and cannot reveal it to other people without your permission. If you take part in an interview, these recordings will be destroyed at the end of the study. The results of this study may be published in academic journals, conference proceedings and as a piece of work for a doctoral qualification in Clinical Psychology. Some direct quotes from your interview may be included in these reports/publications, however all information will be anonymised and it will not be possible to personally identify you from this information.

What are the possible benefits of taking part?
Whilst your taking part will be unlikely to have any direct impact on your own care, it is hoped that it will allow us to improve our understanding of people with similar problems. You will contribute to research in this area which may help people who are at risk of self-harm or suicide. If, for any reason, you experience distress during or after the interview, we will ensure that you are able to access appropriate sources of support, where these are required.

Who has reviewed the study?
The study has been reviewed by the North of Scotland Research Ethics Committee and the NHS Highland Research & Development Department.

If you have any further questions?
We will give you a copy of the information sheet and signed consent form to keep. If you would like more information and would like to speak to someone who is not closely involved in the study, then you can contact:

Dr Sue Turnbull (Research Tutor)
Institute of Health & Wellbeing, University of Glasgow
Administration Building, 1st Floor
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH
Email: sue.turnbull@gla.ac.uk
Tel: 0141 211 3920

Researcher(s) Contact Details:

Claire Allott, Trainee Clinical Psychologist
Department of Psychological Services
Drumossie Unit
New Craigs Hospital
6-16 Leachkin Road
Inverness IV3 8NP
Email: c.allott.1@research.gla.ac.uk
Tel: 01463 253 697

Professor Rory O'Connor
Institute of Mental Health & Wellbeing
Administration Building, 1st Floor
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH
Email: rory.oconnor@glasgow.ac.uk
Tel: 0141 211 3920

What if you have a complaint about any aspect of the study?
If you are unhappy about any aspect of the study and wish to make a complaint, please contact the researcher in the first instance but the normal NHS complaint mechanism is also available to you.

Thank you for taking the time to read this information sheet.

Appendix 2.6: *Consent form for questionnaires*

CONSENT FORM 1 - Questionnaires

Title of Project: Psychological factors associated with self-harm and problem eating in those with borderline personality disorder: an exploratory study.

Name of researcher: Claire Allott

Identification number for this study:

1. I confirm that I have read and understand the participant information sheet (version: date:) for the above study. ☐
2. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
3. I give permission to be contacted by the researcher in the future to take part in an interview based at my local GP practice. ☐
4. I give permission for my information to be looked at by the research team and regulatory authorities, where it is relevant to my taking part in the research. ☐
5. I agree to my General Practitioner being informed of my participation in the study. ☐
6. I understand that my information will be kept strictly confidential and that my identity will not be revealed in any reports, publications or presentations. ☐
7. I agree to take part in this study. ☐

_____	_____	_____
Name of Participant	Date	Signature
_____	_____	_____
Name of Researcher	Date	Signature

Thank you for agreeing to take part in this research

Thank you for agreeing to take part in this research. Please find the questionnaires below, printed on both sides. In total there are 8 questionnaires – these should take you no longer than 15-20 minutes to complete.
Please ensure you answer all questions where possible. Thank you.

1/8: **Difficulties in Emotion Regulation Scale (DERS-16)**

Please indicate how often the following statements apply to you **by writing the appropriate number from the scale above (1 – 5) on the line alongside each item**.

1----------2----------3----------4----------5

Almost never	Sometimes	About half the time	Most of the time	Almost always

1. I have difficulty making sense out of my feelings. _____
2. I am confused about how I feel. _____
3. When I'm upset, I have difficulty getting work done. _____
4. When I'm upset, I become out of control. _____
5. When I'm upset, I believe that I will remain that way for a long time. _____
6. When I'm upset, I believe that I'll end up feeling very depressed. _____
7. When I'm upset, I have difficulty focusing on other things. _____
8. When I'm upset, I feel out of control. _____
9. When I'm upset, I feel ashamed with myself for feeling that way. _____
10. When I'm upset, I feel like I am weak. _____
11. When I'm upset, I have difficulty controlling my behaviours. _____
12. When I'm upset, I believe that there is nothing I can do to make myself feel better. _____
13. When I'm upset, I become irritated with myself for feeling that way. _____
14. When I'm upset, I start to feel very bad about myself. _____
15. When I'm upset, I have difficulty thinking about anything else. _____
16. When I'm upset, my emotions feel overwhelming. _____

2/8: **Multidimensional Perfectionism Scale**

Listed below are a number of statements concerning personal characteristics and traits. Read each item and decide whether you agree or disagree & to what extent. **To score your responses, circle the number which best matches your response.**

	Disagree						Agree
I find it difficult to meet others' expectations of me	1	2	3	4	5	6	7
Those around me readily accept that I can make mistakes too	7	6	5	4	3	2	1
The better I do, the better I am expected to do	1	2	3	4	5	6	7
Anything that I do that is less than excellent will be seen as poor work by those around me	1	2	3	4	5	6	7
The people around me expect me to succeed at everything I do	1	2	3	4	5	6	7
Others will like me even if I don't excel at everything	7	6	5	4	3	2	1
Success means that I must work even harder to please others	1	2	3	4	5	6	7
Others think I am okay, even when I do not succeed	7	6	5	4	3	2	1
I feel that people are too demanding of me	1	2	3	4	5	6	7
Although they may not say it, other people get very upset with me when I slip up	1	2	3	4	5	6	7
My family expects me to be perfect	1	2	3	4	5	6	7
My parent rarely expected me to excel in all aspects of my life	7	6	5	4	3	2	1
People expect nothing less than perfection from me	1	2	3	4	5	6	7
People expect more from me than I am capable of giving	1	2	3	4	5	6	7
People around me think I am still competent even if I make a mistake	7	6	5	4	3	2	1

3/8: **Self-disgust Scale**

Please read the statements below. Read each item and decide whether you agree or disagree & to what extent. **To score your responses, circle the number which best matches your response.**

	Strongly agree						Strongly disagree
I find myself repulsive	1	2	3	4	5	6	7
I am proud of who I am	1	2	3	4	5	6	7
The way I behave makes me despise myself	1	2	3	4	5	6	7
I hate being me	1	2	3	4	5	6	7
I enjoy the company of others	1	2	3	4	5	6	7
I like the way I look	1	2	3	4	5	6	7
Overall, people dislike me	1	2	3	4	5	6	7
I enjoy being outdoors	1	2	3	4	5	6	7
I feel good about the way I behave	1	2	3	4	5	6	7
I do not want to be seen	1	2	3	4	5	6	7
I am a sociable person	1	2	3	4	5	6	7
I often do things I find revolting	1	2	3	4	5	6	7
Sometimes I feel happy	1	2	3	4	5	6	7
I am an optimistic person	1	2	3	4	5	6	7
It bothers me to look at myself	1	2	3	4	5	6	7
Sometimes I feel sad	1	2	3	4	5	6	7
I detest aspects of my personality	1	2	3	4	5	6	7

4/8: **Self-Injurious Thoughts and Behaviours**

These questions ask about your thoughts and feelings of suicide & self-injurious behaviours.

Suicidal Ideation

1) Have you ever had thoughts of killing yourself?

_____

2) How old were you the first time you thought about killing yourself?

_____

3) During how many separate times in your life have you had thoughts of killing yourself? (Please give your best estimate)

_____

4) When was the last time?

_____

6) On average, how intense were these thoughts?

_____

7) When you have thoughts of killing yourself, how long do they usually last?
(Seconds? Minutes? Hours? Days?)

_____

Suicide Attempt

8) Have you ever made an actual attempt to kill yourself in which you had at least some intent to die?

_____

We will refer to this as a suicide attempt

9) How old were you the first time you made a suicide attempt?

_____

10) When was the most recent attempt?

_____

11) How many suicide attempts have you made in your lifetime?

_____

12) How long have you usually thought about suicide before making an attempt?
(Seconds? Minutes? Hours? Days?)

_____

13) On the scale of 0 to 4, what do you think the likelihood is that you *will* make a suicide attempt in the future?

0	1	2	3	4
Low/little				Very much/ Severe

Thoughts of Non-Suicidal Self-Injury

14) Have you ever had thoughts of purposely hurting yourself without wanting to die? (for example, cutting or burning)

_____

We will refer to this as non-suicidal self-injury (NSSI)

15) How old were you the first time you thought about engaging in NSSI?

_____

16) How old were you the last time?

_____

17) During how many separate times in your life have you thought about engaging in NSSI

_____

18) On average, how intense were these thoughts?

_____

19) When you have had these thoughts, how long have they usually lasted? (Seconds? Minutes? Hours? Days?)

_____

20) On the scale of 0 to 4, what do you think the likelihood is that you will have *thoughts* about engaging in NSSI in the future?

0 1 2 3 4

Low/little Very much/ Severe

Non-Suicidal Self-Injury

21) Have you ever actually engaged in NSSI?

_____

22) How old were you the first time?

_____

23) How old were you the last time?

_____

24) How many times in your life have you engaged in NSSI?

_____

25) On average, for how long have you thought about NSSI before engaging in it? (Seconds? Minutes? Hours? Days?)

_____

26) On the scale of 0 to 4, what do you think the likelihood is that you *will* engage in NSSI in the future?

0 1 2 3 4

Low/little Very much/ Severe

5/8: **Brief Resilience Scale**

Please read each item below and indicate to what extent you feel the statement describes you. **Rate each statement using the scale below**.

0	1	2	3	4
Not true at all				True nearly all the time

1.	Able to adapt to change	_____
2.	Can deal with whatever comes	_____
3.	Tries to see humorous side of problems	_____
4.	Coping with stress can strengthen me	_____
5.	Tend to bounce back after illness or hardship	_____
6.	Can achieve goals despite obstacles	_____
7.	Can stay focused under pressure	_____
8.	Not easily discouraged by failure	_____
9.	Thinks of self as strong person	_____
10.	Can handle unpleasant feelings	_____

6/8: **PHQ9**

Over the last 2 weeks, how often have you been bothered by any of the following problems? Read each item carefully, and **tick your response**.

	Not at all	Several days	More than half the days	Nearly every day
	0	1	2	3
1. Little interest or pleasure in doing things				
2. Feeling down, depressed, or hopeless				
3. Trouble falling asleep, staying asleep, or sleeping too much				
4. Feeling tired or having little energy				
5. Poor appetite or overeating				
6. Feeling bad about yourself, feeling that you are a failure, or feeling that you have let yourself or your family down				
7. Trouble concentrating on things such as reading the newspaper or watching television				
8. Moving or speaking so slowly that other people could have noticed. Or being so fidgety or restless that you have been moving around a lot more than usual				
9. Thinking that you would be better off dead or that you want to hurt yourself in some way				

If you checked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
0	1	2	3

7/8: **Barratt Impulsiveness Scale (BIS-15)**

For each statement, **circle a number to the right** to indicate how well it describes you.

	Rarely/ never	Occasionally	Often	Almost always
1. I plan tasks carefully	1	2	3	4
2. I do things without thinking.	1	2	3	4
3. I don't "pay attention."	1	2	3	4
4. I concentrate easily.	1	2	3	4
5. I save money on a regular basis.	1	2	3	4
6. I squirm at plays or lectures.	1	2	3	4
7. I am a careful thinker.	1	2	3	4
8. I plan for job security.	1	2	3	4
9. I say things without thinking.	1	2	3	4
10. I act "on impulse."	1	2	3	4
11. I get easily bored when solving thought problems.	1	2	3	4
12. I act on the spur of the moment.	1	2	3	4
13. I buy things on impulse	1	2	3	4
14. I am restless at lectures or talks.	1	2	3	4
15. I plan for the future	1	2	3	4

EATING QUESTIONNAIRE

Instructions: The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully. Please answer all the questions. Thank you.

Questions 1 to 12: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days) only.

.

	On how many of the past 28 days …..	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
1	Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
2	Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?	0	1	2	3	4	5	6
3	Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
4	Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
5	Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?	0	1	2	3	4	5	6
6	Have you had a definite desire to have a totally flat stomach?	0	1	2	3	4	5	6
7	Has thinking about food, eating or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
8	Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
9	Have you had a definite fear of losing control over eating?	0	1	2	3	4	5	6
10	Have you had a definite fear that you might gain weight?	0	1	2	3	4	5	6
11	Have you felt fat?	0	1	2	3	4	5	6
12	Have you had a strong desire to lose weight?	0	1	2	3	4	5	6

Questions 13-18: Please fill in the appropriate number in the boxes on the right. Remember that the questions only refer to the past four weeks (28 days).

Over the past four weeks (28 days) ……

13 Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?	.....
14 ….. On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?	.....
15 Over the past 28 days, on how many **DAYS** have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food and have had a sense of loss of control at the time)?	.....
16 Over the past 28 days, how many times have you made yourself sick (vomit) as a means of controlling your shape or weight?	.....
17 Over the past 28 days, how many times have you taken laxatives as a means of controlling your shape or weight?	.....
18 Over the past 28 days, how many times have you exercised in a "driven" or "compulsive" way as a means of controlling your weight, shape or amount of fat, or to burn off calories?	.....

Questions 19 to 21: Please circle the appropriate number. Please note that for these questions the term "binge eating" means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

19 Over the past 28 days, on how many days have you eaten in secret (ie, furtively)? ….. Do not count episodes of binge eating	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
	0	1	2	3	4	5	6
20 On what proportion of the times that you have eaten have you felt guilty (felt that you've done wrong) because of its effect on your shape or weight? ….. Do not count episodes of binge eating	None of the times	A few of the times	Less than half	Half of the times	More than half	Most of the time	Every time
	0	1	2	3	4	5	6
21 Over the past 28 days, how concerned have you been about other people seeing you eat? ….. Do not count episodes of binge eating	Not at all		Slightly		Moderately		Markedly
	0	1	2	3	4	5	6

Questions 22 to 28: Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days).

	Over the past 28 days …..	Not at all		Slightly		Moderate -ly		Markedly
22	Has your weight influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
23	Has your shape influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
24	How much would it have upset you if you had been asked to weigh yourself once a week (no more, or less, often) for the next four weeks?	0	1	2	3	4	5	6
25	How dissatisfied have you been with your weight?	0	1	2	3	4	5	6
26	How dissatisfied have you been with your shape?	0	1	2	3	4	5	6
27	How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?	0	1	2	3	4	5	6
28	How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?	0	1	2	3	4	5	6

What is your weight at present? (Please give your best estimate.) .....

What is your height? (Please give your best estimate.) .....

If female: Over the past three-to-four months have you missed any menstrual periods? .....

If so, how many? .....

Have you been taking the "pill"? .....

THANK YOU

Appendix 2.8: *Consent form for interviews*

CONSENT FORM 2 - Interviews

Title of Project: Psychological factors associated with self-harm and problem eating in those with borderline personality disorder: an exploratory study.

Name of researcher: Claire Allott

Identification number for this study:

1. I confirm that I have read and understand the participant information sheet (version: date:) for the above study. ☐
2. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
3. I consent to the interview being audio-recorded. ☐
4. I give permission for my information to be looked at by the research team and regulatory authorities, where it is relevant to my taking part in the research. ☐
5. I agree to my General Practitioner being informed of my participation in the study. ☐
6. I understand that my information will be kept strictly confidential and that my identity will not be revealed in any reports, publications or presentations. ☐
7. I agree to take part in this study. ☐

_____	_____	_____
Name of Participant	Date	Signature
_____	_____	_____
Name of Researcher	Date	Signature

Thank you for agreeing to take part in this research

Appendix 2.9: *Interview Schedule*

Semi structured interview guide

Introduction

The research will welcome the participant, before going through the information sheet and allowing time for questions. Process of consent will be explained, and written consent will then be obtained. The process of confidentiality and safe-record keeping in relation to recording the interview will be explained.

What we talk about today will remain confidential. However, if you tell me something that makes me concerned you may be at risk of harming yourself or someone else, then I will need to share this information with your clinician and a duty doctor. If this happens, I will let you know first.

Thank you for completing the questionnaires and arranging a time to meet with me. As you will now be aware, part of the research I am doing involves asking several people to take part in this interview, following the results of their questionnaires. So today I will be asking you some questions which particularly relate to your experiences of self-harm and of problem eating behaviours. If there are any you don't want to answer, that is okay. It is also fine if you would like a break at any point. If you want to stop at any time, please just let me know. When I come to write up this study, you will not be named, nor will anyone else who has taken part in the research, to ensure confidentiality for everyone involved.

Questions

(The questions below will act as a loose guide in order to explore people's experiences of self-harm and whether/how these relate to their experiences of disordered eating behaviour; whether they consider disordered eating to be a form of self-harm; and whether the function of the behaviours differ)

<u>Experience of self-harm and suicidal thoughts</u>

- I am interested to know more about your experiences of suicidal and self-harm thoughts and behaviours. When was the first time you began to experience thoughts of suicide and/or self-harm?
- What was going on in your life at this time? Who was in your life at this time?
- In what situation did/do you self-harm?
- What sense do you make of your experiences of self-harm?
    - What did/do you gain from self-harm?

- What function does it fulfil? (prompts: control? Relief? Coping?)

Experience of disordered eating

- I'm also interested to know more about your experiences of eating difficulties. When was the first time you became aware that your eating behaviours may be problematic for you?
- What was going on in your life at this time? Who was in your life at this time?
- In what situation do you [restrict/binge/vomit/etc]?
- What sense do you make of your experiences of [eating problem behaviours]?
    - What do you feel you gain from this behaviour?
    - What function does it fulfil?

Self-harm & disordered eating

- Do you consider [eating problem behaviours] to be a form of self-harm, or is this something separate for you?
- Are there particular situations in which you would be more or less likely to consider self-harm versus [restriction/bingeing/vomiting/etc]?
- Does self/harm and [eating problem behaviour] fulfil a similar function for you? What is similar/ what is different?

Thank you for taking part in this interview. How did you find the experience? Some people find they can have mixed emotions after discussing difficult experiences. These feelings are normal, and pass with time. However, if you think you need further support regarding what we have discussed, I have some numbers of people you can talk to, and would encourage you to discuss with your clinician.

The next stage will be for me to write up everything that was said during the interview using the recording. Once the study is finished, you are welcome to receive a copy of the findings.

Appendix 2.10: *Data analysis*

Part one: quantitative data analysis

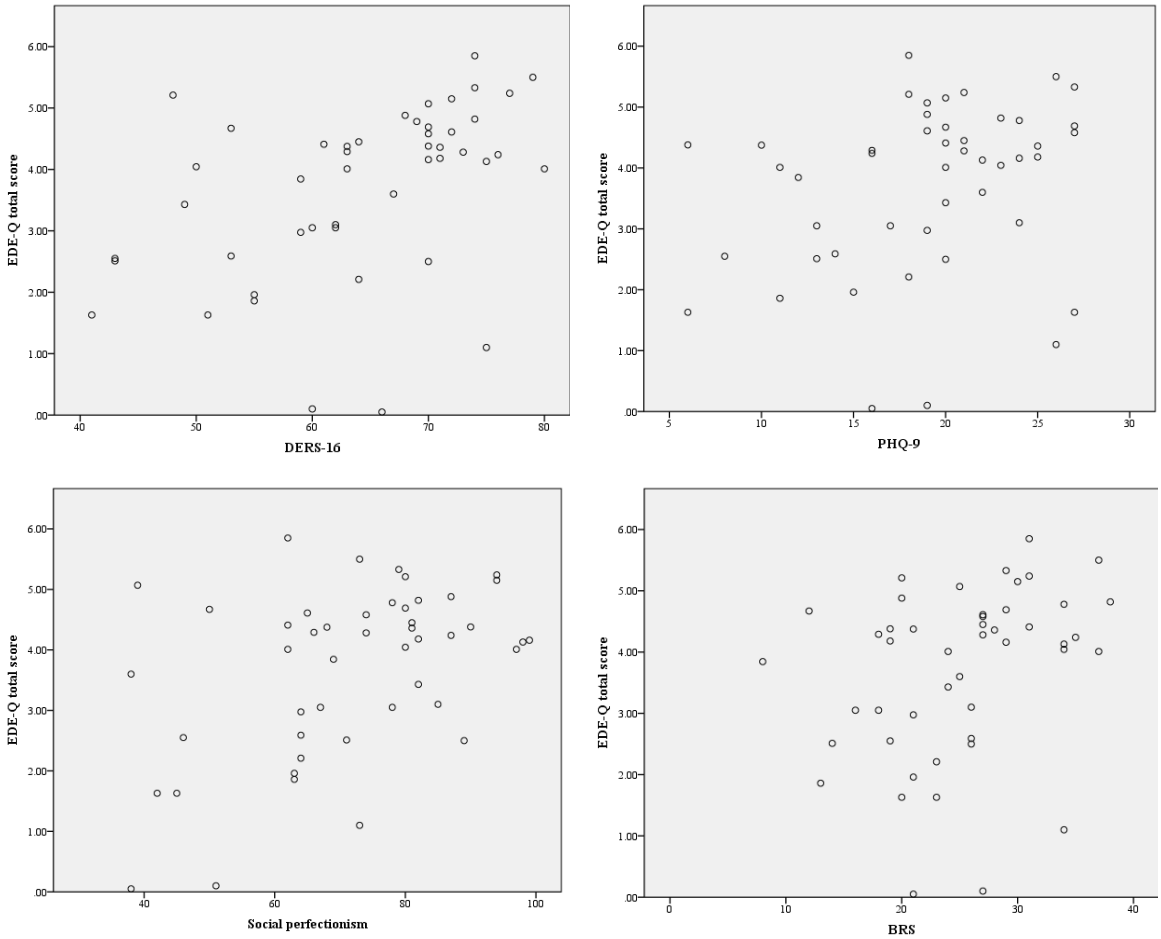
Data were analysed using SPSS v21. Data were initially examined to assess suitability for correlation and regression analyses. Assumptions of normality, linearity, and homoscedasticity were investigated using box plots, histograms, scatter plots, and Shapiro-Wilks tests. These indicated that normality was violated for the total scores of EDE-Q, DERS-16, and SDS. Given the central importance of the EDE-Q variable, non-parametric testing was adopted. In respect of the regression analysis, examination of P-P plots and residual scatter plots confirmed that all model assumptions were met: residuals were independent, normally distributed and had constant variance. A series of Spearman's Rank correlations were conducted for all study variables. These baseline univariate analyses provided the basis for selection of variables for inclusion in a hierarchical multiple regression.

Part two: qualitative data analysis

Data were analysed using Interpretative Phenomenological Analysis (IPA), a qualitative method of analysis which focuses on offering insight into the way in which people make sense of their experiences. IPA involves a six stage process, as detailed by Smith et al. (2013; p. 82-107). Initially, each transcript was listened to and read multiple times, to gain a contextual understanding of the entire narrative. The researcher then began initially noting the linguistic, descriptive, and conceptual content of each transcript in increasing depth. Each transcript was analysed individually, developing emerging themes from exploratory comments, and then searching for connections across emergent themes. These steps were repeated for each transcript. Theme patterns across cases were then considered, with the final identification of key themes that incorporated the experiences of the participants overall. As suggested by Smith et al. (2013), excerpts from the transcripts relating to each emergent theme were recorded in a word document, an example of which can be found in Appendix 2.12.

***Appendix 2.11**: Scatterplots associated with correlation analyses*

Scatter plots depicting the relationship between EDE-Q, DERS, Social perfectionism and Resilience



Note: EDE-Q (Eating Disorder Examination-Questionnaire total score); DERS-16 (Difficulties in Emotion Regulation Scale total score); Social perfectionism total score; BRS (Brief Resilience scale); PHQ-9 (Patient Health Questionnaire)

***Appendix 2.12**: Sample subthemes and exemplars*

Superordinate theme	Subtheme	Exemplars	Represent-ation
Need for control	Taking back control	"Like a control mechanism [I:Okay], that I didn't...not just pure control, erm...more like that I had something that nobody could have, that nobody could take from me [I: Okay]. Whereas before, things had been taken from me." "It's just that I wanted this thing that was mine, this thing of being mine, the control again" "I can see blood on me, then it's more real, and I can feel the release of pain and emotion"	Murdina
		"I like the fact I'm making myself feel like awful. (…) It's sort of like people bring pain to me, people leave me and leave me in pain and I can't control that. But when I'm physically doing something to myself, I can feel the pain of it, and it's me that's inflicting it on myself" "I just wanted to...I loved feeling hungry. I felt like...I'd achieved something" "Like I got sent down to # and I wasn't allowed to see anyone, I wasn't allowed out, I wasn't allowed...he cut off my phone. I couldn't phone or text anyone. I wasn't allowed wifi so I couldn't...I was just trapped. I couldn't speak to anyone. It was awful. So I just stopped eating so I could do something, to...cope"	Isla
		"Yeah...just if I feel like I'm really not dealing with it, I'll just do this and everything will be fine" "It was because I was sad but more because my mum hated it as well, this was something that I'm not supposed to do, so I'm gonna do it, cause there must be a reason for not doing it" "And then I feel okay again and I don't have to eat for another while, and I'm not going to put on any…not going to put on weight, and I have the choice to do it you know?"	Heather
		"So…having the pain and the distraction…brings you out of that [I: Yeah]…focus your attention and do something else." "I think it was probably a control thing, everything else was out of control here, what…what…what can I do to, you	Charlotte

		know, get it back." "Well learned without a doubt that er..if you make it come back up then it…and then my weight was coming down then I was restricting more and more so…yeah. It gave me control -if I'm sick I'll lose weight and look oh there's a result so it's working"	
		"Erm, my mum's quite, you know, "you need to get your hair cut - your hair looks awful"... that's binge eating style, big time. You know, like a rebellion against them" "That was just my way of like rebelling against them, you know? That I am different - that I'm not like her, you know? It showed them" "And, ehh, it was a control thing for me as well, if er, there's anything that I can control, I can control what I put in my body...And erm, the more I put in, the more control they have, I thought, over me"	Nora
		"More angry. It would calm me down instantly, distract me. It had a sort of numbing affect on me. It was like...I would instantly be fine, you know?...Like I wasn't angry any more. And it would be...I remember feeling although it was painful, it was...I was calm, it was a relief, I would sit there and I would be quiet." "I felt so stuck, because I was like I don't want to live any more, I've nothing...there's nothing that I want more than to just not exist. I don't want to wake up in the morning, I hate life, it's not for me, you know? [I: Mmhmm] And I was very defensive of 'this is my decision, I didn't ask to be born"	Louise
		"If I am really sad, I'm either going to eat everything or eat nothing. Erm…but that's pretty much the way that my diet is anyway. Like now, I'm happier. Happier cause I'm restricting so that gives me like a break from it all? But...it's trying to regain that control by trying to take it back when I feel better. Cause it's all to do with my mood, whatever mood I'm in" "So he just wouldn't let me have any to myself for anything. Obviously he was watching me cause he knew. So I had no control. I had no way to do it and I needed to be able to....you know have a way to do it? So I just (*describes*	Cara

		method of suicide attempt)"	
Friend and foe	Self-harm as an ally	"Went back to my old ways yeah, and my old ways were to have this friend that I had control of [I: Okay, yeah], yeah." "That I was still a person [I: Mmhmm], erm, and that I had something. It wasn't that I wasn't alone, it was something that I had. This was my friend. Cause I didn't really have any other friends, 'cause I'd alienated myself [I:Mmhmm]. So it was like I had this other person to talk to and communicate with, and feed if that makes sense?"	Murdina
		"Yeah, yeah, like at the start it was kinda whenever I felt down, or whenever something had happened, it's what I would turn to." "It was kinda just every other day, or like every day. It would just be a thing that I did" "I just wanted to...I loved feeling hungry. I felt like...I'd achieved something"	Isla
		"I'm going to get rid of this pain and I will do it at this time'. It kinda calms me down a little bit. If I'm planning that, I don't mind waiting 'til the kids…I can plan it hours before the kids even go to bed" "Yeah...just if I feel like I'm really not dealing with it, I'll just do this this and everything will be fine [I: mmhmm] and I'll feel a lot better. I think I kind of essentially trick myself into believing it [I: Okay]…cause I know fine well I don't need to do it. But it's part of me you know?"	Heather
		"Pretty much just cutting myself [I: Mmhmm] that I know is like…safe, like I feel…it heals quickly, can hide it…doesn't scar. Sometimes it can be better actually I feel because it doesn't stay, you don't have to see…what you've done." *"*Well this wasn't a horrible thing, it was my thing that I liked doing [I: Aha, okay], it was me, mine."	Cara
		"You know, the reward of it, of getting a reward…with losing the weight. Which is the goal…erm…but I don't know that I was actually doing that as a way to harm myself? It's just part of me now." "I liked the pain, I liked the pain as a distraction so that I didn't have to think about anything else"	Charlotte

		"I get intensively sad, intensively happy, intensively almost every emotion all at once, and I just feel that, for me, self-harming is a way that I can step, take my step back." "it was just my way I found of coping at that time, you know? I just hid it all, it was my thing" "I just felt this, erm, I got a lot of positive attention [I: Okay] But negative, you know, from men... So I just thought that it was brilliant, I was getting loads of attention which I never had, so I just kept doing it cause it made me feel good"	Norma
		"Like an instant relief, from your...you know from how horrible, how sad you feel, how *anything*, because it's instant, the pain's very bad. It's a real nippy pan that you're just focused on – this is sore now, you know. It takes your whole...focus off of anything else. And it always works you know? *"I know myself that if everything was fine again and I felt fine, and I felt I could eat these, that I would go back to doing it again [I: Okay]. Cause that just what I know how to do" [Louise]* "I eat to comfort myself… I'd still use eating as a form of comfort and like that sort of...just something that I've always done on top of"	Louise

Appendix 2.13: *Research proposal*

DOCTORATE IN CLINICAL PSYCHOLOGY

Matriculation Number: 2166398

Name of Assessment: MRP Proposal

Title of Project: Psychological factors associated with self-harm and disordered eating in those with borderline personality disorder

Date of Submission:	**Monday 9th May 2016 (resubmitted to REC 20th September 2016; substantial amendment resubmitted to REC 28th November 2016)**
Version Number:	**9**
Word Count:	3049

Abstract

Background: Suicide is one of the most commonly reported causes of death in individuals with eating disorders, with self-harm also highly prevalent in this population. Binge and/or purge behaviours in particular, occurring cross-diagnostically, are associated with higher rates of suicidal ideation and self-harm. Co-occurring borderline personality disorder (BPD) presents a significant increased risk of suicidal behaviour. The nature of the relationship between eating disorders and BPD remains unclear, and the extent to which psychological factors contribute to this significantly increased risk is also largely unknown.

Aims: To examine the extent to which disordered eating and suicidal and/or self-harm behaviours are associated in a BPD population, and to investigate the effect of psychological factors on this relationship.

Methods: A cross-sectional mixed methods design. Participants with a diagnosis of BPD in NHS Highland will be asked to complete 8 measures concerning self-injurious thoughts and behaviours, disordered eating, depression, emotional regulation, perfectionism, impulsivity, resilience, and self-disgust. Quantitative data will be analysed using logistic regression. Semi-structured interviews with a small number of individuals endorsing history of self-harm and disordered eating will be conducted. These interviews will focus on their experience of the relationship

between these two factors, and the transcripts will be explored using Interpretative Phenomenological Analysis.

Applications: Identification of psychological factors and specific disordered eating symptoms will inform treatment and aid risk-management.

Psychological factors associated with self-harm and disordered eating in those with borderline personality disorder

Introduction

Suicide is one of the most commonly reported causes of death in individuals with eating disorders, with an increased risk of suicide in females with moderate to severe eating disorders (Goldberg, Werbeloff & Shelef, 2015), estimated 23 times the rate of suicide in the general population (Harris & Barraclough, 1997). Rates of self-harm, defined in the NICE guidelines (2013) as "intentional self-poisoning or self-injury, irrespective of the apparent purpose of the act", are also highly prevalent in this population (Kostro, Lerman & Attia, 2014).

Suicide attempts and self-harm in eating disorders

A review of research between 1985-2004 concerning suicide attempts in eating disorders highlighted an increased suicide rate among individuals with anorexia nervosa[1] (AN) in comparison to bulimia nervosa[2] (BN). However, the pattern of suicide attempts varies as a function of type of eating disorder, with those with BN reporting more non-lethal suicide attempts than those with AN (Franko & Keel, 2006). This review was updated by Kostro, Lerman and Attia (2014) to include non-suicidal self-injury (NSSI) as well as suicide attempts. Risk of death by suicide was found to be significantly higher in AN binge and/or purge subtypes in comparison to the restrictive subtype[3]. A higher prevalence of suicidal ideation, attempts, and self-harm was indicated foremostly in BN, followed by the AN binge-purge subtype, in comparison to restrictive AN. Other research reports prevalence rates of between 26 and 55 percent for individuals with BN, and about 27 to 61 percent for those with AN binge-purge subtype (Kerr, Muehlenkamp, & Turner, 2010). These findings highlight an increased prevalence for suicidal ideation and self-harm in eating disorders in which binge and/ or purge behaviour is apparent, a behaviour which crosses diagnostic boundaries.

[1] To meet diagnostic criteria for anorexia nervosa, a person must display: a persistent restriction of energy intake leading to significantly low body weight; an intense fear of becoming fat or persistent behaviour interfering with weight gain; and disturbance in perception of body weight or shape, self-evaluation unduly influenced by body shape or weight, or persistent lack of recognition of the seriousness of current low weight.

[2] To meet diagnostic criteria for bulimia nervosa, a person must display: recurrent episodes of binge eating; recurrent inappropriate compensatory behaviour in order to prevent weight gain (both of the former for at least once a week for three months); and self-evaluation unduly influenced by body shape and weight (American Psychiatric Association, 2013).

[3] Two main subtypes of AN are restricting subtype, where a person severely restricts their food intake (AN-R), and binge and/or purge subtype, where restriction is sometimes accompanied with bouts of binge-eating and/or purging behaviour (AN-BP).

Disordered eating behaviour on a spectrum

The majority of research into the relationship between eating disorders and self-harm has focused on the classification of participants into diagnostic categories of AN, BN, or eating disorder not otherwise specified (EDNOS). However, given the high rate of conversion across diagnoses and the controversy surrounding whether these labels reflect clinical reality or not (Fairburn & Cooper, 2011), and the evidence suggesting that binge purge behaviours are associated with a higher rate of NSSI whereas restrictive behaviours are associated with higher suicide rates, further research into the underlying mechanisms and psychological factors which increase these risks is necessary to improve identification of risk and inform treatment.

Comorbid borderline personality disorder

Common correlates of suicidality in eating disorders are comorbid diagnoses, a history of substance abuse and a history of childhood abuse (Franko, Keshaviah, Eddy, Krishna, David, Keel & Herzog, 2013). Of these comorbid diagnoses, research suggests that co-occurring borderline personality disorder (BPD) and an eating disorder seem to confer greater risk for suicidal and self-injurious behaviours than either diagnosis alone, particularly for those with BN (Reas, Pedersen, Karterud & Rø, 2014). BPD is characterised by instability in emotion and impulse regulation, self-image, and interpersonal relationships. Self-harm is also characteristic of BPD, reported to occur in around 70-75% of those with BPD (Gunderson, 2001). Co-occurrence of eating disorders is said to occur in approximately half of treatment-seeking women with BPD in a lifetime (Zimmerman & Mattia, 1999).

Chen, Brown, Harned & Linehan (2009) investigated the rates of suicidal and non-suicidal self-injury in outpatients with BPD, with and without eating disorders. It was found that co-occurring BPD and BN was associated with a significantly greater risk of recurrent suicide attempts, and co-occurring BPD and AN was associated with an increased risk of NSSI. This research clearly indicates an interaction between eating disorders, BPD, and suicidal and self-harm behaviour. It is possible however that categorisation by diagnostic criteria, and not differentiating binge-purge from restrictive subtypes, led to an underestimation of the relationship between eating disorders and suicidal and self-harm behaviours: a proportion of the sample may have had disordered eating binge-purge behaviours without necessarily fulfilling criteria to reach diagnosis. Underlying mechanisms of these relationships were also not explored. Given the research associating binge/purge behaviours with a greater risk of NSSI and suicide, it is necessary to both consider eating disordered behaviour on a spectrum, and to examine associated psychological factors in order to ascertain what it is about eating disorders that confer greater risk.

Psychological factors associated with an increased risk for suicidal/ self-harm behaviours

Potential moderators of the relationship between suicidal behaviour/NSSI and eating disorders have been suggested. For example, disgust, particularly self-disgust, has been identified as a potential risk factor for suicidal ideation among those with EDs (Chu, Bodell, Ribeiro & Joiner, 2015). Suggested moderators of the relationship between recurrent suicide attempts and NSSI in those with BPD and eating disorders are poor problem-solving, emotion dysregulation, impulsivity and compulsivity, dissociation, need for control, self-hatred, and childhood trauma (Chen et al, 2009; Franko and Keel, 2006). More generally, recent research into the psychological factors associated with suicidal behaviour discusses an array of risk factors related to personality and individual differences, cognitive factors, social factors, and negative life events (O'Connor & Nock, 2014). A number of these personality and cognitive risk factors are those often seen in a disordered eating population, such as perfectionism, self-criticism, and cognitive rigidity. Perfectionism, particularly social facets of perfectionism, has been shown to be related to eating disorder symptoms (Hewitt, Flett & Ediger 1995), and perfectionism and self-criticism have been shown to be associated and predictive of eating pathology severity (Ferreira, Pinto-Gouveia & Duarte, 2014). It remains unclear based on existing literature how these potential psychological factors may interact and impact on the relationship between eating disorders, BPD, and suicidal behaviour.

Given the increased risk of suicide and self-harm in a population with eating disorders, and the further increased risk in those with a co-morbid diagnosis of BPD, further research into what factors are associated with this increased risk is necessary, and what factors differentiate those with ED and BPD who have a history of suicidal and self-harm behaviours from those who do not.

Aims

The primary aim of this study is to examine the extent to which disordered eating and suicidal behaviours are associated within a sample of patients with BPD. A secondary aim is to identify the psychological factors associated with an increased risk of self-harm and higher levels of disordered eating within a BPD population.

Questions

d) What percentage of participants with disordered eating report suicidal and self-harm thoughts and behaviours in a BPD population?
e) What effect do psychological factors of: depression; impulsivity; emotional regulation; perfectionism; self-disgust; and resilience have on the relationship between disordered eating and suicidal and self-harm behaviour in a BPD population?

Plan of Investigation

Sample

The sample will be patients with a diagnosis of Borderline Personality Disorder in NHS Highland. Given that the population can pose recruitment difficulties, the sample pool will be broad in order to account for potential non-responders. The sample will comprise those who are either currently on the caseload of a clinician within Adult Mental Health or the Personality Disorders Service, or being seen by a member of a community mental health team (CMHT) - either for individual support, or waiting for/ receiving one of the three group-based treatments in NHS Highland: STEPPS, STAIRWAYS, or DBT:

(i) Those on the waiting list to attend STEPPS (Systems Training for Emotional Predictability and Problem Solving) group interventions

(ii) Those attending one of the eight to ten STEPPS groups running in NHS Highland between Autumn 2016 and Spring 2017

(iii) Those on the waiting list for STAIRWAYS (an advanced skills group for those who have completed STEPPS) group intervention

(iv) Those attending STAIRWAYS between Autumn 2016 and Spring 2017

(v) Those attending DBT (Dialectical Behaviour Therapy) group intervention between Autumn 2016 and Spring 2017

(vi) Any others who are on the caseload of a member of a CMHT but who are not receiving group-based treatment or treatment through Psychological Services.

STEPPS is a manualised, evidence-based 20-week treatment for BPD developed by Blum, Pfohl, John, Monahan & Black (2002), combining cognitive-behavioural techniques and skills training with a systems component. Groups usually consist of 8-12 participants. STAIRWAYS is an advanced group programme for those who have completed STEPPS which focuses on the following skills: setting goals; trying new things; anger management; impulsivity control; your choices; and staying on track.

Inclusion and Exclusion Criteria

Inclusion criteria: (i) 16+ years (ii) diagnosis of BPD

Exclusion criteria: those with co-morbid dissocial personality disorder (an exclusion criteria for STEPPS which will be extended for all participants).

Quantitative recruitment procedures

Participants will be recruited in four ways.

1. Via clinicians within Psychological Services

   Clinicians within Adult Mental Health and the Personality Disorders Service will be asked to identify clients on their caseloads who meet the inclusion criteria. Letters will then be sent from the clinicians to the client, with the information sheet and questionnaires to complete if they consent to do so.

2. Via group attendance.

   Those due to attend one of the eight to ten STEPPS groups in between Autumn 2016 and Spring 2017 will be sent information in advance, along with a reply slip for consent to contact at the group, and a session of each STEPPS group will then be attended to improve uptake. Participants will be asked to complete questionnaires in the group and hand back to the researcher at the end.

   As STAIRWAYS and DBT are both rolling groups, dates for each group will be identified in advance and attended twice (Autumn 2016 and February 2017) in order to gain as many participants as possible. Again participants will be sent information in advance with a reply slip for consent to contact at the group. Participants will be asked to complete questionnaires in the group and hand back to the researcher at the end.

3. Via waiting lists.

   Waiting lists for STEPPS and STAIRWAYS in NHS Highland will be accessed; all will be sent research information and measures, with free post envelopes to encourage response. Number on the waiting lists is anticipated to be a minimum of 6 per group for STEPPS and approximately 10 for STAIRWAYS. The DBT group does not currently hold a waiting list.

4. Via professionals within CMHTs

   There will be some potential participants on the caseload of some members of the various CMHTs (CPNs, psychiatrists) who are not receiving group-based treatment or treatment through Psychological Services. In this case, CMHT members will be asked to identify clients on their caseloads who meet the inclusion criteria. These clients will then be given the information sheets and questionnaires to complete if they consent to do so.

The potential sample is approximately 124 (48 on current STEPPS groups, 48 on STEPPS waiting lists, 12 on current STAIRWAYS group, 10 on STAIRWAYS waiting list, 6 on current DBT group).

Qualitative recruitment procedures

4-10 participants (the number of participants recommended by Smith, Flowers & Larkin (2009) for doctoral research) will be recruited to take part in semi-structured interviews. A purposive sampling method will be used, with participants scoring on measures of disordered eating and

indicating a history of suicidal ideation or self-harm invited to take part until data saturation is achieved.

Measures

Eating Disorders Examination Questionnaire (EDE-Q, Fairburn & Beglin, 1994).

The EDE-Q is a self-report measure that consists of 41 items about eating behaviour: restraint; eating concern; shape concern; and weight concern. It also concerns eating disorder behaviours over a 28-day period.

Self-Injurious Thoughts and Behaviors Interview (SITBI, Nock, Holmberg, Photos, Michel, 2007). The 72 item short form of the SITBI will be shortened further to 26 questions which record suicidal and non-suicidal thoughts and behaviours, and questions modified in order to be self-report rather than administered in an interview setting.

Patient Health Questionnaire (PHQ-9). The PHQ-9 is a self-report measure consisting of 9 questions which assess symptoms of depression.

Barratt Impulsiveness Scale (Patton et al, 95) short form (BIS-15; Spinella 2007).

The BIS-15 is a self-report measure consisting of 15 questions which assess impulsivity.

Brief version of the Difficulties with Emotion Regulation scale (DERS-16, Bjureberg et al., 2016). The DERS-16 is a brief 16 question self-report measure assessing overall emotion regulation difficulties, demonstrated to retain internal consistency, test-retest reliability, and validity in keeping with the original DERS (Bjureberg et al., 2016).

Self-disgust Scale (SDS, Overton, Markland, Taggart, Bagshaw & Simpson, 2008). The SDS is an 18 item questionnaire assessing concepts of self-disgust.

*Multidimensional Perfectionism Scale (Hewitt & Flett, 1990).*The multidimensional perfectionism scale consists of 45 questions assessing self-oriented, other oriented and socially prescribed perfectionism. The 15 questions relating to socially prescribed perfectionism will be used.

Brief Resilience Scale (BRS, Smith, Dalen, Wiggins, Tooley, Christopher & Bernard 2008). The BRS is a 10 question measure assessing the ability to "bounce back" or recover from stress.

Qualitative interviews

Semi-structured interviews will be conducted with those indicating a suicidal history and scoring on the EDE-Q in order to provide further insight into the relationship between disordered eating and suicidal and/or self-harm behaviours. These interviews will be analysed using IPA: an approach to qualitative research which involves close examination of peoples experiences of a given topic, and how they make sense and meaning of their experience. Topics covered will relate to people's experiences of suicidal and self-harm thoughts and behaviours and whether/how these relate to their experiences of disordered eating behaviour. Whether they consider disordered eating behaviour to be a form of self-harm and whether the function of the behaviours differs will be explored. Published guidance on the use of IPA will be followed (Smith, Flowers and Larkin, 2009; Pietkiewicz & Smith, 2012). Themes will be cross-checked by providing a third party person, with experience of IPA, a selection of anonymised interviews to ensure theme reliability. nVivo will be used in data management and analysis. The interviews will allow further exploration into these relationships then quantitative approaches alone, and allow the opportunity for any other factors to emerge as common key themes.

Design

This is a cross-sectional mixed methods design. There will be two components to the study: quantitative, in which a regression analytic approach will be taken to explore associated variables; and qualitative: interviews concerning the relationship between disordered eating and self-harm explored using an IPA approach.

Research Procedures

For those due to attend upcoming STEPPS groups, information sheets and consent forms will be posted out in advance of the first session. The first session will be attended in which all information and measures will be provided and asked to complete during the first session in order to encourage response rates. The STAIRWAYS group and the DBT group will be attended both Autumn 2016 and Spring 2017, to ensure the maximum amount of participants are accessed as these are rolling groups, at dates identified in advance with group facilitators. For those on the waiting lists for STEPPS or STAIRWAYS, all materials will be sent via post.

Proposed quantitative data analysis

Data analysis is binary logistic regression with an outcome variable of yes or no for history of suicidal/ self-harm behaviours, with the initial predictor variable of score on the EDE-Q. A series of analysis will be performed to investigate moderators/ mediators of the relationship between disordered eating and suicidal/ self-harm behaviours.

Power calculation

This study will be an exploratory study. In estimating the required sample size for future larger scale studies, a logistic regression power calculation was performed using the usual convention of significant criterion as .05, power at 0.8, with 4 predictor variables. For a medium effect size (R^2 0.15) the required sample size is 129; for a large effect size (R^2 0.35) the required sample size is 59. Retention rates from potential sample pools are unclear from the previous literature; however it is expected that, for future large-scale research, recruitment would need to exceed the number of participants required for effect size estimates given the potential recruitment difficulties with said population.

Settings and Equipment

All settings will be clinical NHS. A recorder and transcription kit will be borrowed from The University of Glasgow.

Researcher Safety Issues

Researcher safety issues will be minimal for quantitative data collection as a) measures will be posted to potential participants on group waiting lists so will not require any direct contact; groups will be take place in clinical NHS settings with two other facilitators present. Semi-structured interviews will be held in NHS clinical settings with local guidelines for staff safety in place and supervision will be provided by the local lead supervisor.

Participant Safety Issues

Participants will be given an information sheet regarding the study, in which they will be informed that participation is voluntary, that all data will be anonymised, and that they are able to withdraw at any time and doing so will not affect any aspect of their treatment. They will also be informed that the questions are of a sensitive nature and that there is always the small risk in studies of this kind that asking questions about wellbeing can cause distress. They will be advised of local/ national supports, and also given researcher contact details if they have any questions to ask in advance of participating in the research. For those attending the group, they will be able to directly ask the researcher any questions. Participants will be asked to sign a consent form following these opportunities to ask questions.

Ethical Issues

The study will require approval from North of Scotland Research Ethics Service and NHS Highland R&D. Participants will be informed their participation is voluntary and will not affect any aspect of

their care or management. Participants will be informed of the risk of minor distress given the nature of the questions and advised of local / national supports. All data will be kept anonymous and confidential and stored on a NHS or password protected computer. Consideration will need to be given to the identification of moderate to severe eating disorder behaviour and moderate to severe risk of NSSI or suicidal ideation.

Financial Issues

Measures involved in the research will not have an associated cost. Costs for printing, photocoping, and mailing of the research information and measures will be funded by The University of Glasgow. Travel expenses will be claimed from NES through NHS Highland.

Practical Applications

Given the increased risk of self-harm and suicide in both an eating disorders and a BPD population, identification of psychological markers and specific disordered eating symptomology will aid identification and management of risk and inform treatment.

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