University of Southampton

Faculty of Social, Human and Mathematical Sciences

School of Psychology

The Role of Empathy and Burnout on the Attitudes of Medical and Paramedical Students to People with Medically Unexplained Symptoms

by

Pia Lucy Meads

Thesis for the degree of Doctor of Clinical Psychology

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<u>Abstract</u>

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The first chapter of this thesis is a systematic review of the literature on the efficacy of psychological therapies for people with medically unexplained symptoms (MUS). Many of the reviews to date focus on specific symptoms of MUS and specific treatment approaches. In the current review, a total of nine papers met inclusion criteria. A narrative synthesis was used to explore the outcomes of psychological interventions on symptomology of MUS. The review suggests that psychological interventions for broader MUS may be efficacious in reducing physical and psychological symptoms. However, the review highlights possible methodological concerns, such as selection bias in studies, which may impact on the generalisability of findings. A need for further high-quality research trials in order to analyse the efficacy of a broader range of psychological therapies for people with MUS is identified.

The second part of this thesis is an empirical paper investigating the role of empathy and burnout on attitudes of medical and paramedical students to people with MUS. A total of 104 students from medical and paramedical professions participated in an online questionnaire-based study. The findings suggest that particular forms of empathy, such as perspective taking and empathic concern, were associated with lower client focused burnout, whilst other forms of empathy, such as personal distress and fantasy, were associated with higher client and work focused burnout, respectively. High stress was associated with higher burnout across all

three domains of burnout (work, personal and client focused), and increased confidence

working with people with MUS was associated with lower work and client focused burnout.

High client focused burnout, low confidence working with people with MUS, low perspective

taking, and low empathic concern were associated with increased negative attitudes to MUS.

Clinical implications for staff, patients and policy are discussed, in addition to suggestions for

further research.

Keywords: medically unexplained symptoms, somatic, somatoform, psychological treatment,

psychological therapy, talking therapies, intervention

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Research Thesis: Declaration of Authorship

Print name: PIA LUCY MEADS

Title of thesis: The role of empathy and burnout on the attitudes on medical and paramedical students to people with medically unexplained symptoms

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

Signature: ....Date:..........................

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Chapter 1   Systematic Literature Review: Psychological Therapy for Medically Unexplained Symptoms in Adults

1.1   Introduction

1.1.1   Medically Unexplained Symptoms

Medically Unexplained Symptoms (MUS) are defined as persistent physical symptoms insufficiently explained by a medical condition (den Boeft, Classen-van Dessel & van der Wouden, 2017). Many other terms are used in addition to "MUS", such as "bodily distress syndrome" (Fink & Schröder, 2010), "functional symptoms" and "somatic symptom distress" (Creed et al., 2010). Despite the term "MUS" attracting some critique regarding ambiguity and pejorative connotations (Marks & Hunter, 2015), it is widely used in research literature and diagnostic criteria (Pohontsch et al., 2018).

In 2013, the Diagnostic and Statistical Manual of Mental Disorders (5th ed; DSM-5) introduced the classification category Somatic Symptom Disorder (SSD; American Psychiatric Association (APA), 2013). This new classification category replaced the four diagnostic categories of somatoform disorders in DSM-IV (Somatisation Disorder, Undifferentiated Somatoform Disorder, Hypochondriasis and Pain Disorder), where the presence of medically unexplained physical symptoms was the main indication. In the new diagnostic category, SSD, there is no requirement that physical symptomology is unexplained. Instead, the central feature is that emotional, cognitive and behavioural responses to physical symptoms are disproportionate to the physical symptomatology. The criteria for SSD therefore encompasses somatic symptoms that are both explained and unexplained, with the central feature on perceived maladaptive responses to somatic

symptoms from the perspective of the diagnosing clinician. The diagnostic process for

SSD can therefore still be critiqued as retaining potentially pejorative connotations.

Throughout this review, the term 'MUS' will be used in order to describe

physical symptoms without a known physical cause. This term also captures those

symptoms that are 'unexplained' within the diagnostic label SSD.

1.1.2   Treatment and Medically Unexplained Symptoms

Approximately 40-50% of people seen within primary care present with MUS

(e.g. Haller, Cramer, Lauche & Dobos, 2015). Diagnoses are typically arrived at through a

process of exclusion, which can cause delay in accessing appropriate treatment (Peters et

al., 2015). Throughout the diagnostic process, medical professionals must decide

whether to pursue further medical investigation with the potential to cause harm, such

as by carrying out invasive procedures, whilst gaining no results or further insight, or to

refrain from further investigation at the risk of potentially overlooking a disease

(Sirri, Grandi & Tossani, 2017).

Numerous studies have been carried out to assess the efficacy of treatment

for people with MUS, such as psychological, pharmacological and exercise therapy, as

well as combined treatment approaches (e.g. Larun, Brurberg, Odgaard-Jensen & Price,

2017; Bernardy, Klose, Welsch & Häuser, 2018). The NHS has also published guidelines for

the treatment of MUS in a 'Medically Unexplained Symptoms/Functional Symptoms

Positive Practice Guide' as part of the Improving Access to Psychological Therapies (IAPT)

initiative (Department of Health, 2014). The guidance in the positive practice guide

advises professionals against using the term MUS whilst engaging or treating patients.

Instead, the guidelines recommend using a specific diagnosis of a syndrome, which

describes the central symptom(s) without inferring that the aetiology could be

psychological. Examples of this include Fibromyalgia, Irritable Bowel Syndrome and

Chronic Fatigue Syndrome. The guidance therefore suggests that specific diagnoses should be offered to describe a central symptom(s), without suggesting that a psychological component may be evident in such syndromes. This is particularly interesting to consider alongside diagnostic criteria for SSD, which includes MUS, as the criteria demands the presence of perceived maladaptive psychological responses to physical symptomology. It could therefore be argued that these are in opposition of each other – psychological components are denied in treatment guidance for MUS whilst diagnostic criteria, which includes MUS, demand a psychological component.

Medically unexplained symptoms are frequently associated with histories of trauma (Roelofs & Spinhove, 2007). Links between trauma and MUS can be explained by cognitive hierarchical models of attentional control; Brown (2004) suggests that MUS is developed through the activation of symptom-related mental representations stored in memory. These mental representations develop through various experiences, such as exposure to a serious physical state (e.g. during physical illness or traumatic experiences) and exposure to physical states in others (e.g. illness in the family). It is thought these experiences create memory traces that are functionally similar to experiencing physical symptoms. The mental representation can be selected by the primary attention system, leading to the activation of secondary attention systems that attend to physical sensations and reactivate symptom-related mental representations stored in memory. This can be likened to the Somatosensory Amplification Theory (Barsky, Goodson, Lane & Cleary, 1988), which suggests that attentional focus and accompanying cognitions amplify the perception of physical signals, resulting in a vicious cycle of increased attentional focus, increased cognitions, and increased physical symptoms. It can therefore be argued that the underlying attentional process of MUS is the target of treatment, rather than the specific physical symptomology. Consequently, it is imperative that a broader approach to MUS is taken regarding treatment, rather than focusing on the specific physical symptoms and discrete labels, such as chronic pain and fibromyalgia.

1.1.3   Psychological Therapy and Medically Unexplained Symptoms

Research suggests that persistent MUS are associated with high rates of comorbid mental health difficulties (van der Leeuw et al., 2015). Psychological interventions have been offered to people experiencing MUS, which have shown some efficacy in reducing distressing symptoms. A systematic review by van Dessel et al. (2014) included 21 studies undertaken between 1995 and 2013 on non-pharmacological interventions, including physical and psychological therapies, for somatoform disorders and MUS. Their findings suggest that Cognitive Behavioural Therapy (CBT) was more effective than usual care in reducing symptom severity of MUS. In addition, a systematic review of CBT for MUS (Menon, Rajan, Kuppili & Sarkar, 2017) compared CBT with waiting lists, treatment as usual, or enhanced care. The findings suggest that CBT was superior in reducing illness behaviours and somatic symptoms with moderate effect sizes. However, the review highlights possible methodological concerns, such as evidence of publication bias, which could limit the reliability of these findings. Third-wave CBT has also shown some success, such as Acceptance and Commitment Therapy (ACT), which supports the development of new attitude formation towards symptoms based on self-regulation of attention and acceptance (van Ravensteijn, Lucassen, van Weel & Speckens, 2013).

1.1.4   Aim of the Review

There are a number of reviews on specific non-pharmacological interventions for MUS (e.g. Lin et al., 2019; Menon, Rajan, Kuppili & Sarkar, 2017; Rosendal et al., 2013; Kleinstäuberstäuber, Witthöft & Hiller, 2011). However, these reviews focus on restricted types of MUS, such as pain, and on specific treatment types, such as CBT. It is therefore less clear whether psychological interventions are an effective treatment of general MUS, regardless of the particular physical symptomology experienced. A systematic review on non-specific non-pharmacological interventions for somatoform disorders and MUS (van

Dessel et al., 2014) pre-dates the new DSM-V classification category for SSD. An up-to-date and broader overview of psychological therapies and MUS in adults is therefore needed to address this gap in the literature. This update is crucial in the context of diagnostic changes around SSD, which includes MUS, and guidance advising against the use of psychologically-inferred language, which were introduced at the time of the previous review.

The aim of the current review is to assess the efficacy of psychological therapies on physical and psychological outcomes for general MUS. The review will be based on research undertaken from November 2013, to follow the systematic review undertaken by van Dessel et al. (2014).

1.2   Method

1.2.1   Search Strategy

The online databases Psychinfo, Medline and Web of Science were searched for articles published between 1st November 2013 to 31st October 2019. The following search terms were used: ("somatic symptom disorder" or "somatoform symptom disorder" or "medical* unexplained symptom*" or "MUS" or "medical* unexplained physical symptom*" or "MUPS" and ("psycholog*" or "talking") and ("therap* or treatment*"). In addition to the database search, a hand search of reference lists was undertaken for relevant articles from papers generated from the original searches. In order to ensure a comprehensive review, the search was supplemented by searching grey literature, including Evidence Search Health and Social Care (NICE), ProQuest Dissertation and Thesis Database, Open Grey and The British Library.

1.2.2   Inclusion and Exclusion Criteria

The inclusion criteria for the review was as follows. Papers had to recruit participants aged 18 years and older, be complete (i.e. not protocols for ongoing trials) and be written in English. Studies had to refer to the treatment and/or management of MUS and/or SSD, and employ an experimental design measuring the effects of psychological treatment on MUS. Consequently, only quantitative studies were included, and studies evaluating service delivery were excluded. Eligible studies included psychological therapies with one or more of the following experimental interventions:

a)   CBT (e.g. reattribution therapy and problem-solving therapy)

b)   Behavioural therapy (e.g. classical CBT, relaxation therapy, psychoeducation, biofeedback therapy)

c)   Third-wave CBT (e.g. mindfulness)

d) Psychodynamic therapies (e.g. Dynamic Interpersonal Therapy,

Psychodynamic Interpersonal Therapy, group therapy)

e) Humanistic therapies (e.g. person-centred therapy)

f) Integrative therapies (e.g. cognitive analytical therapy)

Given the aims of the current systematic review to analyse the efficacy of

psychological therapies for broader MUS, studies were excluded that recruited

participants diagnosed with one specific MUS diagnosis/symptom (e.g. chronic pain). This

echoes the criteria in the systematic review by van Dessel et al. (2014).

1.2.3 Data Collection

Titles and abstracts, which had been identified from the literature search,

were screened. Studies were discarded from the literature search where they did not

fulfil inclusion criteria. Duplicate reports were also excluded. Full texts were then

obtained and assessed for inclusion and exclusion criteria. Consensus was sought from

two research supervisors where there was uncertainty.

1.2.4 Quality Appraisal

Quality of the studies was assessed using the quality appraisal checklist for

quantitative evaluative studies (National Institute for Health and Clinical Excellence

(NICE); 2012). This appraisal tool was selected due to its ability to evaluate controlled

intervention studies of varying quality within the area of public health research. The

quality ratings were based on an assessment of sampling, allocation, blinding, outcome

measures, treatment delivery, attrition, and analysis, with the allocation of 'strong',

'adequate' or 'weak' ratings. The quality of each study was first assessed by the

researcher and subsequently assessed by a second independent rater. Where quality

ratings differed, discussion was used to reach agreement. No studies were excluded on

the basis of the quality appraisal (see Appendix A for quality ratings of each study).

1.2.5   Data Synthesis

A narrative synthesis was used to analyse the data. A narrative approach

allows for flexibility and accommodation of a range of study types, and a narrative

synthesis attempts to move beyond textual summary and description in order to

generate comparative understanding, new insights, and knowledge (Mays, Pope, &

Popay, 2005). This differs to the mixed method approach used in the review by van

Dessel et al. (2014). In their review, a meta-analysis of the results was performed if two

or more studies in a comparison category were found that used the same outcome

construct, otherwise the results were summarised narratively. In the current review, the

included studies were considered too variable to enable meta-analysis. As such, studies

were too heterogeneous to meta-analyse. A narrative approach was considered

especially fitting for the current review due to the aims of the review to assess more

widely the efficacy of psychological therapies for MUS within the context of diagnostic

changes.

1.3   Results

The results are presented in two sections. The first section reports the characteristics of included studies, comprising 'participant characteristics' and 'study characteristics'. The second section reports on the physical and psychological outcomes of psychological interventions compared with usual care or waiting list, other psychological therapies, or enhanced care.

1.3.1   Section 1: Characteristics of Included Studies

An initial search of 686 studies was found. 79 duplicate studies were removed. Titles and abstracts of the remaining 607 studies were screened and 293 studies removed that did not use an adult sample or the publication was not available in English. Titles and abstracts of the remaining 314 studies were screened and a further 274 were removed if they had no psychological experimental condition or focussed on specific MUS symptoms. The remaining 40 articles were read in full and a further 32 studies were removed if the study was a protocol for an ongoing study, MUS were not present, the psychological intervention was not in the inclusion criteria, or the study did not include physical or psychological outcomes. A further relevant study was identified in the hand search of reference lists undertaken from papers generated from the original searches. Following the selection process, nine studies were eligible for inclusion. The study selection process is shown in the PRISMA flow diagram (Moher, Liberati, Tetzlaff, Altman & The PRISMA Group, 2009) in Figure 1. A data collection form was used to extract data, and characteristics of the included studies are shown in Table 1.
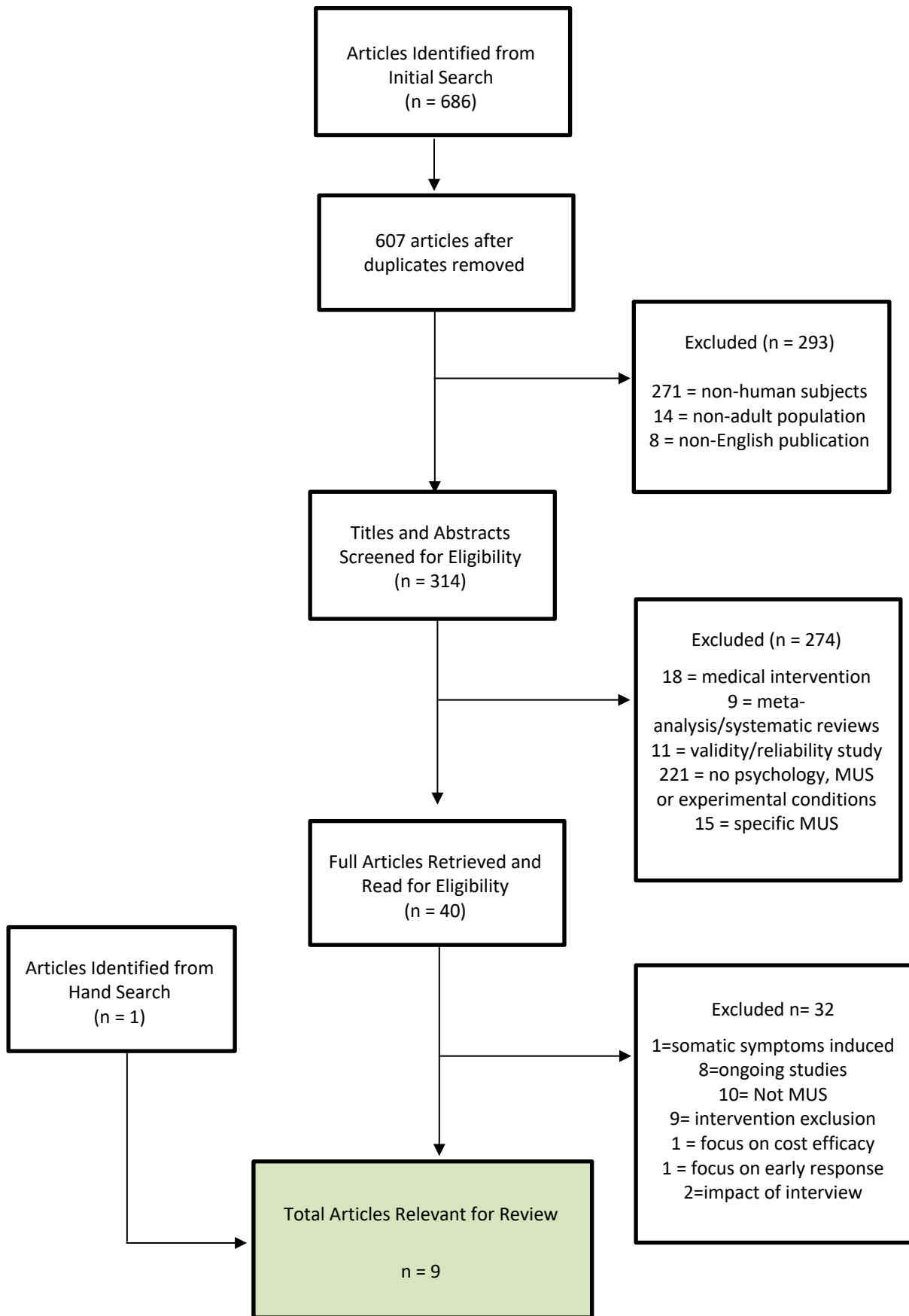
Figure 1. PRISMA Flow Chart of the Study Selection Process

Table 1. *Characteristics of Studies Included in the Review*

Study	Country	Sample size	Mean age and SD	Participants	Design	Outcome measures	Key findings	Quality Appraisal
Sitnikova et al. (2019)	Netherlands	Total n=200 CBT n=111; Usual care n=89	Mean 51.5 SD 16.3	DSM-IV criteria for USD – one or more symptoms from "Robbins' list"	Multicentre cluster RCT	Administered at baseline, 2, 4 and 12 months Baseline: PHQ-15, SID-I Primary: RAND-36 PCS Secondary: MCS and 8 subscales of the RAND-36, HADS, PHQ-15	CBT showed improvement in physical functioning, a decrease in pain and limitations due to physical problems over 12 months (small effect sizes). No differences between groups for anxiety, depression and somatic symptom severity. Effects larger for patients with more recent symptoms.	Strong/ Adequate
Kleinstäub erstäuber et al. (2019)	Germany	Total n=254* CBT n=128;	Mean 43.38 SD 12.92	Patients with at least 3 persisting MUS	Multicentre RCT	Administered at baseline, session 8, end of therapy and 6 month follow up Baseline: clinical interview, MUS interview and	Significant improvement on all outcomes in both groups at the end of treatment. However, ENCERT showed increased	Strong

Study	Country	Sample size	Mean age and SD	Participants	Design	Outcome measures	Key findings	Quality Appraisal
		CBT complimented with emotion regulation training n=126				Structured Clinical Interview for DSM-IV Axis I/II Disorders Primary: SOMS-7T Secondary: Number of somatic symptoms, symptom disability and psychological criteria of SSD assessed with MUS interview. Modified PDI, Eurowol-5D, modified SHAI, modified PCQ, BDI-II, SCL-90, ERSQ	improvement on secondary outcomes. At 6 month follow up, improvements remain. No effect ENCERT and CBT on primary outcome.	
Pederson et al. (2019)	Denmark	Total n=180 Enhanced Care n=60;	Enhanced Care Mean 40.1 SD 8.5 Brief ACT	Multiple-organ BDS	RCT	Administered at baseline, 6, 14 and 20 months after baseline Baseline: SCAN diagnostic interview	Extended ACT significant improvement CGI-5 compared to enhanced care. No significant differences between Brief	Strong/ Adequate

Study	Country	Sample size	Mean age and SD	Participants	Design	Outcome measures	Key findings	Quality Appraisal
		Brief ACT n=61; Extended ACT n=59	Mean 38.7 SD 8.6 Extended ACT Mean 38.8 SD 8.0			Primary: CGI Secondary: SF-36, SCL-92, BDS, Whiteley-7, WHODAS-II	ACT and enhanced care. No other significant differences with found on all secondary outcomes.	
Newby et al. (2018)	Australia	Total n=86 iCBT n=45; Control group n=41	Mean 30.20 SD 11.96	DSM-5 criteria for IAD or SSD	RCT	Administered pre, mid and post-treatment and 3 month follow up (i-CBT group only) Baseline: ADIS-5 Primary: SHAI Secondary: PHQ9, GAD7, K10, WHODAS-II, PHQ-15, BVS-SF, WBI-SF, CABAH, IUS-12	Significant reduction at posttreatment in health anxiety, depression, anxiety, and functional impairment in both groups. iCBT greater improvements in health anxiety, depression, generalised anxiety, functional impairment, maladaptive cognitions, body hypervigilance,	Strong/ Adequate

Study	Country	Sample size	Mean age and SD	Participants	Design	Outcome measures	Key findings	Quality Appraisal
							safety behaviours and avoidance, and intolerance of uncertainty.	
Verdurmen et al. (2017)	Netherlands	Total n=22 Elderly n=9 Adults n=13	Elderly Mean 70.7 SD 8.2 Adults Mean 40.7 SD 11.2	DSM-5 criteria for SSD in adults (under 60 years) and older adults (60+)	Mixed between-within subjections – pilot	Administered start of treatment and after 6, 12 and 18 CBT sessions. Baseline: HIQ and treatment feasibility interview with self-developed questions Not separated into primary and secondary: PCI, BPI, SF-36, PHQ-9, GAD-7, HIQ	CBT helped significantly reduce somatic symptoms in adults but not older adults. Significant pain intensity reduction in older adults compared to adults.	Adequate
Wortman et al. (2016)	Netherlands	Total n=38 BMPT n=18; UC n=20	BMBPT Mean 43.6 SD 16.9	MUS within general practice	RCT Mixed between-within-	Administered at baseline, end of intervention, 6 month and 12 month follow up	BMPT group significant improvement in perceived symptom severity, somatisation and hyperventilation	Strong

Study	Country	Sample size	Mean age and SD	Participants	Design	Outcome measures	Key findings	Quality Appraisal
			UC Mean 44.6 SD 13.6		subjects – pilot trial	Primary: VAS, 4DSQ Secondary: NHL, SF36 (PCS & MCS), MAF	compared to UC at 12 month follow up.	
Hedman et al. (2016)	Sweden	n=132 iCBT n=32 U-iCBT n=33 Bibliothera py n=34 Control n=33	iCBT- Mean 38.6 SD 12.6; U-iCBT Mean 37.4 SD 11.6; Bibliotherapy Mean 35.4 SD 12.4;	Principle diagnosis of DSM-IV SSD or IAD	RCT (Mixed between-within-subjects)	Administered at baseline, post-treatment and 6 month follow up Baseline: HPDI, MINI, ADIS Primary: HAI Secondary: IAS, WI-14, ASI, BAI, MADRS-S, SDS	Compared with the control condition, all three treatment groups made large and significant improvements on the primary outcome HAI. Significant baseline to post treatment reduction in IAS, WI-14 and ASI for all treatment groups compared to control.	Adequate

Study	Country	Sample size	Mean age and SD	Participants	Design	Outcome measures	Key findings	Quality Appraisal
			Control Mean 41.5 SD 13.5					
Selders et al. (2015)	Netherlands	Total n=84 CBT n=27 DIT n=57	Mean 40.2 SD 10.58	"Suffer from chronic MUS"	2 (between) x3 (repeated measures) factorial design - trial	Administered at baseline, 10 and 20 weeks. Primary: CIS, SCL-90, EQ-5D Secondary: EQ VAS IAS	CBT and DIT reduced fatigue, somatisation and pain across time periods. Significant increase in quality of life was observed over time in both CBT and DIT conditions.	Adequate
Gili et al. (2014)	Spain	Total n=168 TAU n=48;	TAU Mean 44.1 SD 11.72 CBT individual Mean 43.11	Somatisation disorder	RCT	Administered at baseline, post-treatment, 6 and 12 months Baseline: SPPI, Othmer and DeSouza test	Individual CBT showed greater improvement in health related quality of life than group CBT and treatment as usual. Improvement fully	Adequate

Study	Country	Sample size	Mean age and SD	Participants	Design	Outcome measures	Key findings	Quality Appraisal
		CBT individual n=56; CBT group n=64	SD 11.43 CBT group Mean 49.23 SD 8.64			SF-36	observed at 12 month, and partially at 6 months. Individual CBT had better scores in Physical and Mental health summary measures at 12 month follow-up.	

Note. Abbreviations: TAU=Treatment as Usual, i-CBT=Internet-Based Cognitive Behavioural Therapy, f2f=Face to Face, CIS=Checklist Individual Strength, BDI=Beck Depression Inventory, SF-36=Medical Outcome Survey Short Form-36, SCL-90=Symptom Checklist-90, RAND-36 PCS = Physical Component Summary Score, MCS=Mental Component Summary Score, HADS=Hospital Anxiety and Depression Scale, PHQ-15=Patient Health Questionnaire-15, USD=Undifferentiated Somatoform Disorder, ADIS-5=Anxiety Disorders Interview Schedule for *DSM–5,* SHAI=Short Health Anxiety Inventory, PHQ-9=Patient Health Questionnaire-9, GAD-7=Generalised Anxiety Disorder-7, K10=Kessler Psychological Distress Scale, WHODAS-II=WHO Disability Assessment Scale, BVS-SF=Body Vigilance Scale Short-Form, WBI-SF=Worry Behaviours Inventory Short-Form, CABAH= Cognitions About Body and Health Questionnaire, SOMS-7=Somatoform Symptom Screening Scale, IUS-12=Intolerance of Uncertainty Short-Form, BDI-II=Beck Depression Inventory-II, PCS=Pain Catastrophising Scale, DASS-S=Depression Anxiety Stress Scale-21, ERQ=Emotion Regulation Questionnaire, MAAS=Mindful Attention Awareness Scale, QOLI=Quality of Life Inventory, MINI=Mini International Neuropsychiatric Interview, UC=Usual Care; BMPT=Brief Multimodal Psychosomatic Therapy, VAS=Visual Analogue Scale, 4DSQ=Four Dimensional Symptom Questionnaire, NHL=Nijmegen Hyperventilation List , SF-36=Short-Form Health Survey-36, MAF=Measure of General Functioning, U-ICBT=Unguided Internet-delivered Cognitive Behavioural Therapy, HAI=Health Anxiety Inventory, IAS=Illness Attitude Scales, WI-14=Whiteley Index-14, ASI=Anxiety Sensitivity Index, BAI=Beck Anxiety Inventory, MADRS-S=Montgomery-Asberg Depression Rating Scale, SDS=Sheehan Disability Scale, HPDI=Health Preoccupation Diagnostic Interview, BDS=Bodily Distress Syndrome, SCAN diagnostic interview=Schedules for Clinical Assessment in Neuropsychiatry, CGI=Clinical Global Impressions Scale, SCL-92=Hopkins Symptom Checklist, DASS-21=Depression Anxiety Stress Scale-21, SPPI=The Standardized Polyvalent Psychiatric Interview.

Note. Kleinstäuberstäuber et al. (2019) Initial sample was 255 but one participant withdrew consent for data to be used, so this has been recorded as a sample of 254

1.3.1.1   Participant Characteristics

The majority of studies recruited a higher proportion of female participants than males, with 858 of the total participants recorded as female (75.9%). The highest female to male percentage was 87.2% of the randomised participant sample (Newby et al., 2018), and the lowest was 60.5% (Wortman et al, 2016).

The mean age across all included studies was 43.1 years. Most studies implemented a lower age limit of 18 years, with the exception of one study that imposed a lower limit of 20 years (Pederson et al., 2019) and another study that imposed a lower limit of 60 years in their 'elderly group' treatment arm (Verdurmen et al., 2017). In addition, the latter study was not explicit about the lower age limit for the adult group of their treatment arm (Verdurmen et al., 2017). Some studies included an upper age limit that varied across studies; 80 years (Wortman et al., 2016), 69 years (Kleinstäuberstauber et al., 2019), 65 years (Gili et al., 2014), 60 years and under (for the 'adult group' treatment arm) (Verdurmen et al., 2017) and 50 years (Pederson et al., 2019), whilst other studies did not impose an upper age limit (Sitnikova et al., 2019, Selders et al., 2015; Newby et al., 2018; Hedman et al., 2016). All studies provided information on the sociodemographic characteristics of participants.

1.3.1.2   Study Characteristics

This section details the diagnoses, recruitment setting and randomisation procedures in the included studies.

The included studies recruited participants with a range of diagnoses. One study explicitly recruited those with SSD (Verdurmen et al., 2017) and two studies recruited patients with a principle diagnosis of Illness Anxiety Disorder (IAD) or SSD (Newby et al., 2018; Hedman et al., 2016). However, other studies used less formal criteria, such as "3 persisting MUS" (Kleinstäuberstauber et al., 2019), "MUS within

general practice" (Wortman et al., 2016), and "chronic MUS" (Selders et al., 2015).

Other diagnostic terms were also used, such as Undifferentiated Somatoform Disorder

from the DSM-IV (Sitnikova et al., 2019), multiple-organ Bodily Distress Syndrome

(Pederson et al., 2019) and Somatisation Disorder (Gili et al., 2014).

Recruitment was carried out from specialist services in three studies

(Pederson et al., 2019; Selders et al., 2015; Verdurmen et al., 2017), whilst three studies

recruited participants in primary care via a GP (Sitnikova et al., 2019; Wortman et al,

2016; Gili et al., 2014). Two studies recruited via medical settings in addition to the

open population through advertising (Kleinstäuberstauber et al., 2019; Hedman et al.,

2016), and participants in one study were asked to apply online, although it was not

explicit how this was publicised (Newby et al., 2018). Four of the nine included studies

were carried out in the Netherlands (Sitnikova et al., 2019; Verdurmen et al., 2017;

Selders et al., 2015; Wortman, et al., 2016), whilst other studies were carried out in

Germany (Kleinstäuberstauber et al., 2019), Denmark (Pederson et al., 2019), Australia

(Newby et al., 2018), Sweden (Hedman et al., 2016) and Spain (Gili et al., 2014).

Six of the nine studies used a computer-generated random number

sequence to randomise patients to a treatment arm (Kleinstäuberstauber et al., 2019;

Sitnikova et al., 2019; Pederson et al., 2019; Newby et al., 2018; Gili et al., 2014;

Hedman et al., 2016). The identity and independence of the person carrying out the

random number generation was explicit in four of these studies (Gili et al., 2014;

Kleinstäuberstauber et al., 2019; Newby et al., 2018; Sitnikova et al., 2019). However,

the randomisation process was omitted in one study (Wortman, et al., 2016), whilst two

of the included studies did not randomise participants (Selders et al., 2015; Verdurmen

et al., 2017). Further attempts were made to conceal allocation, such as blinding and

ensuring no prior knowledge about forthcoming allocations (Kleinstäuberstauber et al.,

2019; Hedman et al., 2016; Pederson et al., 2019; Wortman, et al., 2016; Gili et al.,

2014). However, some bias may have been introduced in studies where participants had therapeutic contact with the lead researcher (Newby et al., 2018) and where outcome questionnaires were handed in during therapy (Selders et al., 2015).

1.3.2 Section 2: Effects of Interventions

This section discusses the efficacy of psychological interventions compared with usual care or waiting list, other psychological therapies, or enhanced care. The studies are therefore grouped by:

1) Psychological therapy versus usual care or waiting list

2) Psychological therapy versus other psychological therapy

3) Psychological therapy versus structured or enhanced care

Where a study implements more than two treatment arms in its design, and therefore potentially spans two categories, the study is included in all relevant categories. In addition, a rationale is provided if a study is included in a category different to the one that the design would initially suggest. The effects of psychological interventions in each category are discussed by physical outcomes and psychological outcomes.

1.3.2.1 Psychological Therapy versus Usual Care or Waiting List

Four studies compared psychological therapy with usual care or waiting list controls. The studies were comprised of three full randomised trials with 200 participants (Sitnikova et al., 2019), 168 participants (Gili et al., 2014) and 132 participants (Hedman et al., 2016), and a randomised pilot trial comprised of 38 participants (Wortman et al., 2016). The studies compared the following treatments:

1) CBT versus Usual Care (Sitnikova et al., 2019)

2) Therapist Guided iCBT versus Unguided CBT versus Bibliotherapy versus Control Condition (Hedman et al., 2016)

3) Brief Multimodal Psychosomatic Therapy versus Usual Care (Wortman et al., 2016)

4) Individual CBT versus Group CBT versus Treatment as Usual (Gili et al., 2014)

The term 'usual care' consisted of care provided by a GP or other health professionals (Sitnikova et al., 2019; Wortman et al., 2016; Gili et al., 2014) and the 'control condition' was defined as a waiting list (Hedman et al., 2016).

1.3.2.1.1 Efficacy on Physical Symptoms

Variations in the four studies made it difficult to compare them directly. A range of physical symptoms were assessed across studies, including physical functioning, somatic symptom severity, bodily pain, and fatigue. There were also a range of psychological therapies that were compared against usual care, which comprised Therapist Guided iCBT/CBT, Group CBT, Unguided CBT, Bibliotherapy, and BMPT. All four studies suggest that guided forms of psychological therapies were effective in reducing physical symptoms compared to waiting list or usual care (Sitnikova et al., 2019; Hedman et al., 2016; Wortman et al., 2016; Gili et al., 2014). However, there were mixed findings on the impact of guided psychological therapies for somatic symptom severity, showing either efficacy or no efficacy compared with waiting list or usual care (Wortman et al., 2016; Sitnikova et al., 2019).

Specifically, both group and individual guided CBT improved physical functioning compared with treatment as usual (Gili et al., 2014). Similarly, Therapist Guided iCBT showed greater improvement in functional impairment, unlike Unguided CBT (Hedman et al., 2016), and guided CBT was significantly more effective compared to waiting list in improving limitations due to physical problems, bodily pain and physical functioning (Sitnikova et al., 2019). However, there was no difference between guided CBT and waiting list on somatic symptom severity (Sitnikova et al., 2019). In contrast,

Brief Multimodal Psychosomatic Therapy (BMPT) showed significant improvement compared to usual care in perceived symptom severity, as well as somatisation and hyperventilation (Wortman et al., 2016). It is important to highlight that the study by Wortman et al. (2016) was a smaller-scale pilot trial comprised on 38 participants, which may be less generalisable compared with the opposing findings by (Sitnikova et al., 2019), comprising 200 participants.

1.3.2.1.2   Efficacy on Psychological Symptoms

In addition to the variation in psychological therapies, there were variations in the types of psychological symptoms assessed. Symptoms included health anxiety, anxiety sensitivity, anxiety, depression, and quality of life. Three of the studies suggested that psychological therapies were effective in improving psychological symptoms compared to waiting list or usual care (Hedman et al., 2016; Wortman et al., 2016; Gili et al., 2014). However, there were mixed findings on the impact of therapist-guided psychological therapies for anxiety and depression, showing either efficacy (Wortman et al., 2016) or no efficacy (Hedman et al., 2016; Sitnikova et al., 2019), compared with waiting list or usual care.

Specifically, Individual CBT resulted in significant improvement in health-related quality of life compared to treatment as usual (Gili et al., 2014). Therapist Guided iCBT, Unguided CBT, and Bibliotherapy showed greater improvement for health anxiety and anxiety sensitivity compared with the waiting list control condition. Unguided CBT and Bibliotherapy made significantly larger reductions in general anxiety and depressive symptoms compared to waiting list, whilst Therapist Guided iCBT did not (Hedman et al., 2016). This suggests that general anxiety and depressive symptoms show greater improvement with less directed interventions i.e. not therapist delivered/guided. Similarly, no significant differences were found between guided CBT delivered by a clinician and usual care for anxiety, depression and health related quality

of life (Sitnikova et al., 2019). Supplementing the findings by Hedman et al. (2016), the findings by Sitnikova et al. (2019) also suggest that a directed psychological intervention is not advantageous compared to waiting lists conditions in reducing general anxiety and depressive symptoms. In contrast, a smaller scale pilot-study, comprised of 38 participants, showed that guided BMPT was more effective in reducing levels of distress, depression and anxiety compared to waiting list (Wortman et al., 2016).

1.3.2.2   Psychological Therapy versus Other Psychological Therapy

Seven studies compared a psychological therapy with another form of psychological therapy. Five of the studies comprised full randomised trials with 254 participants (Kleinstäuberstauber et al., 2019), 180 participants (Pedersen et al., 2017), 168 participants (Gili et al., 2014), 132 participants (Hedman et al., 2016) and 86 participants (Newby et al., 2018), and two studies were non-randomised pilot trials comprising 84 participants (Selders et al., 2015) and 22 participants (Verdurmen et al., 2017).

Despite having a control group, the two-arm study by Newby et al (2018) is included in the 'psychological therapy versus other psychology therapy' category given its comparison of internet-based CBT with an active control group. The active control group received anxiety psychoeducation, support, and monitoring, which was deemed beyond the remit of 'usual care' or 'waiting list' control groups. The studies compared the following treatments:

1) CBT versus "Enriching Cognitive Behavioural Therapy with Emotional Regulation Training" (ENCERT; Kleinstäuberstauber et al., 2019)

2) Internet CBT versus Intervention Control Group (Newby et al., 2018)

3) CBT (Adult) versus CBT (Elderly) (Verdurmen et al., 2017)

4) CBT versus Dynamic Interpersonal Therapy (DIT; Selders et al., 2015)

5) Individual CBT versus Group CBT versus Treatment as Usual (Gili et al., 2014)

6) Therapist Guided iCBT versus Unguided CBT versus Bibliotherapy versus Control Condition (Hedman et al., 2016)

7) Brief Acceptance Commitment Therapy versus Extended Acceptance Commitment Therapy versus Enhanced Care (Pedersen et al., 2017)

1.3.2.2.1 Efficacy on Physical Symptoms

Variations were reported in the types of physical symptoms assessed, which included bodily pain, fatigue, physical symptoms and brief pain. There were also a range of psychological therapies compared in the studies, which comprised Individual CBT/iCBT, ENCERT, Group CBT, Intervention Control (psychoeducation), DIT, Unguided CBT, Bibliotherapy, Brief ACT and Extended ACT. Six studies showed that CBT-based treatments with varying modalities were effective in reducing physical symptoms (Kleinstäuberstauber et al., 2019; Newby et al., 2018; Verdurmen et al, 2017; Hedman et al., 2016; Selders et al., 2015; Gili et al., 2014). Internet-delivered CBT showed greater efficacy compared with CBT-based unguided interventions (Newby et al., 2018; Hedman et al., 2016). Non-CBT psychological therapies also showed some efficacy in reducing particular constructs of physical symptomology (Pedersen et al., 2017; Selders et al., 2015). In addition, efficacy of psychological therapies varied by age (Verdurmen et al., 2017).

Specifically, both Internet-delivered CBT and the active control group resulted in significantly reduced somatic symptom severity and functional impairment scores. However, internet-delivered CBT was advantageous (Newby et al., 2018). Similarly, findings by Hedman et al. (2016) showed that internet-delivered CBT is superior to unguided intervention in reducing physical symptoms.

Both Group CBT and Individual CBT improved physical functioning in the study by Gili et al. (2014), although it is unclear if either was more advantageous than the other as comparisons were made against a waiting list control group. Similarly, both CBT and ENCERT resulted in significant improvement in somatic symptom severity with large effect sizes, suggesting efficacy in both treatments. However, ENCERT appeared to be advantageous in improving symptom disability and number of somatic symptoms. After six months, CBT and ENCERT were comparable, suggesting that ENCERT offers a short-term advantage for physical symptoms (Kleinstäuberstauber et al., 2019). Both CBT and DIT reduced fatigue, somatisation and pain. However, CBT was more effective than DIT (Selders et al., 2015). Extended Acceptance Commitment Therapy (ACT) resulted in significant self-rated global health improvement with a large effect size, which was not evident with Brief ACT (Pedersen et al., 2017).

Interestingly, the study by Verdurmen et al (2017) varies the population rather than the intervention. After CBT, there was a significant improvement in somatic symptoms in the adult group but not the elderly group. Pain decreased significantly for people in the elderly group compared to the adult group, with a large effect size. This suggests that the efficacy of CBT for physical symptoms is impacted by age. However, the 18 weekly treatment sessions could be terminated earlier if both the patient and therapist agreed that optimal symptom reduction was achieved (Verdurmen et al., 2017). Treatment duration could therefore be a confounding factor if some participants attended significantly fewer sessions. In addition, this was a smaller-scale pilot trial comprised of 22 participants, which may be less generalisable compared with the other full-scale studies.

1.3.2.2.2 Efficacy on Psychological Symptoms

In addition to the range of psychological therapies compared in the studies, the psychological symptoms assessed varied and included anxiety, depression, quality

of life, psychological complaints and illness worry. Mixed results were shown on the impact of internet-delivered psychological therapies on psychological symptoms compared with unguided forms (Hedman et al., 2016; Newby et al., 2018). Efficacy of psychological therapies in improving psychological symptoms varied by treatment modality (Gili et al., 2014) and by age range (Verdurmen et al., 2017). Non-CBT psychological therapies also showed some efficacy in reducing psychological symptoms compared with other psychological therapies (Pedersen et al., 2017; Selders et al., 2015).

Specifically, internet-delivered CBT was more effective than an active control group, resulting in significantly improved health anxiety, lower maladaptive conditions, general psychological distress and anxiety and depressive symptoms (Newby et al., 2018). Conversely, findings by Hedman et al. (2016) show that Therapist Guided iCBT did not result in significant reductions in anxiety and depressive symptoms, whilst Unguided CBT and Bibliotherapy did (Hedman et al., 2016).

Health related quality of life was significantly improved after Individual CBT compared with Group CBT (Gili et al., 2014). This is particularly interesting to consider given the duration of treatments in the study; participants in the Individual CBT group attended ten weekly sessions spanning one hour, compared with ten weekly two-hour group sessions for those allocated to Group CBT (Gili et al., 2014). This suggests that the individual focus may be more important than treatment duration. In addition to treatment modality, age also influenced CBT efficacy; after CBT, significant improvements in social functioning, anxiety, and vitality subscales of quality of life were found in the adult group compared to the elderly group (Verdurmen et al., 2017).

CBT and ENCERT significantly improved psychological symptoms, including health-related quality of life, depressive symptoms and emotional regulation skills. However, ENCERT showed greater improvement compared to CBT in outcomes that

address emotional components of symptom perceptions. After six months, CBT and ENCERT were comparable, suggesting ENCERT offers only a short-term benefit for psychological symptoms (Kleinstäuberstauber et al., 2019). Similarly, an increase in quality of life was reported in both CBT and DIT conditions in the study by Selders et al. (2015), although CBT was more efficacious than DIT. In contrast, no significant differences in illness worry, anxiety and depressive symptoms were found when comparing Brief ACT and Extended ACT, and both groups significantly reduced illness worry (Pedersen et al., 2017).

1.3.2.3 Psychological Therapy versus Enhanced Care

One study with 180 randomised participants compared two psychological therapies with enhanced care (Pedersen et al., 2017). The study compared the following treatments:

1) Brief Acceptance Commitment Therapy versus Extended Acceptance Commitment Therapy versus Enhanced Care

The study details that patients allocated to 'enhanced care' received a manualised follow-up consultation with the physician carrying out their clinical assessment between 1–2 weeks after randomisation. The consultation spanned 1-1.5 hours with the aim of enhancing the patient's understanding of the diagnosis, optimising further treatment initiatives in the healthcare system, increasing awareness of stress factors, and increasing motivation for lifestyle changes.

1.3.2.3.1 Efficacy on Physical Symptoms

Physical symptoms assessed included global health improvement and subscales of a health survey covering areas including physical functioning, bodily pain, and vitality. The study reports that Extended Acceptance Commitment Therapy (ACT) resulted in significant global health improvement compared to Enhanced Care with a

large effect size. There were no further significant differences in physical symptoms

when comparing Brief ACT and Extended ACT with Enhanced Care. However, it is

important to highlight the difference in treatment duration in the intervention

conditions in addition to the modality; those assigned to Brief ACT attended a one-day

workshop spanning seven hours, followed by a follow-up consultation. Those assigned

to Extended ACT attended nine weekly three-hour group sessions over a period of three

months. The treatment effects may therefore be influenced by these factors in addition

to the therapeutic content.

1.3.2.3.2   Efficacy on Psychological Symptoms

Psychological symptoms assessed included illness worry, anxiety and

depression. There were no significant differences in psychological symptoms between

groups when comparing Brief ACT or Extended ACT with Enhanced Care. Within-group

analysis showed that all three groups significantly reduced illness worry with a small

effect size. This suggests that both Extended and Brief ACT interventions are not

advantageous in comparison to enhanced care in reducing psychological symptoms.

1.4   Discussion

This systematic review, which included nine studies, reviews the effects of psychological therapies for MUS in adults. A summary of findings is included below with treatment effects discussed in one of three intervention categories:

1) Psychological therapy versus usual care or waiting list

2) Psychological therapy versus other psychological therapy

3) Psychological therapy versus structured or enhanced care

The effects of psychological interventions in each category are discussed by physical outcomes and psychological outcomes, and considered alongside existing literature. The findings are then critiqued by highlighting the context of the included studies and possible methodological limitations. Implications of the review are considered against limitations, and recommendations for further research are presented.

1.4.1   Discussion of Treatment Effects

1.4.1.1   Psychological Therapy versus Usual Care or Waiting List

Compared to usual care or waiting list controls, psychological interventions appeared to show some efficacy in reducing physical symptoms and psychological symptoms. All four studies in this category suggest that guided forms of psychological therapies were effective in reducing physical symptoms compared to waiting list control groups (Sitnikova et al., 2019; Hedman et al., 2016; Wortman et al., 2016; Gili et al., 2014). Three of the studies suggested that psychological therapies were effective in improving psychological symptoms compared to waiting list control groups (Hedman et al., 2016; Wortman et al., 2016; Gili et al., 2014).

Interestingly, psychological therapy appeared more efficacious in reducing physical symptoms than psychological symptoms compared to waiting list conditions. These findings support earlier systematic reviews, which showed that CBT was superior to waiting list or treatment as usual on physical outcomes (van Dessel et al., 2014; Menon, Rajan, Kuppili & Sarkar, 2017). In addition, the findings of the current review suggest that the non-CBT intervention was also efficacious compared with waiting list or usual care in reducing physical symptoms in general MUS.

The efficacy of psychological therapies in reducing physical symptoms is particularly interesting to consider alongside the facilitation of the therapies. Two of the studies were delivered by physiotherapists/exercise therapists with a special interest in MUS (Wortman et al., 2016) or by Mental Health Nurse Practitioners (MHNPs; Sitnikova et al., 2019). The studies suggest that psychological therapies delivered by non-psychological clinicians can significantly reduce physical symptoms in MUS compared to waiting list controls. All other studies included in the current review include treatments delivered by psychological clinicians (e.g. therapists/psychologists/psychiatrists). This may therefore have implications for improved access to psychological therapies for MUS.

In relation to psychological symptoms, mixed support was found for the reduction of psychological symptoms compared to waiting lists or usual care. Two studies showed that CBT was efficacious in reducing psychological symptoms (Hedman et al., 2016; Gili et al., 2014) and one study did not (Sitnikova et al., 2019). Similar results were found for therapist guided interventions compared with waiting list controls, showing efficacy (Wortman et al., 2016) or no efficacy for anxiety and depression symptoms (Hedman et al., 2016; Sitnikova et al., 2019). These results are partially consistent with a systematic review carried out by Menon, Rajan, Kuppili & Sarkar (2017), which showed that CBT was not superior to waiting list in reducing

psychological symptoms for MUS. In addition, van Dessel et al. (2014) found no significant differences in client-rated severity of anxiety and depression.

1.4.1.2   Psychological Therapy versus Other Psychological Therapy

Almost all psychological therapies appeared to show efficacy in reducing physical symptoms and psychological symptoms, with increased efficacy shown with particular forms of psychological therapy.

In relation to physical symptoms, six studies showed that symptoms were improved by CBT-based treatments spanning multiple modalities, comprising Individual CBT, group CBT, Unguided CBT and iCBT (Kleinstäuberstauber et al., 2019; Newby et al., 2018; Verdurmen et al, 2017; Hedman et al., 2016; Selders et al., 2015; Gili et al., 2014). Other non-CBT psychological therapies showed some efficacy in reducing physical symptoms (Pedersen et al., 2017; Selders et al., 2015).

Mixed improvement on psychological symptoms after internet-delivered psychological therapies was found, compared with unguided forms (Hedman et al., 2016; Newby et al., 2018). Efficacy of psychological therapies for improving psychological symptoms was shown by treatment modality (Gili et al., 2014) and by therapeutic approach; non-CBT psychological therapies showed some efficacy in reducing physical symptoms compared with other psychological therapies (Pedersen et al., 2017; Selders et al., 2015).

These results can be contrasted against findings in the systematic review by van Dessel et al. (2014), which showed no significant difference in the severity of physical symptoms between CBT and another psychological therapy, and no significant difference in the severity of anxiety and depression. However, it is important to note that only one study was included in the category comparing two forms of psychological therapy, which therefore limits generalisability of this finding.

1.4.1.3   Psychological Therapy versus Enhanced Care

The one study in this category reported that psychological therapies (Brief ACT and Extended ACT) appeared to show some efficacy in reducing physical symptoms but no efficacy in reducing psychological symptoms, compared to enhanced care. Global health improvement was significantly improved after Extended ACT compared with enhanced care. This finding offers mixed support to previous research showing that third-wave CBT, such as ACT, is beneficial for people with MUS (van Ravensteijn, Lucassen, van Weel & Speckens, 2013). Similarly, mixed support is shown for the systematic review by van Dessel et al. (2014), which showed that psychological intervention (specifically, CBT) was no more effective than enhanced care. This wide variation in interventions and outcomes indicates that further research needs to be carried out in this area.

1.4.2   Context

The current review suggests that psychological therapies show efficacy in reducing physical and psychological symptoms of MUS. However, it is important to consider the context of the included studies, and how this may impact on treatment effects and generalisability.

Sitnikova et al (2019) states that nearly all GP surgeries in the Netherlands employ a MHNP, delivering short-term psychosocial interventions with the aim of bridging a gap between physical and emotional health difficulties. This could suggest a greater awareness of a physical-emotional overlap in this population, which might impact on the generalisability of the findings from the Netherlands. This is particularly pertinent to the current review, given that four of the nine included studies were undertaken in the Netherlands.

Participants in the included studies reflect those people with MUS who were willing to engage with talking therapies, suggesting particular receptibility to psychological approaches that may not be reflective of the general population with MUS. This is important to consider alongside the treatment guidance discussed, advising against using the term MUS and/or inferring that the aetiology may have psychological components. In addition, a number of participants in these studies were referred from specialist centres. This infers that there has already been some level of investigation into symptomology, which may influence agreeableness to psychological approaches. Again, this highlights that the sample may not be reflective of the general population with MUS.

1.4.3   Methodological Strengths and Limitations

It is important to consider the methodological strengths and limitations of the included studies. This section considers how the strengths and limitations of the included studies may impact on treatment effects and the generalisability of findings.

The review includes RCTs with robust experimental design in seven of the nine studies. A majority of studies randomly assigned participants using computer generated codes by a person independent to the study, in order to reduce risk of bias. However, increased risk of bias was highlighted in studies by the use of researchers receiving completed outcome measures and making therapeutic contact with participants. In addition, whilst some studies made attempts to ensure adherence to the treatment model, other studies did not control for, or monitor, this. Durational differences in treatments were also highlighted between, and within, studies, which may mean that studies and treatment arms are less comparable. Outcome measures in several studies were discussed with respect to their reliability and validity. However, other studies did not report this as fully.

Higher-than-expected dropout rates were reported in a number of included studies, such as the premature ending of treatment in 30% of the 'elderly' CBT treatment condition (Verdurmen et al., 2017). In addition, other studies showed dropout rates of 27% for CBT (Wortman et al., 2016), 25% in DIT (Selders et al., 2015) and 20% in internet CBT (Newby et al., 2018). The sample could therefore be biased, and the dropouts reflective of a particular group of people with MUS that is not captured. Whilst most interventions were delivered by psychological clinicians, two studies detailed the delivery of psychological interventions by non-psychological clinicians. One study showed a reduction in both physical and psychological symptoms and the other study showed a reduction in physical symptomology. The studies therefore offer some support for the delivery of effective psychological treatments for MUS by non-psychological clinicians.

It is important to highlight that a large proportion of the participant sample in each study was female, making up 75.9% of the total sample in the current review. However, this proportion may serve as a methodological strength and better represent the MUS population; research suggests that primary care physicians are more likely to perceive that presenting symptoms have psychological explanations in female patients than male patients (Greer, Halgin, & Harvey, 2004). Supplementing this, the prevalence and gender distribution of somatoform disorders in European countries has been highlighted in several studies to show a higher female to male ratio (e.g. Roca et al., 2009; De Waal, Arnold, Eekhof & Van Hemert, 2004).

1.4.4   Clinical Implications of the Review

The results from this review highlight numerous clinical implications for the management of MUS. The review offers additional support that psychological therapies may be an efficacious treatment option for the improvement of physical and psychological symptoms of MUS. However, the strength of treatment efficacy is

dependent on the comparison group. Of particular pertinence is that psychological therapies may not need to be targeted to particular physical symptoms and therefore specialist interventions for discrete MUS conditions may be unnecessary (e.g. CBT for fibromyalgia). Instead, the underlying psychological factors can be treated similarly, irrespective of how the symptoms present (e.g. CBT for MUS). This highlights a role for clinical psychology, where psychologically-informed and standardised treatments can be developed to shape pathways for the standardised, effective, and accessible treatment for those presenting with MUS. In addition, the review shows some limited support for the delivery of effective psychological treatments for MUS by non-psychologists and therapists, which could also shape treatment delivery. A major contribution of the clinical psychology profession is in indirect working, such as through teaching and equipping non-psychologists and therapists with psychological skills, and offering psychological supervision and consultation. Input from clinical psychology may therefore help to disseminate psychological intervention and further increase accessibility of treatment for MUS.

The findings of this review suggest that, with further research on psychological therapies for MUS, a standardised treatment for MUS may be an effective and accessible treatment option for those presenting with MUS.

1.4.5 Theoretical Implications of the Review

The findings of this review could support the Somatosensory Amplification Theory (Barsky, Goodson, Lane & Cleary, 1988). This theory suggests that physical symptoms trigger an attentional response and subsequent cognitions. Attentional focus and accompanying cognitions amplify the perception of physical signals, resulting in a vicious cycle of increased attentional focus, increased cognitions, and increased physical symptoms. Psychological therapy may therefore reduce cognitions and attentional focus, leading to reported reduction in physical symptoms in addition to psychological

symptoms. Research shows that mood states influence somatosensory amplification, which may therefore be reported as both physical and psychological improvement (Nakao, Barsky, Kumano &, Kuboki, 2002).

1.4.5 Limitations of the Systematic Review

A key limitation of the systematic review is in drawing conclusions based on only nine research papers. The available research on psychological interventions for MUS appears to be shaped by guidance recommending the use of diagnostic labels to describe the central feature of MUS. In addition, psychological interventions seem to echo this with regards to providing MUS-specific interventions e.g. CBT for chronic pain. Consequently, few papers research the effects of psychological therapies on broader MUS. It is therefore important to interpret the results of this review with caution. The search could have been extended with the inclusion of literature carried out before 2013. The inclusion and synthesis of these studies, alongside the studies identified in the current review, may have led to different findings. A narrative synthesis was used to analyse the data, based on the aims of the review and the lack of homogeneity in the included studies. However, as more research is added to the field, a future meta-analysis may offer useful data by statistically aggregating the study findings.

1.4.6 Recommendations for Future Research

The findings of the current review highlight the need for additional experimental research. It is recommended that further high-quality RCTs are carried out to assess the impact of various psychological therapies for general MUS. Future research should focus on a broad range of structured psychological interventions, in order to improve treatment adherence and reliability of findings. It would also be useful to investigate the impact that method of delivery may have for psychological therapies for MUS; the studies in the current review suggest some benefits of guided self-help

and group work, in addition to one-to-one psychological treatment, delivered by both psychologists/therapists and non-psychological professionals.

1.5   Conclusion

The aim of this systematic review was to explore the efficacy of psychological therapies for people with MUS. The findings of the current review suggest that psychological therapies for general MUS may be efficacious in reducing physical and psychological symptoms. It is imperative that this is considered alongside the current evidence-base, where research and reviews to date focus on specific symptoms of MUS and specific treatment approaches. The review highlights possible methodological concerns, such as risk of bias, treatment adherence and recruitment setting, that may impact on the generalisability of findings. The review identifies the need for further high-quality research trials in order to analyse the efficacy of a broader range of psychological therapies for people with MUS. With further research, psychological therapy may be an efficient, effective, and accessible way of treating people with MUS.

Chapter 2   Empirical Paper: The Role of Empathy and Burnout on the Attitudes of Medical and Paramedical Students to People with Medically Unexplained Symptoms

2.1   Introduction

2.1.1   Staff Attitudes to Medically Unexplained Symptoms

Research shows that medical staff experience an adverse change in both their emotional state and their behavioural conduct in response to people with Medically Unexplained Symptoms (MUS). Research on staff attitudes to MUS has focussed broadly on working with people with symptoms classified as MUS, rather than particular symptom labels e.g. fibromyalgia. The underlying development and maintenance of MUS presentations is considered similar across discrete symptoms (e.g. Barsky, Goodson, Lane & Cleary, 1988; Brown, 2004). It is therefore considered most helpful to consider staff attitudes to people with any presentation defined as MUS rather than the views held towards people with particular symptoms of discrete MUS.

People with MUS often have complex needs (Abbass & Katzman, 2013) and medical students report low confidence in their ability to effectively treat people with MUS (Harsh, Hodgson, White, Lamson & Irons, 2015). Yon, Nettleton, Walters, Lamahewa and Buszewicz (2015) used a framework method to analyse interviews with 22 junior doctors working with people with MUS. The junior doctors expressed feelings of anxiety, frustration and self-perceived lack of competency in this area and reported significant gaps in training on the topic of MUS and psychological comorbidities. In addition, they spoke of over-investigating patients or avoiding patient contact altogether due to the challenging nature of MUS. Supplementing this, research by

Maatz, Wainwright, Russell, Macnaughton and Yiannakou (2016) used content analysis of interviews with 16 consultants and one senior registrar to explore their attitudes towards patients with MUS. They found the term "difficult" widely used by the specialists, which masked the true complexity of their experience of working with people with MUS. Specifically, "difficult" was used to describe their experience of diagnosing, explaining, communicating and managing these conditions, and managing their own emotional reactions. Research has largely neglected the attitudes and experiences of wider health care professionals working with people with MUS. However, one study used a questionnaire to gain insight of neuropsychological nurses' views on functional neurological symptoms. The findings showed that, of the 68 respondents, one in six nurses did not perceive symptoms as "real" and one in ten thought that patients in this category wasted doctor and nurse time (Ahren, Stone & Sharpe, 2007). Given the lack of research on attitudes to MUS in wider healthcare professions, existing research within medical professions is presented. However, given the prevalence of people experiencing and presenting in primary care with MUS, it is highly likely that wider health care professionals will work with, and treat, people with MUS. The term 'paramedical' will be used throughout to define those students training in broader healthcare professions (Dal Poz, Gupta, Quain & Soucat, 2009).

Interestingly, studies suggest that the attitudes of medics towards MUS develop during early-career and may be learned socially. Shattock, Williamson, Caldwell, Anderson and Peters (2013) showed that many third and fourth year medical students had already developed negative views towards MUS. Yon, Nettleton, Walters, Lamahewa and Buszewicz (2015) found that junior doctors reported their own attitudes towards patients with MUS were influenced by the negative attitudes of senior clinicians. Research also highlights that negative feelings, such as frustration and helplessness, are shared not just between professionals, but also professionals and patients (Stone, 2014). This has been called a "looping effect" (Kirmayer & Sartorius,

2007), where the emotion of one person triggers a heightened emotion in the other. It

is unclear if the experience of working with people with MUS, and the early

development of attitudes towards MUS, is shared across wider paramedical staff.

In addition to attitudes and emotion being influenced socially, staff attitudes

may also be impacted by teaching; medics who decline training in MUS show increased

negative attitudes towards people experiencing MUS, compared to those who attend

(Salmon et al., 2007). Research suggests that General Practitioners who decline training

in MUS hold more negative attitudes towards people presenting with MUS, and may

not engage in training to cope psychologically with the emotional challenges that arise

in response to working with patients with MUS (Byrne, Morton & Salmon, 2001). A

proposed strategy to reach professionals who decline training, and arguably target the

greatest need, is to offer training as early as possible during medical careers

(Shattock, Williamson, Caldwell, Anderson & Peters, 2013).

2.1.2   Stress

As discussed, staff experiences and attitudes towards MUS can impact on

both staff and patient wellbeing, triggering heightened emotions that may be

distressing to experience. Given the prevalence of people experiencing, and presenting

with MUS, it is important to draw on literature exploring the impact of difficult staff

experiences on the wellbeing of staff.

Stress has been defined as the body's method of reacting to a

threat, challenge or physical and psychological barrier (Muthukumar & Nachiappan,

2013). It has been suggested that the body goes through three processes, which starts

with the initial stage of the body being alerted to a stressor. Secondly, autonomic

activity is triggered whilst a person is adopting to, or coping, with stress. Thirdly, if the

stress is processed beyond the capacity to respond, exhaustion is thought to result

(Seyle, 1956). It has been suggested that an individual's experience of stress is influenced by their subjective evaluation of how well a stressor can be managed given their perceived coping resources (Shewchuk, Elliott, MacNair-Semands & Harkins, 1999). Interestingly, stresses encountered in the training process of healthcare professionals have been reported, including ambiguity in clinical psychology trainees (Pica, 1998). In student nurses, the theory-practice gap, workload and examinations have been reported as stressors (Evans & Kelly, 2004). In addition, trainee medics report concerns about study skills, progress, and aptitude for a medical career as stressors (Moffatt, McConnachie, Ross & Morrison, 2004).

As well as broader stressors encountered through training, research suggests that a circular pattern of stress may exist whilst working with people with MUS; common factors reported in MUS are factors that increase stress, and stress increases the likelihood of these common difficult factors. Medics report that relationship difficulties and lack of confidence in treatment in MUS increases stress (Buszewicz, 2017) and research has shown that, in nursing staff, experiences of stress is accompanied with "giving off negative attitudes" towards patients and/or relatives (Angland, Dowling & Casey, 2013). This is interesting to consider alongside literature showing links between relationship difficulties and increases in stress and burnout in medics (Oreskovich et al., 2012). Interestingly, medical students rate their subjective 'perceived stress' levels as high (Gade, Chari & Gupta, 2014) and numerous studies show that work-related stress experienced by medical students leads to high rates of burnout (e.g. Boni, Paiva, de Oliveira, Lucchetti, Fregnani & Paiva, 2018; Maslach & Leiter, 2016).

2.1.3 Burnout

Given the reported emotive and difficult nature of working with people with MUS, it is understandable that this is associated with increased stress. It is therefore

useful to draw on research examining the impact of longer-term stress on the wellbeing of healthcare professionals. It is argued that burnout occurs when an individual experiences too much stress for a prolonged period (Bruce, 2009). Although there is much debate around the particular conceptualisation of 'burnout', the most widely used description suggests that it can be characterised by feelings of overwhelming exhaustion, professional inefficiency, and depersonalisation towards people and work (Maslach, Jackson & Leiter, 1986).

Burnout is shown to cause an adverse change in the emotional state and conduct of medical staff. Research by Oreskovich et al. (2012) showed that high levels of burnout reduces professionalism, increases medical errors, leads to suicidal ideation in medical staff, and is associated with professional relationship difficulties. Research also suggests that there is a high variance of burnout between particular medical groups, with particularly high levels reported in trainees. Bourne et al. (2019) carried out a nationwide cross-sectional survey of practising obstetrics and gynaecology consultants, speciality and associate specialist doctors, and trainees registered with the Royal College of Obstetricians and Gynaecologists. They found that 36% of doctors met the burnout criteria, with the highest levels in trainees at 43%. In addition, 23% of doctors with burnout reported increased defensive practice compared with 7% without, and showed higher rates of anxiety, depression and suicidal thoughts.

Supplementing this, the General Medical Council carried out a survey of UK doctors, reporting that 24% of trainees and 21% of trainers from across the United Kingdom described feeling 'burnt out' (General Medical Council, 2018). A systematic review by Imo (2017) covering research spanning 20 years on the prevalence of burnout amongst UK doctors, as measured by the Maslach Burnout Inventory, found that burnout scores for emotional exhaustion ranged from 31 - 54.3% , depersonalisation 17.4 - 44.5% and low personal accomplishment 6 - 39.6%.

Whilst much of the current literature reports on the experiences of medics within healthcare professions, some studies suggest that burnout is experienced by other healthcare professionals and the wider paramedical workforce. Research by Yoder (2010) suggests that burnout is common amongst nurses and Beaumont et al. (2015) found that more than half of a sample of student midwives reported burnout. In addition, a systematic review of studies suggests that the well-being of paramedics is often compromised, resulting in stress and burnout (Stanley, Hom & Joiner, 2016).

The research in this field suggests that burnout is associated with detrimental changes in both emotion and the behavioural conduct of staff. In addition, higher burnout is reported by trainees, although it could be argued that trainees may not experience increased rates of burnout but may be more inclined to report this, compared to more senior colleagues. Nevertheless, evidence suggests high rates of burnout across the medical workforce, including trainees. The literature also suggests that burnout is not confined to medics and may be experienced by the wider paramedical workforce.

2.1.4   Empathy and Burnout

Empathy is widely discussed within medical and healthcare professions as having a role in therapeutic relationships and quality of care (Brockhouse, Msetfi, Cohen & Joseph, 2011). Empathy and burnout are considered distinct yet related due to the notion that empathy may create a vulnerability to emotional exhaustion, and emotional exhaustion is a key component of burnout (Ferri, Guerra, Marcheselli, Cunico, & Di-Lorenzo, 2015).

However, there are mixed findings on the direction and nature of the relationship between empathy and burnout, particularly across different professions. For example, a systematic review by Wilkinson, Whittington, Perry and Eames (2017)

examined the relationship between empathy and burnout in healthcare professionals across 10 studies. A largely negative association between burnout and empathy was found, with one study showing a positive association between empathy and burnout and one showing both positive and negative correlations between different subscales of empathy and burnout measures. In addition, a scoping review reported that, of the 26 studies reviewed, 22 showed a negative correlation between empathy and burnout amongst nurses and physicians (Williams, Lau, Thornton & Olney, 2017).

The strength of relationship between empathy and burnout is dependent on sample and setting, and can vary across professions (Williams, Lau, Thornton and Olney, 2017). For example, research on the role of empathy and burnout amongst social workers showed that empathy may prevent or reduce burnout (Wagaman, Geiger, Shockley & Segal, 2015). However, empathy has been shown as detrimental for doctors, suggesting that emotional responses to the pain of others need to be "switched off" (Decety, Yang & Cheng, 2010). A study by Neff (2003) showed that chronic stress and burnout negatively impact on empathy in nurses, and Brazeau, Schroeder, Rovi and Boyd (2010) found that higher burnout was associated with lower empathy in medical students.

In summary, whilst most research appears to suggest that empathy is associated with lower burnout, some research suggests that high burnout is associated with increased empathy. The association between empathy and burnout deserves particular attention given the experience reported by clinicians working with people with MUS, and reports of higher rates of stress and burnout.

2.1.5   Study Aim

The aim of this research is to explore the role of empathy and burnout on the attitudes of medical and paramedical students towards people with MUS during

their training. This is novel research that has not been addressed across professions, particularly paramedical workforces, during early-career. Given the prevalence of people presenting with MUS, it is especially important to explore the early development of attitudes to people with MUS, and the adverse emotional and behavioural impact reported in existing research by qualified and trainee medics in response to MUS. In addition, there are suggestions that these findings may be echoed across other paramedical professions working with MUS populations.

The Joint Commissioning Panel for Mental Health published a guide for the commissioners of services for people with MUS, and Dr Ian Gargan, Chair of the Professional Practice Board for British Psychological Society stated "Psychology plays a pivotal part in the assessment and treatment of MUS but also to educate other members of the multidisciplinary team about the needs of each individual. Attitudes to MUS are mainly negative with respect to substantiating patient presentations, validating the individual challenges and offering effective treatment modalities. This needs to change at undergraduate level, the earliest opportunity to educate medical and paramedical health professionals." (Gargan, 2017, Para. 6). It is imperative that research is undertaken within medical and paramedical student populations examining attitudes and influences to attitudes towards MUS during early-career.

2.1.6   Research Questions and Hypotheses

1. Are (1) empathy, (2) stress, and (3) confidence in working with MUS patients associated with burnout in medical/paramedical students?

2. Are (1) empathy, (2) stress, (3) confidence in working with MUS patients, and (4) burnout in medical/paramedical students associated with negative attitudes to people with MUS?

It is predicted that:

1. Empathy in students will be significantly associated with burnout (however, based on the literature, it is unclear what direction this association will be).

2. High levels of stress and low confidence in working with MUS patients will be significantly associated with burnout.

3. Higher burnout, stress, lower empathy, and confidence in working with MUS, will be significantly associated with negative attitudes to people with MUS.

2.2   Method

This section includes information on the design and recruitment process, and presents characteristics of the participant sample. Materials used to measure the variables identified in the study's aims and hypotheses are detailed, and the procedure explained alongside ethical considerations. Information is then given detailing the process of initial data preparation ahead of analyses.

2.2.1   Design and Procedure

A cross-sectional design was implemented by carrying out one online survey that collected responses to demographic and five self-report questionnaires from medical and paramedical students. Participants accessed the study via a hyperlink contained in an online post, email or detailed on a hard copy poster. The link directed the participant to iSurvey and an information sheet was displayed requesting consent to take part in the study. After consent was obtained, the demographic questionnaire was displayed followed by the self-report questionnaires.

This approach allowed for quantitative analysis of data in order to explore any associations between variables. In addition, it was anticipated that this approach would help to reduce researcher effects whilst exploring potentially negative attitudes and beliefs to people with MUS, which was hoped to elicit accurate subjective responses from students.

2.2.2   Recruitment

Power was calculated using G*Power Version 3 (Faul, Erdfelder, Lane & Buchner, 2007). Assuming a medium effect size (p^2 = 0.13), an a-priori power analysis to test a linear multiple regression, allowing for up to eight predictors, identified that 130 participants were needed to test a two tailed hypothesis with power greater than .8 and significance less than p=.05.

Students and trainees enrolled on medical, nursing and other professional healthcare courses at universities in the United Kingdom were invited to take part in the study. In order to take part, it was mandatory that participants had at least one experience of working with people with MUS. Recruitment emails (see Appendix B) were sent to course administrators or generic course/university contacts for students studying nursing, medicine, paramedic science, occupational therapy and postgraduate psychology courses, as defined as professionally accredited on the NHS healthcare course website (see Appendix C). The recruitment emails detailed the research and invited their students to take part. In addition, participants were recruited via online forums and Facebook groups, aimed at the target participant sample. Student Unions were also contacted to distribute details of the research amongst Medical Societies at their university, and to feature in weekly bulletins sent to medical students. Details of the study were included in posters, which were put up at university buildings across the University of Southampton campus.

Recruitment was incentivised with entry into a competition for a chance to win one of three Amazon vouchers, valued at £100 and 2x £50, after successful completion of the questionnaires. An initial prize draw took place on 1st November 2019, which selected three winners using a random number generator that correlated with a unique number assigned to each participant who had completed the questionnaires up to, and including, 1st November 2019. An additional ethics application was sought and approved to extend recruitment and run a further competition. Recruitment was extended until 1st March 2020 and a further competition was drawn on this date.

2.2.3   Participants

In total, 104 participants took part in the research and completed each measure. The sample age average was 28.2 years (SD = 6.8, range 18-48 years) and

participants were 76% (*n* = 79) female. Participant characteristics are shown in Table 2.

The participant sample was most represented by 59.6% White British (*n* = 62) and 11.4%

Other White (*n* = 15) ethnicity groups. The profession most represented was doctor,

making up 34.6% (*n* = 36) of the sample, followed by psychologists/other therapists

making up 27.9% (*n* = 29). Students in their second year of training made up the highest

proportion of the sample at 26% (*n* = 27). Half of the participant sample reported

experience of working with five or fewer patients with MUS (*n* = 52), and 68.3% (*n* = 71)

of participants had no training on working with MUS.

Table 2. *Characteristics of Participant Sample*

Characteristic	*N*	*%*
Sex		
Female	79	76
Male	25	24
Age		
18-24	38	36.5
25-30	36	34.6
31-40	21	20.2
41-50	9	8.7
Ethnicity		
White British	62	59.6
Other White	15	11.4
Chinese	4	3.8
Indian	4	3.8
Irish	4	3.8
Other [a]	15	11.4
Profession (in training)		
Doctor	36	34.6
Psychologist/Therapist	29	27.9
Nurse	20	19.2
Nursing Assistant	4	3.8
Other [b]	15	11.4
Year of Training		

1	13	12.5
2	27	26
3	23	22.1
4	7	6.7
5	10	9.6
6	9	8.7
7	0	0
8	1	1
Unclear	14	13.5
Contact working with MUS		
1-5 patients	52	50
6-10 patients	26	25
11-20 patients	15	14.4
21+ patients	11	10.6
Training on MUS		
Yes	33	31.7
No	71	68.3

Note. [a] Other ethnicity (*n* =15) comprises: *n*=1 Any other Black background, Any other mixed background, Bangladeshi, Hispanic, *n*=2 African, Pakistani, Any other Asian background, Any other ethnic group, *n*=3 White & Asian; [b] Other profession (*n*=15) comprises: *n*=1 Anaesthetist, Dietician, Support Worker/Carer/Rehabilitation, Pharmacist, Psychiatrist, Midwife, Radiographer, Dentist, Cardiac Physiologist student, Physician Associate, *n*=2 Nursing Associate, *n*=3 Trainee Nurse Associate

2.2.4   Materials

All variables were measured using self-report questionnaires. The five main questionnaires measured stress, empathy, burnout, confidence working with complexity, and negative attitudes to MUS. In addition, demographic information was collected. The reliability and validity of each measure is discussed below.

2.2.4.1   Demographic Questionnaire

Demographic information was collected by requesting information on sex, age, ethnicity, year of study, previous experience of working with people with MUS and any prior training on working with MUS (see Appendix F).

2.2.4.2   Stress Questionnaire

The Perceived Stress Scale-10 (PSS-10) (Cohen, Kamarck & Mermelstein, 1983) was used as a measure of stress (see Appendix G). It is a 10-item questionnaire with a Likert scale ranging from 0 (Never) to 4 (Very often). The total sum of scores is categorised into Low (0-13), Moderate (14-26) or High (27-40) perceived stress. The PSS-10 is shown to be a reliable and valid assessment instrument for measuring subjective perceptions of stress, in addition to demonstrating good internal consistency and reliability (Lee, 2012).

2.2.4.3   Empathy Questionnaire

The Interpersonal Reactivity Index (IRI; Davis, 1980) was used to measure empathy (see Appendix H). It is a 28-item questionnaire with a Likert scale ranging from A (Does not describe me well) and E (Describes me very well).

The IRI consists of 4 subscales each made up of 4 items, which measure multiple dimensions of empathy – Perspective Taking, Fantasy, Empathic Concern and Personal Distress. Perspective Taking (PT) refers to how somebody adopts the perspective of another person. Fantasy (FS) refers to tendencies to transpose imaginatively into the feelings and actions of fictious characters, such as in books and films. Empathic Concern (EC) refers to feelings of sympathy and concern for other people. Personal Distress (PD) refers to self-orientated feelings of anxiety and unease in difficult interpersonal settings. The IRI is widely used across many populations, including medical professionals, and is a reliable and valid way of measuring empathic tendencies via self-report (Davis, 1994).

2.2.4.4   Burnout Questionnaire

The Copenhagen Burnout Inventory (CBI; Kristensen, Borritz, Villadsen & Christensen, 2005) was used to measure burnout (see Appendix I). It is a 19-item

questionnaire made up of three subscales – 1) Personal, 2) Client and 3) Work. Personal burnout makes reference to the degree of physical and psychological fatigue and exhaustion experienced by a person; this measures generally how tired or exhausted a person feels. Client burnout refers to the degree of physical and psychological fatigue and exhaustion that are perceived as related to work with clients; this examines the degree to which people see a connection between their fatigue and "people work". Work burnout makes reference to the degree of physical and psychological fatigue and exhaustion that are perceived as related to work, which focuses on a person's own attribution of their symptoms to work. The questionnaire uses a Likert scale ranging from 1 (Always) to 5 (Never), which is then recoded into scores of 100 (Always), 75, 50, 25 or 0 (Never) to provide the categories Low (<50), Moderate (50-74), High (75-99) or Severe (100). Internal consistency was calculated in the current study, which showed high internal reliability for Client (α = .91), Personal (α = .84) and Work (α = .83) subscales of burnout.

The CBI was selected over the more widely used Maslach Burnout Inventory (MBI; Maslach, Jackson & Leiter, 1986). The rationale for this is related to the conceptualisation of burnout; the three dimensions of burnout in the MBI are exhaustion, depersonalisation, and lack of personal accomplishment. The MBI defines depersonalisation as a lack of empathy, which is being measured separately in the current study. In addition, research suggests that depersonalisation is an associated coping strategy rather than a core component of burnout, and that lack of personal accomplishment is less central to burnout (Kristensen, Borritz, Villadsen & Christensen, 2005). In the CBI used in the current study, fatigue and exhaustion are defined as the core features of burnout.

In addition, there is much debate around whether burnout is context-free or work-related (e.g. MBI and Oldenburg Burnout Inventory (Bakker et al., 2004), and

whether burnout, exhaustion, and depression are one and the same. The MBI suggests that problems around exhaustion in burnout would not be evident outside of a work context, unlike depression (Maslach, Jackson & Leiter, 1986). The CBI used in the current study evaluates fatigue and exhaustion across personal, work-related, and patient-related contexts. It is therefore considered helpful in measuring burnout across contexts and differentiating between burnout and depression.

2.2.4.5   Confidence Working with Complexity Questionnaire

An adapted version of the Effective Working with Complex Clients Questionnaire (EWCC; Maguire, 2005) was used to assess staff confidence whilst working with patients with complexity – in the current study, this client group refers to those presenting with MUS (see Appendix J). Whilst the original wording on the questionnaire is "complex clients", this term was replaced with "people with MUS". It is a 13-item questionnaire with a Likert scale ranging from 1 (None) to 5 (Extremely). Internal consistency was calculated in the current study, which suggested good internal reliability (α = .75).

2.2.4.6   Negative Attitudes to MUS Questionnaire

An adapted version of the Staff Attitudes and Beliefs Questionnaire (SAB; Clarke, 2009) was used to measure negative attitudes to MUS (see Appendix K). Whilst the original questionnaire focusses on attitudes and beliefs towards people with a personality disorder, this was replaced with "people with MUS" in the current study. It is a 42-item questionnaire with a Likert scale ranging from 1 (Strongly disagree) to 6 (Strongly agree). Internal consistency was calculated in the current study, which suggested high internal reliability (α = .95).

2.2.5   Ethical Considerations

Ethical approval was received from the University of Southampton Ethics Committee (ERGO number 48075) and an amendment was subsequently submitted and approved to extend recruitment (ERGO number 48075.A1). The necessary insurance was provided from the point of ethical clearance (see Appendix D).

Participants were given information on the study and asked to provide informed consent (see Appendix E). Participants were given the option of providing an email address for an optional prize draw, which meant that their data was identifiable. Participants were informed of their right to withdraw from the study at any time if they had provided an email address, where it was possible to track their data. It was highlighted that this was otherwise not possible, as the data would be anonymous. Contact details of the researcher were provided in order to answer any queries that participants, or potential participants, might have.

After completion of the questionnaires, a debrief statement explained the purpose of the research, and provided the contact details of the researcher for any further information (see Appendix L). Details of support organisations were provided and participants were encouraged to contact their GP in the unlikely event that participation had raised concerns or caused distress.

2.2.6   Data Preparation

Ahead of analyses, categorical variables (ethnicity and profession) were recoded into dummy variables in order to ensure they could be used in analyses. Items on each questionnaire that required reverse scoring were recoded into new variables and the relevant values assigned. Subscales were created for the IRI and CBI and total scores were calculated for the PSS, EWCC and SAB.

In order to ensure items on each questionnaire were reliable measures of
the variables being tested, internal reliability was checked using Cronbach's alpha (see
Table 3). Internal consistency for the EWCC and the personal distress subscale of IRI
showed good internal consistency ($\alpha \geq .7$). All other variables achieved high internal
consistency ($\alpha \geq .8$).

Table 3. *Cronbach's Alpha for Questionnaires Measuring Stress, Empathy, Burnout, Confidence
Working with Complexity and Negative Attitudes*

Variable	α
Stress (PSS-10)	.86
Perspective Taking (IRI)	.83
Fantasy (IRI)	.81
Empathic Concern (IRI)	.80
Personal Distress (IRI)	.70
Personal Burnout (CBI)	.84
Work Burnout (CBI)	.83
Client Burnout (CBI)	.91
Confidence Working with Complexity (EWCC)	.75
Negative Attitudes (SAB)	.95

Linearity of the data was explored using a scatter plot, which suggested that
no variables appeared to be non-linear. Normal distribution was checked using a series
of histograms alongside visual examination of Q-Q plots, which showed sufficient
distribution for analyses. Indicators of multicollinearity were assessed and assumptions
met for analyses. No outliers were identified in the data. The data were considered
interval as each of the variables had been scored on a Likert scale, which is routinely

treated as interval data. Finally, the data was presumed independent and uninfluenced by others' scores during data collection.

In order to increase the power of the main analyses, a data reduction method was implemented by including variables only if they had a significant bivariate correlation with the relevant outcome variables. All preliminary bivariate correlations were therefore carried out and reviewed prior to the main analyses.

2.3 Results

In this section, descriptive statistics are presented alongside preliminary correlations used to assess the associations between the main predictor variables. Data analyses for each of the three hypotheses are then presented.

2.3.1 Descriptive Statistics and Preliminary Bivariate Correlations

Means, standard deviations and preliminary bivariate Pearson's correlations were calculated for continuous variables, separated by predictor variables (see Table 4) and outcome variables (see Table 5). The tables detail the associations between predictor and outcome variables, including their significance. The correlations included in these tables are discussed in the sections that follow, within the relevant hypothesis.

Table 4. *Means, Standard Deviations and Pearson's r Correlations of Predictor Variables with Burnout and Negative Attitudes to MUS*

Variable	M (SD)	Personal Burnout	Work Burnout	Client Burnout	Negative Attitudes
Age	28.2 (0.43)	.06	-.02	-.12	-.05
Sex (Female)	(79(76.0))[a]	.15	.10	-.16	-.26**
Ethnicity					
White British	62 (59.6)	.12	.12	-.25*	-.27**
Other White	15 (14.4)	-.12	-.19	-.03	.25*
Other[b]	27 (26.0)[a]	-.04	.02	.30**	.10
Profession					
Nurse	20 (19.2)[a]	.19*	.23*	-.10	-.12
Doctor	36 (34.6)[a]	-.22*	-.12	.07	.20*
Psychologist/Therapist	29 (27.9)[a]	.02	-.08	-.05	-.22*
Nursing Assistant	4 (3.8)[a]	.03	-.01	.04	.11
Year of Training	3.07 (1.61)	-.22*	-.07	.09	.20
Contact with MUS	1.86 (1.02)	.03	.03	.08	.09

Training on MUS	33 (31.7)[a]	.16	.10	.02	.05
Stress	18.92 (6.26)	.59***	.53***	.53***	.16
Empathy:					
Perspective Taking	19.38 (4.91)	-.07	-.04	-.30**	-.45***
Fantasy	16.35 (5.66)	.18	.22*	.14	-.15
Empathic Concern	21.34 (4.69)	.10	.04	-.22*	-.57***
Personal Distress	10.58 (4.23)	-.09	.01	.20*	.07
Confidence with Complexity	39.55 (5.88)	-.11	-.24*	-.24*	-.31**

Note. *p* < .05, **p* < .01, ***p* < .001; [a] *N* and % for categorical variables; [b] Other ethnicity (*n* =27) comprises: *n*=1 Any other Black background, Any other mixed background, Bangladeshi, Hispanic, *n*=2 African, Pakistani, Any other Asian background, Any other ethnic group, *n*=3 White & Asian, *n*=4 Chinese, Indian and Irish

Table 5. *Means, Standard Deviations and Pearson's r Correlations of Outcome Variables with Burnout and Negative Attitudes to MUS*

Variable	*M (SD)*	Personal Burnout	Work Burnout	Client Burnout
Personal Burnout	54.93 (17.54)	-	-	-
Work Burnout	50.24 (17.64)	.81***	-	-
Client Burnout	32.57 (21.97)	.52***	.59***	-
Negative Attitudes	101.66 (27.26)	.11	.11	.35***

Note. *p* < .05, **p* < .01, ***p* < .001

2.3.2 Hypothesis I – Empathy Associated with Burnout

It was predicted that empathy would be significantly associated with burnout.

2.3.2.1 Bivariate Correlations

In order to identify which variables were sufficiently correlated for inclusion in the regression analyses, preliminary bivariate correlations were carried out (shown in

Table 4). Perspective taking was significantly and negatively associated with client burnout, r = -.30, p < .001, 95% C.I. [-0.465, -0.114] with a medium effect size, suggesting a good-strength relationship between variables. Empathic concern was also significantly and negatively associated with client burnout, r = -.22, p = .03, 95% C.I. [-0.395, -0.029] with a small effect size, suggesting a small relationship between the variables. These correlations suggest that an ability to consider alternative perspectives, and empathic concern for others, are associated with lower client burnout. In addition, personal distress, or feelings of personal anxiety and unease in tense interpersonal settings, was positively correlated with client burnout, r = .20, p = .04, 95% C.I. [-0.029, 0.395] suggesting that a high level of personal distress is associated with higher burnout in client contexts. However, this had a small effect size, suggesting a small relationship between the variables.

A significant correlation suggests that fantasy, which measures tendencies to transpose imaginatively into the feelings and actions of fictitious characters, is associated with work burnout, r = .22, p = .03, 95% C.I. [-0.029, 0.395]. Fantasy was positively correlated with work burnout, suggesting that higher fantasy is associated with higher work burnout. However, this correlation had a small effect size, suggesting a small relationship between the variables. No significant correlations were found for any empathy subscales and personal burnout, suggesting that perspective taking, fantasy, empathic concern and personal distress are not associated with personal burnout.

2.3.2.2   Hierarchical Regressions

Hierarchical multiple regression was subsequently used to establish whether personal distress, perspective taking and empathic concern subscales were a significant predictor of client burnout, and whether fantasy was a significant predictor of work burnout. Two hierarchical regressions were therefore carried - one to include client burnout and one to include work burnout as the outcome variable. Hierarchical

regression was not carried out to predict personal burnout, as all hypothesised

predictors were not significantly correlated in preliminary analysis (see Table 4).

Similarly, fantasy was not included as a predictor or client burnout, and personal

distress, perspective taking, and empathic concern subscales were not included as

predictors of work burnout.

Blockwise entry was used to firstly enter significant correlations of

demographic variables, identified during correlational analyses shown previously in

Table 4, before entering predictor variables.

Analyses for client burnout showed that the overall models were significant

for both model 1 ($F(2,100) = 5.27$, $p = .007$) with a small effect size ($R^2 = .09$), and model

2 ($F(5,97) = 5.18$, $p < .001$) with a medium effect size ($R^2 = .21$). They explain 9.5% and

21.1% of the variance, respectively.

The results in Table 6 show that, controlling for White British and Other

ethnicity groups, perspective taking was a statistically significant negative predictor of

client burnout ($\beta = -.31$, $p = .01$, $r^2 = -.23$). This suggests that increased ability to take an

alternative perspective significantly predicts reduced client burnout. Interestingly,

'other' ethnicity was also a statistically significant predictor of client burnout ($\beta = .31$,

$p = .02$, $r^2 = .22$). Both predictors had a medium-to-large effect size, suggesting a strong

relationship between the variables.

Table 6. *Hierarchical Multiple Regression Analyses for Perspective Taking and Empathic Concern on Client Burnout*

	B	SE B	β	95% CI	r^2
Client Burnout					
Model 1					
Ethnicity - White British	-2.96	6.10	-.07	[-15.069, 9.140]	-.046
Ethnicity – Other[a]	12.84	6.81	.26	[-0.686, 26.365]	.179
Model 2					
Ethnicity - White British	0.23	6.21	.01	[-12.095, 12.561]	.003
Ethnicity – Other[a]	15.44	6.52	.31*	[2.506, 28.370]	.214
Personal Distress	0.94	0.48	.18	[-0.003, 1.890]	.178
Perspective Taking	-1.41	0.56	-.31*	[-2.519, -0.298]	-.227
Empathic Concern	0.29	0.63	.07	[-0.958, 1.534]	.041

Note. *$p < .05$, **$p < .01$, ***$p < .001$; Effect size. $r^2 = < .02$ (small), $r^2 > .13$ (medium), $r^2 > . 26$ (large); [a] Other ethnicity ($n = 27$) comprises: $n=1$ Any other Black background, Any other mixed background, Bangladeshi, Hispanic, $n=2$ African, Pakistani, Any other Asian background, Any other ethnic group, $n=3$ White & Asian, $n=4$ Chinese, Indian and Irish

Analyses for work burnout showed that the overall models were significant with small effect sizes for both model 1 ($F(1,101) = 5.48$, $p = .021$), ($R^2 = .05$) and model 2 ($F(2,100) = 5.92$, $p = .004$), ($R^2 = .11$). They explain 5.1% and 10.6% of the variance, respectively.

Results in Table 7 show that, controlling for nurse profession group, fantasy was a statistically significant positive predictor of work burnout (β= .24, $p = .02$, $r^2 = .25$). This suggests that higher fantasy significantly predicts high work burnout. Interestingly, nursing profession was also a statistically significant predictor of work burnout (β= .23, $p = .01$, $r^2 = .20$). Both predictors had medium-to-large effect sizes, suggesting a good-strength relationship between the variables.

Table 7. *Hierarchical Multiple Regression Analyses for Fantasy on Work Burnout*

	B	SE B	β	95% CI	r^2
Work Burnout					
Model 1					
Profession - Nurse	10.11	4.32	.28*	[1.54, 18.69]	.227
Model 2					
Profession - Nurse	10.89	4.23	.24*	[2.50, 19.28]	.249
Fantasy	0.73	0.30	.23*	[0.14, 1.32]	.240

Note. $*p < .05$, $**p < .01$, $***p < .001$; Effect size. $r^2 = < .02$ (small), $r^2 > .13$ (medium), $r^2 > .26$ (large)

2.3.3 Hypothesis II – Stress and Confidence Working with Complexity Associated with Burnout

It was predicted that high stress and low confidence working with complexity would be significantly associated with burnout in students.

2.3.3.1 Bivariate Correlations

In order to identify which variables were sufficiently correlated for inclusion in the regression analyses, preliminary bivariate correlations were carried out (shown in Table 4), which identified that stress is significantly correlated with personal burnout, $r = .59$, $p < .001$, 95% C.I. [0.449, 0.702], work burnout, $r = .53$, $p < .001$, 95% C.I. [0.376, 0.655], and client burnout, $r = .42$, $p < .001$, 95% C.I. [0.248, 0.566]. These were each positively correlated, suggesting that increased stress is associated with increased burnout in personal, work, and client domains. Large effect sizes were found in correlations between stress and personal burnout, and stress and work burnout, suggesting a strong relationship between the variables. A medium effect size was found in the correlation between stress and client burnout, suggesting a good-strength relationship between the variables.

In addition, confidence working with complexity was significantly associated with work burnout, r = -.24, p = .01, 95% C.I. [-0.413, -0.05], and client burnout, r = -.24, p = .02, 95% C.I. [-0.413, -0.05]. These associations were negatively correlated, suggesting that increased confidence working with MUS is associated with lower work and client burnout. These significant correlations had small effect sizes, suggesting a small relationship between the variables. There was no statistically significant correlation between confidence and personal burnout, which suggests there is no relationship between the variables.

2.3.3.2   Hierarchical Regressions

Hierarchical multiple regression was subsequently used to establish whether stress was a significant predictor of client, work, and personal burnout, and whether confidence working with complexity was a significant predictor of work and client burnout. Three hierarchical regressions were therefore carried - one to include client burnout, one to include work burnout, and one to include personal burnout as the outcome variable. Confidence working with complexity was not included in the hierarchical regression to predict personal burnout, as this hypothesised predictor was not significantly correlated in the preliminary analysis (see Table 4).

Blockwise entry was used to firstly enter significant correlations of demographic variables, identified during correlational analyses shown previously in Table 4. Predictor variables were subsequently entered in the order of known influencers of burnout, based on previous research.

Analyses for client burnout showed that the overall models were significant for model 1 (F(2,101) = 5.12, p =.008) with a small effect size (R^2 = .09), model 2 (F(3,100) = 13.33, p <.001) with a large effect size (R^2 = .29), and model 3 (F(4, 99) =

10.89, $p < .001$) with a large effect size ($R^2 = .31$). They explain 9.2 %, 28.6% and 30.6% of the variance, respectively.

The results in Table 8 show that, after controlling for White British and Other ethnicity groups, stress was a statistically significant positive predictor of client burnout ($\beta = .42$, $p < .001$, $r^2 = .42$). This suggests that increased stress significantly predicts higher client burnout. This had a large effect size, suggesting a strong relationship between variables. Interestingly, 'Other' ethnicity (see Table 8 footnote) was a statistically significant predictor of client burnout with a medium effect size, suggesting a good-strength relationship between variables ($\beta = .31$, $p = .01$, $r^2 = .22$).

Table 8. *Hierarchical Multiple Regression for Stress and Confidence Working with Complexity on Client Burnout*

	B	SE B	β	95% CI	r^2
Client Burnout					
Model 1					
Ethnicity - White British	-2.67	6.08	-.06	[-14.74, 9.39]	-.042
Ethnicity – Other[a]	12.84	6.81	.26	[-0.66, 26.34]	.179
Model 2					
Ethnicity - White British	-0.97	5.43	-.02	[-11.65, 9.91]	-.014
Ethnicity – Other[a]	15.52	6.09	.31*	[3.44, 27.61]	.215
Stress	1.55	0.30	.42***	[0.96, 2.14]	.440
Model 3					
Ethnicity - White British	0.48	5.44	.01	[-10,32, 11.28]	.007
Ethnicity – Other[a]	15.65	6.04	.31*	[3.67, 27.62]	.217
Stress	1.49	0.30	.42***	[0.90, 2.08]	.419
Confidence with Complexity	-0.54	0.32	-.14	[-1.18, 0.10]	-.141

Note. *p < .05, **p < .01, ***p < .001; Effect size. r^2 = < .02 (small), r^2 > .13 (medium), r^2 > .26 (large); Other ethnicity (n =27) comprises: n=1 Any other Black background, Any other mixed background, Bangladeshi, Hispanic, n=2 African, Pakistani, Any other Asian background, Any other ethnic group, n=3 White & Asian, n=4 Chinese, Indian and Irish

Analyses for work burnout showed that the overall models were significant for model 1 ($F(1,102) = 5.52$, $p = .021$) with a small effect size ($R^2 = .05$), model 2 ($F(2,101) = 25.66$, $p <.001$) with a large effect size ($Rr^2 = .34$), and model 3 ($F(3, 100) = 20.99$, $p <.001$) with a large effect size ($R^2 = .39$). They explain 9.4%, 28.6% and 30.6% of the variance, respectively.

The results in Table 9 show that, controlling for nurse profession group, stress was a statistically significant positive predictor of work burnout with a large effect size, suggesting a strong relationship between variables ($\beta= .51$, $p <.001$, $r^2 = .50$). This suggests that increased stress significantly predicts higher work burnout. Confidence working with complexity was statistically significant negative predictor of work burnout with had a medium-to-large effect size, suggesting a strong relationship between variables ($\beta= -.23$, $p = .01$, $r^2 = -.22$). This suggests that higher confidence significantly predicts lower work burnout. Interestingly, nursing profession was also a statistically significant predictor of work burnout and also had a strong relationship between variables with a large effect size ($\beta= .28$, $p< .001$, $r^2 = .28$).

Table 9. *Hierarchical Multiple Regression for Stress and Confidence Working with Complexity and Work Burnout*

	B	SE B	β	95% CI	r^2
Work Burnout					
Model 1					
Profession - Nurse	10.09	4.29	.23*	[1.58, 18.61]	.227
Model 2					
Profession - Nurse	10.79	3.61	.24**	[3.63, 17.95]	.242
Stress	1.51	0.23	.53***	[1.05, 1.96]	.534
Model 3					
Profession - Nurse	12.53	3.54	.28***	[5.50, 19.56]	.277

	B	SE B	β	95% CI	r^2
Stress	1.42	0.22	.51***	[0.99, 1.88]	.503
Confidence with Complexity	-0.68	0.24	-.23**	[-1.16, -0.21]	-.222

Note. *p < .05, **p < .01, ***p < .001; Effect size. r^2 = < .02 (small), r^2 > .13 (medium), r^2 > .26 (large)

Analyses for personal burnout showed that the overall model was not significant for model 1 but the model was significant for model 2 ($F(4,85) = 12.31$, p <.001) with a large effect size ($R^2 = .37$). Model 2 explains 36.7% of the variance.

The results in Table 10 show that, controlling for nurse and doctor profession groups and year of training, stress was a statistically positive predictor of personal burnout ($β= .55$, $p <.001$, $r^2 = .54$). This suggests that increased stress significantly predicts higher levels of personal burnout with a large effect size, suggesting a strong relationship between variables.

Table 10. *Hierarchical Multiple Regression for Stress on Personal Burnout*

	B	SE B	β	95% CI	r^2
Personal Burnout					
Model 1					
Profession - Nurse	7.44	4.73	.18	[-1.95, 16.84]	.163
Profession - Doctor	0.81	4.98	.02	[-9.09, 10.72]	.017
Year of Training	-2.28	1.38	-.22	[-5.01, 0.46]	-.171
Model 2					
Profession - Nurse	7.01	3.94	.17	[-0.82, 14.83]	.154
Profession - Doctor	-3.34	4.20	-.10	[-11.70, 5.02]	-.069
Year of Training	-1.40	1.15	-.13	[-3.70, 0.90]	-.105
Stress	1.49	0.24	.55***	[1.01, 1.96]	.539

Note. *p < .05, **p < .01, ***p < .001; Effect size. r^2 = < .02 (small), r^2 > .13 (medium), r^2 > .26 (large)

2.3.4 **Hypothesis III – Burnout, Stress, Empathy and Confidence Working with Complexity Associated with Negative Attitudes to MUS**

It was predicted that higher burnout and stress, and lower empathy and confidence in working with complexity, will be significantly associated with negative attitudes to people with MUS.

2.3.4.1 **Bivariate Correlations**

In order to identify which variables were sufficiently correlated for inclusion in the regression analyses, preliminary bivariate correlations were carried out (shown in Table 4). Client burnout was associated with negative attitudes to people with MUS, r = .35, $p < .001$, 95% C.I. [0.169, 0.508]. This was positively correlated, suggesting that higher client burnout is associated with increased negative attitudes to people with MUS. This had a medium effect size, suggesting a good-strength relationship between the variables. No significant correlations were found between personal burnout or work burnout and negative attitudes to people with MUS, suggesting that there is no significant relationship between these variables.

Perspective taking was negatively associated with attitudes to people with MUS, r = -.45, $p < .001$, 95% C.I. [-0.591, -0.282], suggesting that increased perspective taking is associated with fewer negative attitudes to people with MUS. This had a medium effect size, suggesting a good-strength relationship between the variables. Empathic concern was significantly correlated with negative attitudes to people with MUS, r = -.57, $p < .001$, 95% C.I. [-0.687, -0.424]. This was a negative correlation, suggesting lower empathic concern is associated with increased negative attitudes to people with MUS. This had a large effect size, suggesting a strong relationship between the variables. No significant correlations were found between fantasy or personal distress subscales and negative attitudes to people with MUS, suggesting that there is no significant relationship between these variables.

Confidence working with complexity was negatively associated with attitudes to people with MUS, r = -.31, p < .001, 95% C.I. [-0.474, -0.125]. This suggests that lower confidence working with people with MUS is associated with increased negative attitudes to people with MUS. This had a medium effect size, suggesting a good-strength relationship between the variables.

No correlation was found between stress and negative attitudes to people with MUS, suggesting no significant relationship between the variables.

2.3.4.2   Hierarchical Regressions

Hierarchical multiple regression was subsequently used to establish whether client burnout, perspective taking, empathic concern, and confidence working with complexity were significant predictors of negative attitudes to people with MUS. Personal and work burnout, fantasy and personal distress, and stress were not included in the regression analyses to predict negative attitudes to people with MUS, as these hypothesised predictors were not found to be significantly correlated in the preliminary analysis (see Table 4).

Blockwise entry was used to firstly enter significant correlations of demographic variables, identified during correlational analyses shown previously in Table 4. Predictor variables were subsequently entered in the order of known influencers on negative attitudes to MUS, based on previous research. Analyses for negative attitudes to MUS showed that model 1 was significant (F(5,100) = 4.04, p = .002) with a medium effect size (R^2 = .17), and large significant effect sizes were shown for model 2 (F(6,94) = 5.66, p <.001), model 3 (F(8, 92) = 8.42, p <.001), and model 4 (F(9, 91) = 7.73, p <.001). (R^2 = .26,.42, and .43, respectively). The models explain 17.5%, 26.5%, 42.3% and 43.3% of the variance, respectively.

The results in Table 11 show that, controlling for Other White and Other ethnicity groups and doctor and psychologist profession groups, client burnout was a statistically significant positive predictor of negative attitudes to MUS (β= .23, p= .01, r^2 = .20). This suggests that higher client burnout significantly predicts increased negative attitudes to people with MUS. This had a medium effect size, suggesting a good-strength relationship between variables. Results show that empathic concern was a statistically significant negative predictor of negative attitudes to MUS, with a large effect size (β= -.41, p <.001, r^2 = -.27). This suggests that higher empathic concern for others significantly predicts fewer negative attitudes to people with MUS, with a strong relationship between variables.

Table 11. *Hierarchical Multiple Regression for Client Burnout, Perspective Taking, Empathic Concern and Confidence Working with Complexity on Negative Attitudes to MUS*

	B	SE B	β	95% CI	r^2
Model 1					
Sex	-13.89	6.47	-.22*	[-26.75,-1.04]	-.20
Ethnicity – Other White	21.70	7.74	.28**	[6.33, 37.07]	.26
Ethnicity - Other	5.29	6.43	.09	[-7.48, 18.07]	.08
Profession – Doctor	-0.71	6.38	-.01	[13.38, 11.95]	-.01
Profession - Psychologist	-11.85	6.44	-.19	[-24.64, 0.94]	-.17
Model 2					
Sex	-12.54	6.16	-.20*	[-24.77, -0.32]	-.18
Ethnicity – Other White	20.59	7.35	.27**	[5.99, 35.19]	.25
Ethnicity - Other	-0.37	6.33	-.01	[-12.94, 12.20]	-.01
Profession – Doctor	-.48	6.05	-.01	[-12.49, 11.54]	-.01
Profession - Psychologist	-11.09	6.12	-.18	[-23.23, 1.06]	-.16
Client Burnout	0.39	0.11	.32***	[0.16, 0.62]	.30
Model 3					
Sex	-7.48	5.65	-.12	[-18.71, 3.74]	-.10
Ethnicity – Other White	7.72	7.14	.10	[-6.46, 21.91]	.09
Ethnicity - Other	-6.98	5.97	-.11	[-18.85, 4.89]	-.09

Profession – Doctor	3.59	5.53	.06	[-7.38, 14.57]	.05
Profession - Psychologist	-4.66	5.63	-.08	[-15.85, 6.53]	-.07
Client Burnout	0.31	0.11	.25**	[0.09, 0.52]	.22
Perspective Taking	-0.19	0.64	-.03	[-1.46, 1.08]	-.02
Empathic Concern	-2.54	0.71	-.44***	[-3.95, -1.13]	-.28
Model 4					
Sex	-8.23	-0.13	-.13	[-19.47, 3.01]	-.11
Ethnicity – Other White	7.82	0.10	.10	[-6.31, 21.96]	.09
Ethnicity - Other	-6.95	-0.11	-.11	[-6.31, 21.96]	-.09
Profession – Doctor	1.72	0.03	.03	[-9.58, 13.02]	.02
Profession Psychologist	-4.44	-0.07	-.07	[-15.60, 6.71]	-.06
Client Burnout	0.28	0.23	.23**	[0.07, 0.50]	.20
Perspective Taking	-0.16	-0.03	-.03	[-1.43, 1.11]	-.02
Empathic Concern	-2.41	-0.41	-.41***	[-3.83, -1.00]	-.27
Confidence with Complexity	-0.54	-0.11	-.11	[-1.35, .28]	-.10

Note. *$p < .05$, **$p < .01$, ***$p < .001$; Effect size. $r^2 = < .02$ (small), $r^2 > .13$ (medium), $r^2 > .26$ (large)

2.4   Discussion

2.4.1   Summary of the Study

The aim of this research was to explore the role of empathy and burnout on the attitudes of medical and paramedical students towards people with MUS during their training. This research questioned whether empathy, stress, and confidence working with complexity were associated with burnout in students. It also asked whether empathy, stress, confidence working with complexity, and burnout were associated with negative attitudes to people with MUS.

The findings are discussed below alongside existing literature, which is presented by each hypothesis. Clinical implications of the findings are considered against the strengths and limitations of the study, and ideas for further research are presented.

2.4.2   Discussion of Findings

2.4.2.1   Hypothesis I – Empathy Associated with Burnout

Significant correlations were found between three empathy subscales and client burnout, and the fantasy subscale and work burnout. Perspective taking predicted client burnout and fantasy predicted work burnout. The results offer some support of the research hypothesis.

Previous research suggests mixed findings on the direction of the relationship between empathy and burnout, although a majority of studies suggest a negative association (Wilkinson, Whittington, Perry and Eames, 2017; Williams, Lau, Thornton & Olney, 2017). The findings in the current study support a mixed relationship. The results show a negative correlation between perspective taking and empathic concern subscales with client burnout, which suggests that increased ability to

consider alternative perspectives and increased empathic concern for others is associated with lower client burnout. However, personal distress was positively correlated with client burnout, and fantasy positively correlated with work burnout. These correlations suggest that high levels of personal distress and higher levels of fantasy are association with higher client and work burnout, respectively. The significant correlations offer support for research on nurses suggesting that empathy and burnout are related (Ferri, Guerra, Marcheselli, Cunico, & Di-Lorenzo, 2015), and suggests that these findings may apply to broader medical and paramedical professions. The findings support existing literature showing a mixed-directional relationship between empathy and burnout; particular forms of empathy may be protective and associated with reduced burnout, and other forms of empathy may exacerbate burnout.

Regression analyses suggested a mixed relationship between empathy as a predictor of burnout; one construct of empathy positively predicted a construct of burnout, whilst another construct of empathy negatively predicted a construct of burnout. Specifically, perspective taking was a significant negative predictor of client burnout and fantasy was a significant positive predictor of work burnout, in addition to belonging to a nursing profession. The fantasy subscale of empathy is particularly interesting to consider alongside research suggesting that story-induced affective empathy is associated with helping tendencies (Stansfield & Bunce, 2014). The findings might therefore reflect greater empathy and helping tendencies in those reporting high 'fantasy'. This may lead to a predisposition for burnout, particularly in medical and paramedical students, given their "helping profession". This can be considered using the Social Cognitive Theory (Bandura, 1977), which describes how behaviour, personal factors, and environmental factors interact. It could be argued that high 'fantasy' is linked with increased helping tendencies and empathy, i.e. behaviour and personal factors, which interact particularly within a work-based (and helping) environment, triggering burnout.

The findings offer some support of the research by Decety, Yang and Cheng (2010), which suggests that empathy is detrimental for doctors and that emotional responses to the pain of others therefore need to be deactivated. The correlational findings suggest that particular empathy, i.e. perspective taking and empathic concern, is protective, whilst personal distress and fantasy is associated with an exacerbation of burnout in a client context and work context, respectively. The findings therefore suggest that a reduction in particular forms of empathy, i.e. personal distress and fantasy, could be advantageous in medical and paramedical students. In addition, some support is shown for research suggesting that burnout negatively impacts on empathy in nurses and medical students (Neff, 2003; Brazeau, Schroeder, Rovi and Boyd, 2010); the findings in the current study identify two constructs of empathy that suggest a negative association with burnout in medical and paramedical students.

2.4.2.2   Hypothesis II - Stress and Confidence Working with Complexity Associated with Burnout

Significant correlations were found between stress and each burnout domain, and between confidence working with complexity and both work and client burnout. In addition, stress predicted client and work burnout, and confidence working with complexity negatively predicted work burnout. The findings support the hypothesis predicting an association between high stress and low confidence working with MUS with burnout.

Confidence working with MUS correlated negatively with both work and client burnout, suggesting that low confidence is associated with increased burnout. The findings support previous research suggesting that medics report that lack of confidence in treating MUS increases stress (Buszewicz, 2017), and that prolonged stress influences burnout (Bruce, 2009). Results in the current study also expand these previous findings by suggesting that low confidence in treating MUS and increased

stress is shared across wider student paramedical professions and not just medicine. However, interestingly, regression analysis showed that confidence only predicted work burnout and not client burnout. The findings may be explained by SCT (Bandura, 1977), which describes how behaviour, personal factors, and environmental factors interact. A primary construct in SCT is self-efficacy, which refers to the belief a person has in their own ability to achieve an outcome despite possible obstacles. Self-efficacy could therefore reflect level of confidence (Van Dyk, Siedlecki & Fitzpatrick, 2016) working with MUS, i.e. a personal factor and/or behaviour. However, this may trigger burnout only if there is an interaction with the environmental condition of 'work'. This may help to explain why the same variable, low confidence working with MUS, does not trigger client-focussed burnout.

Stress correlated positively with all three subscales of burnout and subsequent analyses showed stress to be a predictor of all three subscales of burnout. The findings support research showing that medical students rate their subjective 'perceived stress' levels as high (Gade, Chari & Gupta, 2014) and the numerous studies showing that stress experienced by medical students leads to high rates of burnout (e.g. Boni, Paiva, de Oliveira, Lucchetti, Fregnani & Paiva, 2018; Maslach & Leiter, 2016). The current study expands these findings by suggesting that an association between high stress and high burnout applies to broader paramedical students, as well as medical students.

The findings showing an association between high stress and high burnout are interesting to consider alongside research illustrating a circular pattern of stress; relationship difficulties between professionals and people with MUS increase with higher stress and burnout in medics (Buszewicz, 2017; Oreskovich et al., 2012), and increased stress may lead to relationship difficulties (e.g. Angland, Dowling & Casey,

2013). The maintenance cycle of stress may therefore lead to prolonged stress,

influencing burnout (Bruce, 2009), which is shown in the current study.

2.4.2.3   Hypothesis III – Burnout, Stress, Empathy and Confidence Working with Complexity Associated with Negative Attitudes to MUS

Significant correlations were found between client burnout, perspective

taking, empathic concern, and confidence working with complexity with negative

attitudes to MUS. Client burnout and empathic concern significantly predicted negative

attitudes to MUS. The findings offer some support of the research hypothesis.

A significant positive correlation was found between client burnout and

negative attitudes to people with MUS, suggesting that higher client burnout is

associated with increased negative attitudes to people with MUS. Client burnout also

predicted negative attitudes to people with MUS, whereas personal and work burnout

were not significant predictors. This can be considered alongside the measure of 'client

burnout', which assesses the degree of physical and psychological fatigue and

exhaustion that is perceived as caused by "people work". Understandably, the

attribution of burnout caused by "people work" could be more likely to impact on

attitudes towards people with MUS. This may support research showing that

experiences of burnout cause an adverse change in the emotional state and conduct of

medical staff, and are associated with professional-patient relationship difficulties

(Oreskovich et al. (2012). The current study suggests that this may be shared amongst

wider paramedical students working with MUS in addition to medical students.

The findings show that perspective taking and empathic concern are

negatively correlated with negative attitudes to people with MUS, suggesting that

decreased perspective taking and empathic concern are associated with increased

negative attitudes to people with MUS. In addition, empathic concern negatively

predicted negative attitudes to MUS. The findings appear to support research

suggesting that empathy has a role in therapeutic relationships and quality of care within medical and healthcare settings (Brockhouse, Msetfi, Cohen & Joseph, 2011), and the findings identify particular forms of empathy that may improve professional relationships i.e. empathic concern. This may counter research showing that empathy is detrimental for doctors (Decety, Yang and Cheng, 2010) by worsening professional-patient relationships.

Confidence working with complexity was negatively correlated with attitudes to people with MUS. This suggests that lower confidence working with people with MUS is associated with increased negative attitudes to people with MUS. This is particularly interesting, given research by Harsh, Hodgson, White, Lamson and Irons (2015) who found that junior doctors report low confidence in their ability to effectively treat people with MUS, experience feelings of anxiety, frustration and self-perceived lack of competency. The current study suggests that lack of confidence and adverse emotional responses may be shared amongst wider paramedical students working with MUS in addition to medical students.

The findings revealed no significant correlations between stress and negative attitudes to people with MUS, which does not support the research hypothesis. However, this finding is interesting to consider alongside research by Maatz, Wainwright, Russell, Macnaughton and Yiannakou (2016), who found the term "difficult" was widely used amongst specialists to describe their experience of diagnosing and managing MUS, and managing their own emotional reactions. Despite these findings, there was no report that these arguably stressful experiences were accompanied by negative attitudes to people with MUS. Similarly, Yon, Nettleton, Walters, Lamahewa and Buszewicz (2015), found that junior doctors expressed feelings of anxiety, frustration and self-perceived lack of competency due to the challenging nature of MUS. However, they did not report that this impacted or shaped their beliefs

about people with MUS. Conversely, research has shown that nursing staff held

increased negative attitudes when experiencing increased stress (Angland, Dowling &

Casey, 2013). The findings from the current study do not support this and suggest that

stress experienced by medical and paramedical students, including nurses, is not

correlated with negative attitudes to people with MUS .

Despite there being no significant correlation between stress and negative

attitudes to people with MUS, stress is shown to predict client burnout, and client

burnout is a significant predictor of negative attitudes to people with MUS. A possible

explanation of this relates to research showing that prolonged stress results in burnout

(Bruce, 2009). If stress is prolonged, it may lead to burnout in a client context, which

predicts negative attitudes to people with MUS. However, stress may not always lead to

forms of burnout, which may explain the lack of association between stress and

negative attitudes to MUS in the current study.

2.4.3 Clinical Implications

2.4.3.1 Clinical Implications for Staff

The study recognises the difficulties experienced by medical and

paramedical students working with people with MUS. The findings suggest an

association between empathy and client burnout; perspective taking and empathic

concern may be protective forms of empathy in relation to burnout, compared with

personal distress and fantasy. Efforts to assist staff in developing these protective

empathic qualities could help to prevent or reduce burnout within client contexts. In

addition, increased perspective taking was associated with reduced negative attitudes

to people with MUS, and increased empathic concern predicted reduced negative

attitudes to people with MUS. Enhancing perspective-taking and empathic concern for

others may therefore serve to directly influence the experience, and professional

conduct, of staff. Clinical psychology may have a particular role in helping to cultivate

empathy in medical and paramedical students working with MUS, such as through the sharing of psychological formulation that may assist understanding of broad MUS presentations. A meaningful understanding of a patient's difficulties can be facilitated by psychological formulation (Boyle & Johnstone, 2014) and is essential to empathic interaction (Mercer & Reynolds, 2002).

In addition, findings suggest that client burnout predicts negative attitudes to people with MUS; helping staff to manage stress and reduce levels of burnout may therefore offer a further benefit of assisting their professional relationships. By minimising negative attitudes to people with MUS, staff could be more receptive to engage with training on the topic of MUS (Byrne, Morton & Salmon, 2001; Salmon et al., 2007). Findings in the current study suggest that higher stress is associated with, and predicts, higher burnout across work, personal and client contexts. In addition, lower confidence working with MUS was associated with increased negative attitudes to people with MUS. Psychologically-informed teaching targeting stress management could therefore offer clinicians protection against burnout, and assist working relationships between clinicians and people with MUS. Increased confidence working with MUS was also associated with, and predicted, lower levels of burnout in work contexts. Efforts to increase confidence, or ease anxiety whilst working with uncertainty, may offer protection for staff working in challenging contexts. This links with research documenting increased stress with uncertainty of patient treatment (Angland, Dowling & Casey, 2013).

In summary, psychological input could assist staff at a student/trainee level in developing protective forms of empathy, managing stress, and increasing their confidence working with people with MUS. This may offer benefits for both staff wellbeing and positively influence their professional relationships.

2.4.3.2   Clinical Implications for Patients

The study recognises the difficulties experienced by people presenting with MUS. The results suggest that the internal experiences of staff members may lead to increased negative attitudes towards patients presenting with MUS, which may influence patient healthcare experience. The implications of the findings for patients are discussed below.

Earlier research highlights that negative feelings in staff, such as frustration and helplessness, are shared between professionals and patients (Stone, 2014). This "looping effect" suggests that the emotion of one person triggers a heightened emotion in the other (Kirmayer & Sartorius, 2007). The heightened emotions experienced by staff working with people with MUS may therefore be "looped" and experienced by patients presenting with MUS. The findings of the current study suggest that empathy, burnout, and confidence play a significant role in the negative attitudes of medical and paramedical students towards people with MUS. These findings suggest that, if staff possess higher protective forms of empathy, best manage stress and burnout, and increase their confidence working with people with MUS, this may reduce burnout and negative attitudes to people with MUS. This could therefore "loop" to trigger a response in patients presenting with MUS, benefiting the professional relationship and improving patient experience. This deserves particular attention, given the wealth of existing research suggesting that patients with MUS may be dissatisfied with the care they receive (Peters et al., 2009) and their interactions during clinical consultations (Salmon, Dowrick, Ring & Humphris, 2004). Input from clinical psychology in increasing awareness and understanding of MUS presentations may translate to increased understanding in staff, and therefore improve patient experience.

In summary, psychological input could improve the professional relationship between patients with MUS and the clinicians working with them, and therefore improve patient experience.

2.4.3.3   Clinical Implications for Policy

The implications of the study's findings have been considered for staff and patients, which could inform practice and improve the experience of both staff working with, and patients presenting with, MUS. The findings are discussed below in relation to policy implications.

Guidance from commissioners of services for people with MUS suggest that "psychology plays a pivotal part in the assessment and treatment of MUS but also to educate other members of the multidisciplinary team" and that "this needs to change at undergraduate level, the earliest opportunity to educate medical and paramedical health professionals." (Gargan, 2017). Course providers should ensure training support for medical and paramedical students and trainees likely to work with patients presenting with MUS. Input from clinical psychology in teaching on MUS could ensure that clinicians are equipped with knowledge of factors that are associated with exacerbated burnout and increased negative attitudes to people with MUS, so they are identified at the earliest opportunity. This awareness can be accompanied with psychologically-informed training in order to help clinicians develop skills associated with reduced burnout and reduced negative attitudes to MUS: protective empathy skills, increasing confidence, and strategies to best manage stress. This intervention may help clinicians working in difficult contexts, and inform best practice to improve the experience of both staff working with MUS and patients presenting with MUS.

In summary, best practice is informed by research. Policy should therefore support course providers in equipping clinicians with the personal resources that will

help them to stay well whilst working most effectively with people with MUS. This support will also enhance the healthcare experience of people presenting with MUS.

2.4.5 Strengths and Limitations

Research to date has largely focussed on the experiences of medical students and medical staff working with MUS. A particular strength of this study is the participant sample, which includes a range of paramedical students as well as medical students. The current study highlights the breadth of professions who have contact working with people with MUS, and therefore encompasses wider experience to increase generalisability. The quantitative approach used in the current study is another strength, as most studies to date have adopted qualitative methods to explore the experiences of medical staff working with complexity. The quantitative approach has enabled identification of factors that may predict burnout and negative attitudes to MUS. Adopting a quantitative method rather than using interview methods may reduce the likelihood of receiving feedback understandably influenced by social desirability and self-perception biases, such as purposefully or unconsciously representing the self in a favourable light (Edwards, 1953). This is particularly important, given that student and trainee clinicians were asked about potentially difficult emotions and feelings towards a patient group.

A key limitation of the study is the composition of the participant sample, which is made up of 76% females and a majority of those with experience of working with five or fewer people with MUS. The generalisability of these findings may therefore be limited and more reflective of a female sample with lesser experience working with people with MUS. It is possible that the sample is self-selected, and those with differing attitudes to MUS may not have taken part. Another potential limitation is the professional composition of the participant sample, such as the inclusion of a large number of psychology trainees and no representation from other healthcare

professionals who also work with people with MUS, such as physiotherapists. This could also limit generalisability of findings. In addition, the study is under-powered. This means there is increased likelihood of falsely rejecting the research hypothesis due to a limited sample size; non-significant findings in the study may have been interpreted as disconfirmation of the research hypothesis without this necessarily being correct. A data reduction technique was implemented for the main analyses of data in order to increase power.

Although the quantitative approach taken in the current study has been discussed in the context of reducing social desirability, responses on self-report questionnaires can also be limited by social desirability and self-perception biases. There is mixed research documenting the accuracy of self-report measures within clinical settings and research contexts. Some research shows that the level of agreement is approximately the same between clinician-rated scales and self-reported scales measuring treatment response in clinical practice (Zimmerman, Walsh, Friedman, Boerescu & Attiullah, 2018). However, self-report bias may result in a discrepancy between reported behaviour and observed behaviour in research studies (e.g. Devaux & Sassi, 2016; Stephens-Davidowitz, 2017), although other research suggests that self-report measures are a reliable measure in research contexts (e.g. Chan, 2009).

2.4.6   Future Research

Future research should be carried out by replicating this study with a larger pool of participants, in order to ensure adequate power, with a greater breadth of healthcare professions in order to increase generalisability. Supplementing the findings and suggestions of the current study, further research should be carried out with experimental conditions to explore the impact of psychological strategies that assist clinicians in the development of protective empathy skills, increased confidence working with complexity, and skills to best manage stress. Input from the clinical

psychology profession in sharing psychologically-informed teaching could improve the experience of both staff working with, and patients presenting with, MUS. The effect of this intervention should be evaluated to assess any effects on student and trainee clinicians. In addition, the indirect effect of staff training on patients could be evaluated, such as by monitoring patient satisfaction, which is routinely used within existing healthcare settings.

2.5   Conclusion

The current study adds to the literature by exploring the roles of empathy and burnout on the attitudes of medical and paramedical students to people with MUS. This is crucial given the early development of attitudes towards people with MUS, the prevalence of people presenting with MUS, and the adverse emotional and behavioural impact reported by staff in response to people with MUS. The findings suggest that particular forms of empathy, such as perspective taking and empathic concern, are protective and associated with lower client burnout, whilst other forms of empathy, such as personal distress and fantasy, are associated with higher client and work burnout, respectively. High stress is associated with higher burnout across contexts, and increased confidence working with complexity is associated with lower burnout in work and client contexts. High client burnout, low confidence working with complexity, low perspective taking and low empathic concern were associated with increased negative attitudes to MUS. Support for clinicians during early-career should assist them in the development of protective empathy skills, increased confidence, and strategies to best manage stress. This could improve the experience of both staff working with, and patients presenting with, MUS. The effect of such an intervention should be evaluated.

Appendix A   Quality Appraisal

	Sitnikova et al. (2019)	Kleinstäuberstäuber et al. (2019)	Pederson et al. (2019)	Newby et al. (2018)	Verdurmen et al. (2017)	Wortman et al. (2016)	Hedman et al. (2016)	Selders et al. (2015)	Gili et al. (2014)
Section 1: Population									
1.1 Is the source population or source area well described?	Strong	Strong	Strong	Strong	Adequate	Strong	Strong	Adequate	Strong
Was the country (e.g. developed or non-developed, type of healthcare system), setting (primary schools, community centres etc.), location (urban, rural), population demographics etc. adequately described?									
1.2 Is the eligible population or area representative of the source population or area?	Strong	Strong	Adequate	Strong	Adequate	Adequate	Strong	Adequate	Strong
Was the recruitment of individuals, clusters or areas well defined (e.g. advertisement, birth register)Was the eligible population representative of the source? Were important groups under-represented?									
1.3 Do the selected participants or areas represent the eligible population or area?	Strong	Strong	Adequate	Strong	Adequate	Adequate	Strong	Adequate	Strong
Was the method of selection of participants from the eligible population well described? What % of selected individuals or clusters agreed to participate? Were there any sources of bias? Were the inclusion or exclusion criteria explicit and appropriate?									
Section 2: Method of allocation to intervention (or comparison)									

Appendix A

	Sitnikova et al. (2019)	Kleinstäuberstäuber et al. (2019)	Pederson et al. (2019)	Newby et al. (2018)	Verdurmen et al. (2017)	Wortman et al. (2016)	Hedman et al. (2016)	Selders et al. (2015)	Gili et al. (2014)
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	Strong	Strong	Strong	Strong	NA	Strong	Strong	Adequate	Strong
Was allocation to exposure and comparison randomised? Was it truly random Strong or pseudo-randomised Adequate (e.g. consecutive admissions)? If not randomised, was significant confounding likely (−) or not (Adequate)? If a cross-over, was order of intervention randomised?									
2.2 Were interventions (and comparisons) well described and appropriate?	Strong	Strong	Strong	Strong	Adequate	Strong	Strong	Strong	Strong
Were interventions and comparisons described in sufficient detail (i.e. enough for study to be replicated)? Was comparisons appropriate (e.g. usual practice rather than no intervention)?									
2.3 Was the allocation concealed?	Strong	Strong	Strong	Strong	NA	Strong	Strong	Weak	Strong
Could the person(s) determining allocation of participants or clusters to intervention or comparison groups have influenced the allocation? Adequate allocation concealment (Strong) would include centralised allocation or computerised allocation systems.									
2.4 Were participants or investigators blind to exposure and comparison?	Adequate	Strong	Adequate	Adequate	NA	Adequate	Adequate	Weak	Strong
Were participants **and** investigators – those delivering or assessing the intervention kept blind to intervention allocation? (Triple or double blinding score Strong) If lack of blinding is likely to cause important bias, score −.									
2.5 Was the exposure to the intervention and comparison adequate?	Strong	Strong	Strong	Strong	Strong	Adequate	Strong	Adequate	Strong

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	Sitnikova et al. (2019)	Kleinstäuberstäuber et al. (2019)	Pederson et al. (2019)	Newby et al. (2018)	Verdurmen et al. (2017)	Wortman et al. (2016)	Hedman et al. (2016)	Selders et al. (2015)	Gili et al. (2014)
Is reduced exposure to intervention or control related to the intervention (e.g. adverse effects leading to reduced compliance) or fidelity of implementation (e.g. reduced adherence to protocol)? Was lack of exposure sufficient to cause important bias?									
2.6 Was contamination acceptably low?	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Did any in the comparison group receive the intervention or vice versa? If so, was it sufficient to cause important bias? If a cross-over trial, was there a sufficient washout period between interventions?									
2.7 Were other interventions similar in both groups?	Adequate	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Did either group receive additional interventions or have services provided in a different manner? Were the groups treated equally by researchers or other professionals? Was this sufficient to cause important bias?									
2.8 Were all participants accounted for at study conclusion?	Strong	Strong	Strong	Strong	Adequate	Strong	Strong	Weak	NR
Were those lost-to-follow-up (i.e. dropped or lost pre-during or post-intervention) acceptably low (i.e. typically <20%)? Did the proportion dropped differ by group? For example, were drop-outs related to the adverse effects of the intervention?									
2.9 Did the setting reflect usual UK practice?	Adequate	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Did the setting in which the intervention or comparison was delivered differ significantly from usual practice in the UK? For example, did participants receive intervention (or comparison) condition in a hospital rather than a community-based setting?									

	Sitnikova et al. (2019)	Kleinstäuberstäuber et al. (2019)	Pederson et al. (2019)	Newby et al. (2018)	Verdurmen et al. (2017)	Wortman et al. (2016)	Hedman et al. (2016)	Selders et al. (2015)	Gili et al. (2014)
2.10 Did the intervention or control comparison reflect usual UK practice?	Adequate	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Did the intervention or comparison differ significantly from usual practice in the UK? For example, did participants receive intervention (or comparison) delivered by specialists rather than GPs? Were participants monitored more closely?									
Section 3: Outcomes									
3.1 Were outcome measures reliable?	Adequate	Adequate	Adequate	Strong	Strong	Adequate	Strong	Adequate	Adequate
Were outcome measures subjective or objective (e.g. biochemically validated nicotine levels Strong vs self-reported smoking –)? How reliable were outcome measures (e.g. inter or intra-rater reliability scores)? Was there any indication that measures had been validated (e.g. validated against a gold standard measure or assessed for content validity)?									
3.2 Were all outcome measurements complete?	Strong	Strong	Strong	Adequate	Adequate	Strong	Strong	Strong	Adequate
Were all or most study participants who met the defined study outcome definitions likely to have been identified?									
3.3 Were all important outcomes assessed?	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Were all important benefits and harms assessed? Was it possible to determine the overall balance of benefits and harms of the intervention versus comparison?									
3.4 Were outcomes relevant?	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Where surrogate outcome measures were used, did they measure what they set out to measure? (e.g. a study to assess impact on physical activity assesses gym membership – a potentially objective outcome measure – but is it a reliable predictor of physical activity?)									
3.5 Were there similar follow-up times in exposure and comparison groups?	Strong	Strong	Strong	Adequate	Strong	Strong	Adequate	Strong	Strong

	Sitnikova et al. (2019)	Kleinstäuberstäuber et al. (2019)	Pederson et al. (2019)	Newby et al. (2018)	Verdurmen et al. (2017)	Wortman et al. (2016)	Hedman et al. (2016)	Selders et al. (2015)	Gili et al. (2014)
If groups are followed for different lengths of time, then more events are likely to occur in the group followed-up for longer distorting the comparison. Analyses can be adjusted to allow for differences in length of follow-up (e.g. using person-years).									
3.6 Was follow-up time meaningful?	Strong	Strong	Strong	Adequate	Strong	Strong	Adequate	Strong	Strong
Was follow-up long enough to assess long-term benefits or harms? Was it too long, e.g. participants lost to follow-up?									
Section 4: Analyses									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	Adequate	Strong	Strong	Strong	Strong	Strong	Strong	Adequate	Strong
Were there any differences between groups in important confounders at baseline? If so, were these adjusted for in the analyses (e.g. multivariate analyses or stratification). Were there likely to be any residual differences of relevance?									
4.2 Was intention to treat (ITT) analysis conducted?	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Weak	Adequate
Were all participants (including those that dropped out or did not fully complete the intervention course) analysed in the groups (i.e. intervention or comparison) to which they were originally allocated?									
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	Strong	Strong	Strong	NR	NR	Weak	Adequate	NR

	Sitnikova et al. (2019)	Kleinstäuberstäuber et al. (2019)	Pederson et al. (2019)	Newby et al. (2018)	Verdurmen et al. (2017)	Wortman et al. (2016)	Hedman et al. (2016)	Selders et al. (2015)	Gili et al. (2014)
A power of 0.8 (that is, it is likely to see an effect of a given size if one exists, 80% of the time) is the conventionally accepted standard. Is a power calculation presented? If not, what is the expected effect size? Is the sample size adequate?									
4.4 Were the estimates of effect size given or calculable?	Strong	Strong	Weak	Adequate	Strong	Strong	Strong	Strong	Weak
Were effect estimates (e.g. relative risks, absolute risks) given or possible to calculate?									
4.5 Were the analytical methods appropriate?	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Were important differences in follow-up time and likely confounders adjusted for? If a cluster design, were analyses of sample size (and power), and effect size performed on clusters (and not individuals)? Were subgroup analyses pre-specified?									
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Weak	Adequate
Were confidence intervals or p values for effect estimates given or possible to calculate? Were CI's wide or were they sufficiently precise to aid decision-making? If precision is lacking, is this because the study is under-powered?									
Section 5: Summary									
5.1 Are the study results internally valid (i.e. unbiased)?	Adequate	Strong	Adequate	Adequate	Adequate	Strong	Strong	Adequate	Adequate
How well did the study minimise sources of bias (i.e. adjusting for potential confounders)? Were there significant flaws in the study design?									

	Sitnikova et al. (2019)	Kleinstäuberstäuber et al. (2019)	Pederson et al. (2019)	Newby et al. (2018)	Verdurmen et al. (2017)	Wortman et al. (2016)	Hedman et al. (2016)	Selders et al. (2015)	Gili et al. (2014)
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	Adequate	Strong	Adequate	Adequate	Adequate	Strong	Strong	Adequate	Strong
Are there sufficient details given about the study to determine if the findings are generalisable to the source population? Consider: participants, interventions and comparisons, outcomes, resource and policy implications.									

Appendix B   Recruitment Email

Dear [Name],

I hope this email reaches you well.

My name is Pia Meads and I am contacting you to seek your support with a project regarding student attitudes to people with medically unexplained symptoms, stress, burnout, empathy. This research is being undertaken as part of a Doctorate in Clinical Psychology at the University of Southampton.

This project specifically focuses on attitudes of people enrolled on a medical, nursing and other professional healthcare course at a university in the United Kingdom. The study has been approved by the University of Southampton Research Ethics Committee [Approval ID 48075].

I would be very grateful if you would consider forwarding the study link email below to your current trainees across all years. The online questionnaire takes approximately 25 minutes to complete and participants can then choose to enter a competition for a chance to win one of the following: 1x £100 and 2x £50 Amazon vouchers.

Your support with this project is greatly valued and, if there are any questions you might have, please do not hesitate to contact me.

Kind regards,

Pia Meads
Trainee Clinical Psychologist
University of Southampton

STUDY INVITATION EMAIL:

Dear Student,

I am writing to invite you to take part in a research project, where you have a chance to win one of the following for taking part: 1x £100 and 2x £50 vouchers! This research looks at student attitudes to people with medically unexplained symptoms, stress, burnout, empathy.

This research is being undertaken as part of a Doctorate in Clinical Psychology at the University of Southampton. The study has been approved by the University of Southampton Research Ethics Committee [Approval ID Number].

Can I take part?

Students enrolled on a medical, nursing and other professional healthcare course at a university in the United Kingdom are invited to take part. Participants must have had an experience of working with MUS to be eligible.

What will I need to do?

You will be asked to complete five online questionnaires related to stress, burnout, empathy and experience of working with MUS. It is anticipated this will take 25 minutes in total.

By taking part, you can choose to enter a competition for a chance to win one of the following: 1x £100 and 2x £50 Amazon vouchers.

If you would like to take part, or for more information, please use the following link: https://www.isurvey.soton.ac.uk/32183

Alternatively, you can email me for additional information: p.l.meads@soton.ac.uk.

Many thanks,

Pia Meads
Trainee Clinical Psychologist
University of Southampton

Title: The role of empathy and burnout on the attitudes of medical and paramedical students to people with medically unexplained symptoms

Appendix C: Recruitment List

Recruitment Posts - Facebook

United Kingdom Medical Student's Association

Physiotherapy UK

Counselling Psychology and Psychotherapy Training

Trainee Clinical Psychologists

Trainee Health Psychologists UK

UK Agency Nursing

Royal College of Nurses

University of Southampton Medicine

Study for Physiotherapy Students

Psychology Research Recruitment

Royal College of Nursing Students

The Nursing Associate

Health Psychologists

Survey Exchange

Psychiatry and Clinical Psychology

Student Dietitians

Recruitment Other

Physical posters – University of Southampton campuses

Mumsnet

University of Southampton – Psychology Facebook page

Weekly email bulletin – UCL MedSoc

Weekly email bulletin – Cambridge MedSoc

Royal Society of Medicine

Nursing Notes

Callforparticipants.com

University of Birmingham, College of Medical and Dental Sciences - Programme Research Advisory Committee

Medical Societies

Birmingham Medical Society

Lancashire Medical Society

Cambridge Medical Society

Leicester Medical Society

Cardiff Medical Society

Sheffield Medical Society

Brighton and Sussex Medical Society

Hull Medical Society

UCL Medical Society

Manchester Medical Society

Southampton Medical Society

Newcastle Medical Society

Email to Universities (NHS health career courses)

University	
Aberdeen*	London South Bank University
Anglia Ruskin	Manchester
Aston	Medipro (paramedic science)
Bangor*	Medway
Barts London	Newcastle
Bath*	Norwich
Belfast	Nottingham
Birmingham*	Orms Paramedic Programme
Birmingham – medicine graduate/PG entry*	Oxford
Bradford	Oxford – medicine graduate/PG entry
Brighton	Oxford Brookes
Brighton and Sussex	Plymouth
Bristol*	Portsmouth
Buckingham	QMUL*
Cambridge	Reading
Cardiff	Robert Gordan University Aberdeen
City	Royal Holloway
Coventry	Salomons
Cumbria*	Sheffield
DeMontford	Sheffield Hallam
Dundee	South Bank

East London	South Wales
Edge Hill	Southampton*
Edinburgh	St Andrews
Essex	Staffordshire
Exeter	Strathclyde
Exeter	Surrey
Glasgow*	Swansea
Hertfordshire	Teeside
Huddersfield	UCL
Hull	UCLAN
Hull York*	UEA*
Imperial	Ulster
IoPPN*	UWL
KCL	Warwick
Keele	West London
Kent	Winchester
Kingston	Wolverhampton
Lancaster	London School Hygiene and Tropical Medicine
Leeds	Liverpool John Moores*
Leicester	
Lincoln	
Liverpool	

Note. * refers to those universities that responded directly to the recruitment email(s)

Appendix D   : Approved Study Insurance

Pia Meads

Faculty of Environmental and Life Sciences

University of Southampton

Date: 04 July 2019

Dear Pia Meads

Professional Indemnity and Clinical Trials Insurance

Project Title: The role of empathy and burnout on the attitudes of medical and

paramedical students to people with medically unexplained symptoms

ERGO Ref: 48075

Participant Type	Number of participants	Participant age group
Patients	0	ADULT
Patients	0	MINOR
Healthy	200	ADULT
Healthy	0	MINOR

Thank you for submitting the completed questionnaire and attached papers.

Having taken note of the information provided, I can confirm that this project will be covered

under the terms and conditions of the above policy, subject to informed consent being obtained

from the participating volunteers.

If there are any changes to the above details, please advise us, as failure to do so may invalidate

the insurance.

Insurance Office

Tel: 023 8059 2417

email: insure@soton.ac.uk

Finance Department, University of Southampton, Highfield Campus, Southampton SO17 1BJ U.K.

Tel: +44(0)23 8059 5000 Fax: +44(0)23 8059 2195 www.southampton.ac.uk

Appendix E : Participant Information Sheet and Consent

Study Title: The role of empathy and burnout on the attitudes of medical and paramedical students to people with medically unexplained symptoms

Researcher: Pia Meads

ERGO number: 48075

You are being invited to take part in the above research study. To help you decide whether you would like to take part or not, it is important that you understand why the research is being done and what it will involve. Please read the information below carefully and ask questions if anything is not clear or you would like more information before you decide to take part in this research. You may like to discuss it with others but it is up to you to decide whether or not to take part. You will be asked to give consent via a tick box before accessing the survey.

What is the research about?

This research is being undertaken as part of a Doctorate in Clinical Psychology. The aim of this study is to look at student attitudes to people with medically unexplained symptoms (MUS), stress, burnout, empathy.

Why have I been asked to participate?

You have been asked to participate as a student enrolled on a medical, nursing and other professional healthcare course at a university in the United Kingdom. You must have had an experience of working with MUS to take part.

What will happen to me if I take part?

You will be asked to complete five online questionnaires related to stress, burnout, empathy and experience of working with MUS. It is anticipated this will take 25 minutes in total.

Are there any benefits in my taking part?

Your input will help further understanding of attitudes to people with MUS across medical and paramedical professions during training, which could shape future teaching. In addition, a competition for a chance to win one Amazon voucher (1x £100 and 2x £50 vouchers) will be

offered after submission of the completed questionnaires. You can enter the competition by providing an email address you can be contacted with. The competition will be drawn as soon as adequate participants are recruited and no later than 1st November 2019. Winning participants will be contacted the same day using the email address provided by them at the end of the survey.

Are there any risks involved?

There are no significant risks involved in this study. However, questions cover potentially negative topics such as stress, burnout and attitudes towards people with MUS. Should this trigger distress during or following involvement in the study, you will be signposted to relevant support services.

What data will be collected?

You will be asked to provide demographic information on your sex, age and ethnicity. This information is special category data according to Data Protection. You will also be asked your profession, year/level of training, contact with MUS and any prior training on MUS.

The online questionnaires will then ask you about stress, burnout, empathy and your attitudes towards MUS. If you would like to enter the prize draw, you will need to enter an email address.

Raw data will be collected and stored on the University of Southampton's iSurvey platform, which is password protected. The downloaded data will be held in line with the new Data Protection Act 2018, using encryption and password protected access.

Will my participation be confidential?

Only members of the research team and responsible members of the University of Southampton may be given access to the data for monitoring purposes and/or to carry out an audit of the study to ensure that the research is complying with applicable regulations. Individuals from regulatory authorities (people who check that we are carrying out the study correctly) may require access to your data. All of these people have a duty to keep your information, as a research participant, strictly confidential. Anonymised data may be used for future research, such as validation of measures.

Do I have to take part?

No, it is entirely up to you to decide whether or not to take part. If you decide you want to take part, you will need to provide consent to show you have agreed to take part before accessing the survey.

What happens if I change my mind?

Participation in this study is fully voluntary and you have the right to withdraw at any time with no penalty. However, if you do not enter an email address for the prize draw competition, data will be anonymous and so it will not be possible to identify and therefore withdraw your particular data.

What will happen to the results of the research?

Research findings made available in any reports or publications will not include information that can directly identify you.

Where can I get more information?

At any time after participating you may contact the research team:

Pia Meads: p.l.meads@soton.ac.uk

What happens if there is a problem?

If you have a concern about any aspect of this study, you should speak to the researchers who will do their best to answer your questions.

If you remain unhappy or have a complaint about any aspect of this study, please contact the University of Southampton Research Integrity and Governance Manager (023 8059 5058, rgoinfo@soton.ac.uk).

Data Protection Privacy Notice

The University of Southampton conducts research to the highest standards of research integrity. As a publicly-funded organisation, the University has to ensure that it is in the public interest when we use personally-identifiable information about people who have agreed to take part in research. This means that when you agree to take part in a research study, we will use information about you in the ways needed, and for the purposes specified, to conduct and complete the research project. Under data protection law, 'Personal data' means any information that relates to and is capable of identifying a living individual. The University's data protection policy governing the use of personal data by the University can be found on its

website (https://www.southampton.ac.uk/legalservices/what-we-do/data-protection-and-foi.page).

This Participant Information Sheet tells you what data will be collected for this project and whether this includes any personal data. Please ask the research team if you have any questions or are unclear what data is being collected about you.

Our privacy notice for research participants provides more information on how the University of Southampton collects and uses your personal data when you take part in one of our research projects and can be found at http://www.southampton.ac.uk/assets/sharepoint/intranet/ls/Public/Research%20and%20Integrity%20Privacy%20Notice/Privacy%20Notice%20for%20Research%20Participants.pdf

Any personal data we collect in this study will be used only for the purposes of carrying out our research and will be handled according to the University's policies in line with data protection law. If any personal data is used from which you can be identified directly, it will not be disclosed to anyone else without your consent unless the University of Southampton is required by law to disclose it.

Data protection law requires us to have a valid legal reason ('lawful basis') to process and use your Personal data. The lawful basis for processing personal information in this research study is for the performance of a task carried out in the public interest. Personal data collected for research will not be used for any other purpose.

For the purposes of data protection law, the University of Southampton is the 'Data Controller' for this study, which means that we are responsible for looking after your information and using it properly.

To safeguard your rights, we will use the minimum personal data necessary to achieve our research study objectives. Your data protection rights – such as to access, change, or transfer such information - may be limited, however, in order for the research output to be reliable and accurate. The University will not do anything with your personal data that you would not reasonably expect.

If you have any questions about how your personal data is used, or wish to exercise any of your rights, please consult the University's data protection webpage (https://www.southampton.ac.uk/legalservices/what-we-do/data-protection-and-foi.page)

where you can make a request using our online form. If you need further assistance, please contact the University's Data Protection Officer (data.protection@soton.ac.uk).

Thank you.

Consent

I have read and understood the information about this study. By consenting, I understand that my legal rights are not affected. I also understand that data collected as part of this research will be kept confidential and that published results will maintain that confidentiality. I finally understand that if I have any questions about my rights as a participant in this research, or if I feel that I have been placed at risk, I may contact the University of Southampton Research Integrity and Governance Manager (023 8059 5058, rgoinfo@soton.ac.uk).

I have read the above consent form and I give consent to participate in the above described research.

 (Please check this box to indicate that you consent to taking part in this survey)

Title: The role of empathy and burnout on the attitudes of medical and paramedical students to people with medically unexplained symptoms

Appendix F: Demographics Questionnaire

Demographics

1.   Sex: Male/Female/Other

2.   Age:

3.   Ethnicity:

White

- English / Welsh / Scottish / Northern Irish / British

- Irish

- Gypsy or Irish Traveller

- Any other White background

Mixed / Multiple ethnic groups

- White and Black Caribbean

- White and Black African

- White and Asian

- Any other Mixed / Multiple ethnic background

Asian / Asian British

- Indian

- Pakistani

- Bangladeshi

- Chinese

- Any other Asian background

Black / African / Caribbean / Black British

- African

- Caribbean

- Any other Black / African / Caribbean background

- Other ethnic group

- Arab

- Any other ethnic group

4.   In which profession are you currently a student/trainee?

(Nurse, Midwife, Psychiatrist, Doctor (please specify below), Physiotherapist, Occupational Therapist, Dietician, Anaesthetist, Psychologist/Other therapist, Paramedic/Emergency Services, Support Worker/Carer/Rehabilitation Assistant/Nursing Assistant/OT assistant, Pharmacy Technician, Pharmacist, Radiographer, Dentist, Other: please specify)

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

5.   What is your year/level of training?..

6.   Approximately how much contact have you had working with people with MUS?

○ 5 patients or less

○ 10 patients or less

○ 20 patients or less

○ More than 20 patients

7.   Have you had training on working with people with MUS? Yes/No

Thank you

Appendix G   : Stress Questionnaire

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by selecting how often you felt or thought a certain way.

0	1	2	3	4
Never	Almost Never	Sometimes	Fairly Often	Very often

1. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the last month, how often have you felt that you were unable to control the most important things in your life?	0	1	2	3	4
3. In the last month, how often have you felt nervous or "stressed"?	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4

9. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

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Appendix H   : Empathy Questionnaire

INTERPERSONAL REACTIVITY INDEX

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate letter on the scale at the top of the page: A, B, C, D, or E. When you have decided on your answer, fill in the letter on the answer sheet next to the item number. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can. Thank you.

ANSWER SCALE:

A	B	C	D	E
DOES NOT				DESCRIBES ME
DESCRIBE ME WELL				VERY WELL

1.   I daydream and fantasize, with some regularity, about things that might happen to me.

2.   I often have tender, concerned feelings for people less fortunate than me.

3.   I sometimes find it difficult to see things from the "other guy's" point of view.

4.   Sometimes I don't feel very sorry for other people when they are having problems.

5.   I really get involved with the feelings of the characters in a novel.

6.   In emergency situations, I feel apprehensive and ill-at-ease.

7.   I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.

8.   I try to look at everybody's side of a disagreement before I make a decision.

9.   When I see someone being taken advantage of, I feel kind of protective towards them.

10.   I sometimes feel helpless when I am in the middle of a very emotional situation.

11.   I sometimes try to understand my friends better by imagining how things look from their perspective.

12.   Becoming extremely involved in a good book or movie is somewhat rare for me.

13.   When I see someone get hurt, I tend to remain calm.

14.   Other people's misfortunes do not usually disturb me a great deal.

15.   If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.

16.   After seeing a play or movie, I have felt as though I were one of the characters.

17.   Being in a tense emotional situation scares me.

18.   When I see someone being treated unfairly, I sometimes don't feel very much pity for them.

19.   I am usually pretty effective in dealing with emergencies.

20.   I am often quite touched by things that I see happen.

21.   I believe that there are two sides to every question and try to look at them both.

22.   I would describe myself as a pretty soft-hearted person.

23.   When I watch a good movie, I can very easily put myself in the place of a leading character.

24.   I tend to lose control during emergencies.

25.   When I'm upset at someone, I usually try to "put myself in his shoes" for a while.

26.   When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me.

27.   When I see someone who badly needs help in an emergency, I go to pieces.

28.   Before criticizing somebody, I try to imagine how I would feel if I were in their place.

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Appendix I : Burnout Questionnaire

THE COPENHAGEN BURNOUT INVENTORY

BURNOUT SCALES

5-point scale

1	2	3	4	5
Always or To a very high degree	Often or To a high degree	Sometimes or Somewhat	Seldom or To a low degree	Never or To a very low degree

Please note that the term "client" refers to any person you have contact with during your working hours.

1. How often do you feel tired?	1	2	3	4	5
2. How often are you physically exhausted?	1	2	3	4	5
3. How often are you emotionally exhausted?	1	2	3	4	5
4. How often do you think: "I can't take it anymore"?	1	2	3	4	5
5. How often do you feel worn out?	1	2	3	4	5
6. How often do you feel weak and susceptible to illness?	1	2	3	4	5
7. Do you feel worn out at the end of the working day?	1	2	3	4	5
8. Are you exhausted in the morning at the thought of another day at work?	1	2	3	4	5
9. Do you feel that every working hour is tiring for you?	1	2	3	4	5
10. Do you have enough energy for family and friends during leisure time?	1	2	3	4	5
11. Is your work emotionally exhausting?	1	2	3	4	5
12. Does your work frustrate you?	1	2	3	4	5
13. Do you feel burnt out because of your work?	1	2	3	4	5
14. Do you find it hard to work with clients (or co-workers, students, trainees, pupils, or any other work-related persons)?	1	2	3	4	5

15. Does it drain your energy to work with clients (or co-workers, students, trainees, pupils, or any other work- related persons)?	1	2	3	4	5
16. Do you find it frustrating to work with clients (or co-workers, students, trainees, pupils, or any other work- related persons)?	1	2	3	4	5
17. Do you feel that you give more than you get back when you work with clients (or co-workers, students, trainees, pupils, or any other work-related persons)?	1	2	3	4	5
18. Are you tired of working with clients (or co-workers, students, trainees, pupils, or any other work-related persons)?	1	2	3	4	5
19. Do you sometimes wonder how long you will be able to continue working with clients (or co-workers, students, trainees, pupils, or any other work-related persons)?	1	2	3	4	5

Title: The role of empathy and burnout on the attitudes of medical and paramedical students to people with medically unexplained symptoms

Appendix J : Confidence Questionnaire

PLEASE ANSWER THESE QUESTIONS IN RELATION TO YOUR EXPERIENCE OF WORKING WITH MEDICALLY UNEXPLAINED SYMPTOMS.

1. What improvement to the quality of life of this patient group do you believe that you can make?

1	2	3	4	5
None	A little	Some	Quite a lot	A great deal

2. How competent do you feel when dealing with individual's difficulties?

1	2	3	4	5
Not at all	A little	Quite	Very	Extremely

3. How well prepared / trained do you feel to work with this patient group

1	2	3	4	5
Not at all	A little	Quite	Very	Extremely

4. How well supported do you feel when working with this patient group?

1	2	3	4	5
Not at all	A little	Quite	Very	Extremely

5. How confident do you feel about enabling patients to improve strategies or ideas to help them cope in the future?

1	2	3	4	5
Not at all	A little	Quite	Very	Extremely

6. How often do you believe that you will never be able to help this patient group make long-term change?

1	2	3	4	5
Never	Sometimes	Half of the time	Most of the time	Always

7. At these times, how much stress /distress do you feel?

1	2	3	4	5
None	A little	Some	Quite a lot	A great deal

8. To what extent do you believe your interventions are structured and focussed?

1	2	3	4	5
Never	Sometimes	Half of the time	Most of the time	Always

9. To what extent do you believe your interventions have clear goals?

1	2	3	4	5
Not at all	Sometimes	Half of the time	Most of the time	Always

10. Generally, how stressful do you find work with this patient group?

1	2	3	4	5
Not at all	Slightly	Quite	Very	Extremely

11. How often do you become stressed as a result of difficult interactions with individual patients

1	2	3	4	5

| Never | Sometimes | Half of the time | Most of the time | Always |

12. How distressed do you feel at these times

| 1 | 2 | 3 | 4 | 5 |
| Not at all | Slightly | Quite | Very | Extremely |

13. How rewarding do you find the work with this patient group?

| 1 | 2 | 3 | 4 | 5 |
| Not at all | Slightly | Quite | Very | Extremely |

Title: The role of empathy and burnout on the attitudes of medical and paramedical students to people with medically unexplained symptoms

Appendix K : Attitudes to MUS Questionnaire

Attitudes and Beliefs

Listed below are a variety of thoughts that may pop into people's heads in relation to their patients with medically unexplained symptoms.

Please read each thought and indicate how strongly, if at all, you tend to believe this thought by circling a number from 1 – 5 using the scale provided.

Strength of belief

1	2	3	4	5	6
strongly disagree	disagree	slightly disagree	slightly agree	agree	strongly agree

Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

Strength of Belief

1. These patients are not going to change no matter what I do.

   1 2 3 4 5 6

2. If patients are ready to change, they'll change on their own, without my help

   1 2 3 4 5 6

3. These patients take up valuable time that should be spent with people who are really ill, or have real problems

   1 2 3 4 5 6

4. These patients behave in extreme ways to gain attention

   1 2 3 4 5 6

5. These patients have such complex problems that they can't really be helped

   1 2 3 4 5 6

6. patients with extensive histories of treatment failures can be treated effectively

   1 2 3 4 5 6

7. Working with these patients requires too much effort to make it worthwhile

   1 2 3 4 5 6

8. Most patients with medically unexplained symptoms do take responsibility for their difficulties

1 2 3 4 5 6

9. These patients live such chaotic lives, it's impossible to help them

1 2 3 4 5 6

10. These patients complain, no matter what you do

1 2 3 4 5 6

11. If patients with medically unexplained symptoms really wanted to get better, they would

1 2 3 4 5 6

12. patients with medically unexplained symptoms are not manipulative

1 2 3 4 5 6

13. It is possible to overcome the damage done by their past history

1 2 3 4 5 6

14. There is a segment of patients with such severe symptoms that they are beyond any help

1 2 3 4 5 6

15. These patients will never be able to improve their lives because they can't control their thoughts or emotions

1 2 3 4 5 6

16. These patients are not really ill and should just get on with it

1 2 3 4 5 6

17. These patients will sabotage any efforts to help them

1 2 3 4 5 6

18. These patients will never be able to improve their lives because they can't control their behaviour

1 2 3 4 5 6

19. You can trust patients with medically unexplained symptoms to tell you the truth or give you a complete picture

1 2 3 4 5 6

20. You have to be a very exceptional or skilled person to work with these patients effectively

1 2 3 4 5 6

21. These patients never really improve in the sense that they are always just one step away from a crisis

1 2 3 4 5 6

22. Someone who has medically unexplained symptoms can be helped effectively

1 2 3 4 5 6

23. These patients have a vested interest in not getting better

1 2 3 4 5 6

24. Patients with medically unexplained symptoms should stop complaining and just get on with it

1 2 3 4 5 6

25. The best you can do for patients with medically unexplained symptoms is to keep them from harming themselves or others

1 2 3 4 5 6

26. It's realistic to expect these patients to be able to live a fulfilling life

1 2 3 4 5 6

27. Patients with medically unexplained symptoms have too much to lose if they begin to take responsibility for their lives   1 2 3 4 5 6

28. These patients are as worthy of professional care as any others are   1 2 3 4 5 6

29. Patients with medically unexplained symptoms are in control of their behaviour   1 2 3 4 5 6

30. These patients will exploit any care that's offered them   1 2 3 4 5 6

31. These patients are rewarding to work with   1 2 3 4 5 6

32. Patients with medically unexplained symptoms are demanding, you can never do enough   1 2 3 4 5 6

33. Patients with medically unexplained symptoms are emotionally draining   1 2 3 4 5 6

34. Patients with medically unexplained symptoms are too frightening to work with   1 2 3 4 5 6

35. Patients with medically unexplained symptoms are too aggravating to work   with   1 2 3 4 5 6

36. Patients with medically unexplained symptoms are too unpredictable to work with   1 2 3 4 5 6

37. These patients are trouble makers   1 2 3 4 5 6

38. These patients cause splitting amongst staff   1 2 3 4 5 6

39. Patients with medically unexplained symptoms are best avoided   1 2 3 4 5 6

40. These patients will spoil any efforts to help them   1 2 3 4 5 6

41. Patients with medically unexplained symptoms are responsible for the majority of their problems   1 2 3 4 5 6

42. Patients with medically unexplained symptoms are too unreliable to work with   1 2 3 4 5 6

Title: The role of empathy and burnout on the attitudes of medical and paramedical students to people with medically unexplained symptoms

Appendix L : Debriefing Statement

Title of project: The role of empathy and burnout on the attitudes of medical and paramedical students to people with medically unexplained symptoms

The aim of this research was to explore the role of empathy, stress, confidence and burnout on the attitudes of medical and paramedical students towards people with Medically Unexplained Symptoms (MUS) during their training. People with MUS often have complex needs and research suggests that some professionals *report low* confidence in their ability to effectively treat people with MUS. Some professionals report this changing their emotional state and their behaviour towards people with MUS.

It is predicted that empathy in students will be associated with levels of burnout. It is also predicted that high stress and low confidence will be associated with burnout. In addition, it is predicted that high burnout and stress, and low empathy and confidence in working with MUS, will be associated with negative attitudes to people with MUS.

Your data will help our understanding of broader medical and paramedical staff attitudes to MUS. Results of this study will not include your name or any other identifying characteristics. The research did not use deception.

This study has been designed to ensure that, as best as possible, it will not cause distress. However, it is not uncommon to experience some anxieties or concerns when completing questionnaires about emotions and support is available. If participating in this study raises any issues for you, we recommend that you contact one of the following resources:

-       Your GP
-       University Counselling Services
-       Or you can find a counsellor at www.bacp.org

If you have any further questions please contact me, *Pia Meads,* at p.l.meads@soton.ac.uk*.*

Please enter an email address if you wish to take part in the prize draw for a chance to win one of the following: win 1x £100 and 2x £50 Amazon vouchers.

The competition will be drawn as soon as adequate participants are recruited and no later than 1st November 2019. Winners will be contacted the same day using the email address provided by them at the end of the survey.

Thank you again for your participation in the study!

If you have questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact the University of Southampton Research Integrity and Governance Manager (023 8059 5058, rgoinfo@soton.ac.uk).

(01/07/2019, Version 5), Researcher: Pia Meads   Ethics number: 48075

Title: The role of empathy and burnout on the attitudes of medical and paramedical students to people with medically unexplained symptoms

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