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Burnout and Related Concepts: a Systematic Review Exploring Moral Injury and Burnout and an Investigation into the Role of Individual Psychological Factors in the Development of Burnout in Mental Health Nurses

Bethan Parry

Doctorate in Clinical Psychology

August 2021

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Acknowledgements

I would like to thank my academic supervisor, David Gillanders, for his patience, encouragement and guidance; my parent for their continued support; and Stephen, for everything.
Full Thesis Abstract

**Background:** It has been demonstrated that those working in “helping” roles, such as mental health professionals, are at increased risk of experiencing forms of occupational distress, including burnout, due to the emotional and cognitive demands of their work. More recently, there has been a shift in understandings of occupational distress and consequently the construct of burnout has drawn criticism for its limited validity and narrow conceptualisation. Alternative descriptions of occupational distress have been suggested in the literature, including that of moral injury. This thesis presents a systematic review of the literature quantifying both moral injury and burnout as well as an empirical paper exploring the role of psychological factors in the development of burnout in mental health nurses.

**Purpose:** The systematic review aimed to explore the presence and strength of conceptual overlap between burnout and moral injury constructs in the existing empirical literature. The empirical study aimed to explore relationships between job demands, cognitive fusion, self-compassion, coping style, engaged living, demographic variables and burnout. It aimed to determine which variables were predictive of burnout, whether coping styles and values-based processes indirectly effect the relationship between job demands and burnout, and to explore whether levels of self-compassion and cognitive fusion strengthen or weaken these relationships.

**Methods:** For the systematic review, specified search terms were used to search multiple electronic databases to identify existing research which used quantitative measures of burnout and moral injury in occupational contexts. Findings were synthesised using a narrative approach. The empirical study utilised a cross-sectional survey of 214 mental health nurses to collect demographic information alongside scores on measures of self-compassion, burnout, engaged living, cognitive fusion, job demands and coping styles. Regression analyses and conditional process analyses were utilised to explore hypothesised relationships between these variables.

**Results:** Ten cross-sectional studies met the criteria specified for inclusion in the systematic review. All studies reported a significant correlation between burnout and moral injury scores. However, preliminary findings suggest the two constructs are distinct. Measurement and assumed core experiences of the two constructs varied considerably. Findings from the empirical paper demonstrated that job demands and engaged living predicted burnout in opposing directions. Conditional process analysis showed that job demands exerted direct and indirect effects on burnout via avoidant coping and a less engaged response style. Self-compassion moderated the relationship between job demands and avoidant coping but did not moderate the overall indirect effect. Cognitive fusion moderated the direct effect between job demands and burnout but not the indirect effect via avoidant coping and engaged living.

**Conclusions:** There appears to be a significant relationship between moral injury and burnout which warrants further exploration, particularly by using high-quality, longitudinal designs. Both constructs would benefit from efforts to further empirical validation and the development of a measurement standard. Third wave interventions targeted at facilitating engaged living and adaptive coping may be effective in reducing burnout in mental health nurses. Such interventions may also benefit from a self-compassion component.
Lay Summary

Job-related distress can occur in any occupation but those working in helping professions, such as healthcare workers, may be at particular risk of experiencing job-related distress due to the demanding nature of their work. The current study looked at different kinds of job-related distress and what contributes to its development in two chapters.

The first chapter of the thesis reviewed the existing research comparing two different descriptions of job-related distress. One common description of job-related distress is the idea of “burnout”, meaning feelings of being exhausted, experiencing negative feelings about one’s job, and achieving less at work. Although burnout is a well established concept, research has shown that it is a complex phenomenon which is not well understood. More recently, there has been a shift in the way job-related distress is understood and the appropriateness of the term burnout has been questioned. Some have suggested that those in helping professions are not experiencing burnout but are instead experiencing a “moral injury”. Moral injury is the psychological and emotional damage experienced when a person carries out, witnesses, or does not prevent action which they believe is morally wrong, as a result of working in difficult circumstances.

In order to better understand these descriptions, a number of online databases were searched for existing studies which compared moral injury and burnout, ten relevant studies were identified. The similarities and differences between moral injury and burnout were discussed and the strengths and weaknesses of the studies were considered. It was concluded that burnout and moral injury were strongly related but were measuring different experiences. This is important because intervention and prevention strategies for burnout may not be effective for moral injury. More long-term research is needed to further explore how these two descriptions are related and how they can be prevented and treated.

The second half of the study was an original piece of research exploring how a number of factors may contribute to, or be protective against, burnout. 214 mental health nurses participated and completed online questionnaires. The results of the research suggested that mental health nurses may experience feelings of burnout when they experience lots of job demands. Coping with these increased job demands using avoidance strategies, such as denial, may impact an individual’s ability to live a meaningful life based on what is important to them and this contributes to feelings of burnout. Helping people to reduce avoidance and to take positive action based on what is important to them may reduce feelings of burnout. Additionally, interventions which help people to respond to their own distress with empathy and understanding may be helpful in reducing use of avoidant coping strategies.
I: Systematic Review

Moral Injury or Burnout? A Systematic Review of Occupational Distress

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Abstract

**Aims and Objectives:** To review the extent of conceptual overlap between moral injury and burnout by identifying the presence, strength and quality of relationships between the two constructs within the existing literature.

**Background:** Psychological distress is common in professions where emotional and cognitive occupational demands are high. Research has questioned the validity of the burnout construct with regards to occupational distress in these contexts. More recently, discussion has suggested that occupational distress is better conceptualised as moral injury i.e. the lasting psychological, spiritual, social and emotional impacts of experiencing events which violate one’s deeply held moral beliefs.

**Design:** The existing literature was systematically reviewed to better understand empirical relationships between the constructs of burnout and moral injury. Ten studies fulfilled inclusion criteria. Data and key findings were extracted from included studies and descriptively analysed. An adapted form of the AXIS tool was used to assess methodological quality and risk of bias.

**Results:** All but one of the included studies was cross-sectional in design. There was strong, consistent evidence to suggest that burnout and moral injury are correlated; preliminary findings suggest that the current conceptualisations are measuring related, but distinct, phenomena with a potential temporal relationship. Definition and measurement of each construct varied significantly. There was some limited evidence to suggest particular socio-demographic characteristics were relevant to moral injury. Findings investigating risk of moral injury and burnout by occupational role were inconclusive.

**Conclusion:** Construct validity of each term is limited and precludes definitive conclusions being drawn based on the available evidence. Findings are considered in relation to quality and methodological strengths and weaknesses. Implications for clinical practice and research are discussed.

**Relevance to Clinical Practice:** Routine screening for moral injury where burnout is suspected may be beneficial in informing relevant treatment pathways for individuals experiencing occupational distress.

**Conflicts of Interest:** The authors declare no conflicts of interest.

**Funding:** The study did not receive any funding.

Keywords: Moral injury, burnout, occupational distress
1. Introduction

Research has identified that occupational stress can be associated with a number of negative sequelae including intention to leave a profession, mental health pathology and burnout (Collins, 1999; McGrath, Reid & Boore, 2003; Romano, Festini & Bronner, 2015). Helping professions, broadly defined as those which provide health, education or care services to individuals, communities or organisations, seem to be particularly at risk of experiencing these negative outcomes (Raczova & Koverova, 2017). Common to these occupational contexts are the emotional and psychological demands of “helping”, and implicit in this definition is a degree of exposure to distress. More recently, conversations about occupational distress in these contexts have shifted away from traditional explanations, such as burnout, and towards broader definitions that incorporate the lasting psychological impact of bearing witness to suffering.

Burnout

A large body of research has been dedicated to studying the phenomenon of burnout. It has been described as a psychological state characterised by emotional exhaustion, depersonalization and low personal accomplishment occurring as a result of chronic occupational stress (Maslach & Jackson, 1981). Various conceptual frameworks have suggested developmental models of burnout, and one such framework is the job demands-resources model (JD-R; Bakker & Demerouti, 2007). As described above, job demands require psychological and emotional efforts or costs. The consequences of these demands can be offset, or mitigated, with available job resources such as social support and autonomy. However, in contexts where job demands are continual and resources are limited, a chronic imbalance occurs. Individuals may be unable to replenish resources depleted by the psychological effort required by their role; consequently, they may disengage from occupational activity in order to protect their remaining resources resulting in low personal accomplishment. Additional theoretical developments suggest that a mismatch of personal and organisational values contributes to disengagement (Leiter, 2008), as individuals withdraw from behaviour that is psychologically costly and not in keeping with personal values. A large evidence base has been dedicated to examining risk factors, protective factors and potential treatments for burnout (Adriaenssense, De Gucht & Maes, 2015; Ahola, Toppinen-Tanner & Seppanen; Molero Jurado et al., 2018).

Criticisms of Burnout

Burnout research has been hindered by a lack of consensus regarding its definition, and consequently, its identification and assessment. For example, whilst Maslach and Jackson’s (1981) three-dimensional model is widely adopted in the literature, it is suggested that reduced personal accomplishment is better understood as a consequence of burnout rather than a core constituent of the phenomenon itself (Demerouti et al., 2003). This is supported by evidence suggesting that a two-factor structure consisting of only exhaustion and depersonalisation fits the data equally well, or better, than the three-factor model (De Beer & Bianchi, 2017; Holland, Michael & Kim, 1994; Kalliath et al., 2010). This evidence casts doubt on the validity of the three dimensional model and tools subsequently developed on this understanding. The Maslach Burnout Inventory (MBI) (Maslach and Jackson, 1986; Maslach et al., 1996), the most widely used tool to measure burnout, has drawn criticism for taking a top-down approach by including items the authors hypothesised as being related to burnout instead of those based on clinical observation or empirical evidence (Schaufeli, 2003). Therefore, the MBI only measures Maslach and Jackson’s definition of the construct; it does not necessarily capture the lived experience of burnout.

Further evidence challenging the construct validity of burnout has emerged from the literature. Qualitative exploration based on clinical interviews has identified a number of additional thematic clusters beyond those in Maslach and Jackson’s triad, including indifference, depression, anger/irritability, difficulties with executive functioning and sleep disturbance (Tavella & Parker, 2020). The role of cognitive symptoms, such as
differences in memory and attention, and sleep disturbances have also been recognised in quantitative and longitudinal designs (Grossi et al., 2015; Rudman et al., 2020; Sandstrom et al., 2005).

Alternative definitions consider burnout a depletion of an individual’s energetic resources in the context of chronic stress (Melamed, Kushnir & Shirom, 1992) with a single underlying construct related to exhaustion. Exhaustion disorder in the context of chronic occupational stress has been suggested as a clinically viable alternative to burnout (Grossi et al., 2015) whilst other authors have noted significant overlap with depression (Bianchi, Schonfeld & Laurent, 2015) and have posited a job-related depression construct (Bianchi, Schonfeld & Laurent, 2019). However, the validity of these definitions requires further empirical exploration.

Burnout is a complex, multi-faceted phenomenon; however, there are a number of fundamental issues still to be resolved in the research, not least the validity of the very construct itself. The evidence suggests the dominant definitions of burnout are conceptually narrow with limited validity, and the utility of measurements based on these definitions is debatable. Therefore, a broadening or redefinition of burnout based on empirical evidence, is imperative to advance the evidence base and to develop appropriate interventions for occupational distress.

**Moral Injury**

Recently, there has been a shift in understandings of employee wellbeing and the associated risks of psychological harm. This has garnered further attention during the COVID-19 pandemic, particularly in relation to healthcare staff. It has highlighted that extreme stress, overwhelming demand, limited resources, and decision-making about allocation is likely to result in the violation of moral, ethical and professional codes. This has prompted some researchers to question whether distress in healthcare professionals might be better understood as ‘moral injury’ (Dean, Talbot & Dean, 2019).

Moral injury is a term originating from military research, and can be defined as a trauma response occurring when an individual is “perpetrating, failing to prevent, or bearing witness to acts that transgress deeply held moral beliefs and expectations” (Litz et al., 2009). Shay (2014) offers three components of a potentially moral injurious event including “(a) a betrayal of “what’s right”; (b) either by a person in legitimate authority, or by oneself; (c) in a high stakes situation”. Moral injury, or exposure to potentially morally injurious events, has been associated with increased risk of psychiatric pathology, self-injury and suicidal behaviour (Wisco et al., 2017), hopelessness, (Bryan et al., 2018; Litz et al., 2009), disrupted interpersonal functioning (Currier et al., 2015; Nash & Litz, 2013), loss of meaning (Currier, Holland & Malott, 2015; Koenig et al., 2018), and spiritual distress (Currier et al., 2019). Therefore, moral injury has long-term implications for an individual’s psychological, spiritual, emotional and social wellbeing. Despite originating in military studies, moral injury also applies to a number of civilian occupations where individuals are operating in morally complex contexts.

Moral injury research has yet to identify specific diagnostic criteria, reach a consensus over which events qualify as potentially morally injurious, or establish meaningful thresholds of moral injury. Despite ongoing efforts to operationalise the term, several instruments have been developed to measure moral injury including the Moral Injury Events Scale (Nash et al., 2013) and the Moral Injury Symptom Scale (Koenig et al., 2018). These scales appear to correspond with the definitions suggested by Shay (2014) and Litz et al. (2009), and tend to measure either potentially morally injurious events and/or proposed psychological and behavioural consequences of moral injury. Tools are increasingly being developed and validated for use in civilian populations, though as yet there is no agreed gold-standard tool to measure moral injury.

**Moral Injury as a Distinct Construct**

It has been suggested that moral injury shares similarities with other trauma presentations, such as post-traumatic stress disorder (PTSD) (Bartzak, 2015); this has been somewhat supported by a meta-analytic review (Williamson, Stevelink & Greenberg, 2018) which found moderate to strong evidence for a causal relationship between potentially morally injurious events and PTSD symptoms in occupational contexts. However, moral
injury appears to be a distinct form of trauma response with a unique symptom profile compared to trauma arising from other events. For example, PTSD is associated with flashbacks, increased startle reflex reactivity, and memory loss, whilst moral injury is associated with anhedonia, social alienation, guilt and shame (Bryan et al., 2018). Observed differences in neural correlates offers further evidence that moral injury is distinct at the level of mechanism from existing constructs such as PTSD (Sun et al., 2019).

Historically, PTSD has been framed as a fear-based disorder which is predominantly driven by appraisals of threat (Dalgleish & Power, 2004) and treatments, such as prolonged exposure, were designed to systematically desensitise individuals to typical fear-conditioned responses. Negative effects on mood and cognitions were only added to PTSD diagnostic criteria with the development of Diagnostic and Statistical Manual 5th Edition (American Psychological Association, 2013). As Vermetten & Jetly (2018) point out, guilt and shame appear to predict chronicity and non-responsivity to typical PTSD treatments and it has therefore been suggested that guilt and shame are instead mechanisms and core symptoms of moral injury (Frankfurt & Frazier, 2016; Jinkerson, 2016; Litz et al., 2009). The distinction between core appraisals is an important one as it has implications for the development of interventions. Prolonged exposure to morally injurious events could be harmful (Foa & Meadows, 1997), especially when high levels of shame are experienced. Greater understanding of the presentation and mechanisms of psychological reactions to traumatic events has the potential to lead to enhanced treatment efficacy and reduced risk of iatrogenic harm.

The Umbrella of Moral Suffering

Many terms have been utilised in the literature to describe various forms of moral suffering. Distinctions have been made between moral distress and moral injury; this has been the subject of recent reviews which have sought to bring clarity to the terms (Cartolovni et al., 2021; Grimell & Nilsson, 2020). Both terms reflect a sense of compromising one’s own moral integrity, and an inner conflict arising from a misalignment of behaviours, either by omission or commission, with an individual’s own values and moral beliefs. These inner conflicts can bring about similar adverse psychological sequelae such as guilt, self-blame, and associated functional impairment. However, Zalta & Held (2020) suggest that moral injury is characterised by high levels of shame and negative beliefs about the self whilst moral distress is characterised by fewer negative self-beliefs and adaptive shame-free guilt. Furthermore, it has been suggested that moral injury is a state associated with greater severity, chronicity, and greater functional impairment than moral distress (Litz & Kerig, 2019).

Moral distress in healthcare professionals has been the subject of extensive previous reviews. It has been associated with organisational factors such as ethical climate, levels of autonomy, power structures, contribution to decision-making and appears to predict poorer occupational wellbeing, decreased job-engagement, job dissatisfaction and intention to leave the profession (Huffman & Rittenmeyer, 2012; Lamiani, Borghi & Argentero, 2017; Sasso et al., 2016). Whilst further investigation is required to make empirically and theoretically valid conclusions regarding meaningful thresholds between distress and injury, moral suffering is best understood as a continuum with associated degrees of harm and impairment. Moral injury, therefore, represents a chronic state with a greater degree of functional impairment comparable to the chronicity and severity of burnout states. To avoid repetitions of previous reviews and to allow a more direct comparison, explorations of moral distress were excluded from the current review.

Occupational Distress: Moral Injury or Burnout?

Whilst there is some agreement in the literature that a broadening or refinement of the current definition of burnout is required, the extent of any conceptual overlap with moral injury remains unclear. It has been argued that the two constructs have distinct causes and are phenomenologically different. However both can occur in occupational contexts, both involve difficulty reconciling action or inaction with personal values (e.g. being unable able to meet demands with limited resource or being able to do what is morally “right”) and both are chronic, persistent states with some shared associated negative sequelae.

It is argued that burnout is characterised by exhaustion whilst feelings of guilt and shame are core to moral injury. However, as discussed above, the dominant model of burnout has relied on a top-down approach which
may not have adequately captured lived experiences of burnout symptoms. Furthermore, guilt and shame appear to be relevant to both constructs, accounting for significant proportions of variance in burnout scores at least in cross-sectional methodologies (Barr, 2021; Duarte & Pinto-Gouveia, 2017; Greenmeyer et al., 2021; Shapiro et al., 2016). Importantly, unlike burnout, recognising occupational distress as moral injury explicitly acknowledges the external constraints which are beyond an individual’s control. The use of the term “burnout” has been met with contention as critics have suggested that it locates difficulties within an individual deficit model whilst overlooking the various social, political, and economic factors that shape the work environment and contribute to occupational distress. Importantly, conceptualising occupational distress as moral injury implicates wider organisational and macro-economic policy factors and indicates the need for systemic and socio-political interventions.

Although moral injury and burnout are constructs originating from significantly different research areas, limiting their application to their respective areas of research may unnecessarily limit our understanding of psychological injury and occupational distress. Neither of the definitions of moral injury proposed by Shay (2014) and Litz (2009) specify a particular context beyond that of exceptional powerlessness, helplessness, hopelessness and betrayal, indeed moral injury appears to be a construct relevant to a range of civilian occupations including journalists (Feinstein, Pavisian & Storm, 2018), police officers, (Papazoglou & Chopko, 2017), paramedics (Murray, 2019), and medical students (Murray, Krahe & Goodsman, 2018). However, the use of the term in occupational contexts has drawn criticism due to suggested similarities with the existing construct of burnout (Asken, 2019).

There is a need, therefore, to review the current occupational wellbeing literature and evaluate how occupational distress can be best understood. Specifically, it remains unclear whether moral injury can provide any unique additional contribution to our understanding of occupational distress above and beyond the application of current definitions of burnout. A comparison of the empirical overlap between the constructs of burnout and moral injury would provide a first step towards using empirical evidence to inform the debate in the literature regarding the utility and value of the terms. Greater understanding of any factors which differentiate between constructs has the potential to facilitate early identification of at-risk populations, allowing the provision of appropriate and timely support.

1.1 Aims

This study aims to synthesise the limited quantitative evidence investigating both moral injury and burnout in civilian contexts and compare the empirical overlap between both constructs. The review will quantify empirical overlap by comparing Pearson’s correlation coefficients. Pearson’s correlation coefficients provide a standardised effect size which can be used to quantify the strength and magnitude of empirical relationships; a positive, but not perfect, correlation is expected between burnout and moral injury. However, limited construct validity of the key terms may result in artificial conflation of the two constructs. Therefore, the impact of predictors, such as demographic variables and occupational role, will be explored to identify any related factors that discriminate between the constructs as well as those which are shared. Associations between the key variables and additional relevant constructs, such as PTSD, will also be explored for any distinguishing patterns of convergence or divergence. The review will discuss the validity and reliability of the measures used to quantify the key constructs. Lastly, the literature will be quality reviewed to estimate how confident we can be of these findings and suggestions for research, measurement, and practice in this field will be made.

2. Methods

2.1 Protocol
An initial scoping review of the literature was conducted in March and April 2021 to develop and refine research questions and clarify terms to inform search strategies. Initial searches of the Prospective Register of Systematic Reviews (PROSPERO) and the Cochrane Database and Systematic Reviews (CDSR) were conducted to explore the scope of previous reviews and to ensure no others addressing similar research questions had been submitted to either database.

The search strategy was applied to the following databases: CINAHL Plus, OVID MEDLINE (1946 to May 2021), EMBASE (1980 to May 2021) and PsycINFO (1806 to May 2021). ProQuest Dissertation and Thesis Global, Opengrey and Electronic Theses Online Service (EThOS) were used to search the grey literature and for any unpublished studies. Furthermore, manual searches were conducted; references lists of key articles were checked and publications citing key reference papers were examined. A Google Scholar search was conducted and the first ten pages of results were examined for additional studies. Authors of key papers were contacted to check for further articles that were unpublished, in-progress or that the authors were otherwise unaware of.

2.2 Search Terms

To ensure the maximum scope of relevant literature could be identified, careful consideration was given to key search terms. Previous research papers and reviews were consulted to inform relevant search terms (McEwen, Alisic & Jobson, 2020; Williamson et al. 2018). Synonyms, equivalent research terms, truncation, specific phrase searching, and Boolean operators were all utilised. The full search terms were as follows (“moral*” OR “ethical*) AND injury (“injur*” OR “suffer*” OR “distress” OR “stress”) AND burnout (“burnout” OR “burn out” OR “burn-out” OR “compassion fatigue” OR “occupational stress”). Due to the broad definitions of “helping profession” and the risk of unintentionally excluding relevant studies, no search terms were specified with regard to occupational role. Returned results were manually screened to exclude any papers which investigated moral injury and burnout in non-helping professional contexts, no studies met these criteria. Searches were limited to publications available in the English language only.
**Table 1**: PICOS criteria for eligible study selection

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
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<tbody>
<tr>
<td><strong>Population</strong></td>
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<tr>
<td>• Civilian occupational contexts including but not limited to healthcare professionals, first responders, emergency services, law enforcement, education providers, social care workers</td>
<td>• Military populations</td>
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<tr>
<td><strong>Intervention</strong></td>
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<tr>
<td>• No intervention specified</td>
<td>• No intervention specified</td>
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<tr>
<td><strong>Comparator</strong></td>
<td></td>
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<tr>
<td>• No specifications regarding comparator conditions set</td>
<td>• No specifications regarding comparator conditions set</td>
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<tr>
<td><strong>Outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>• Psychometric measures of both burnout and moral injury including but not limited to: Maslach Burnout Inventory, Professional Quality of Life Scale, Oldenburg Burnout Inventory, Moral Injury Events Scale, Moral Injury Symptom Stress Scale – Health Professionals, Moral Injury Questionnaire</td>
<td>• No exclusion criteria specified for outcome measures</td>
</tr>
<tr>
<td><strong>Studies and Design</strong></td>
<td></td>
</tr>
<tr>
<td>• Cross-sectional, longitudinal, intervention, psychometric validation studies where burnout or moral injury were primary or secondary outcomes. • Published or unpublished studies • English language</td>
<td>• Qualitative designs • Narrative or theoretical reviews • Studies not published in English language</td>
</tr>
</tbody>
</table>
2.3 Study Selection

Eligibility criteria for studies were developed guided by the 'PICOS' method: population, intervention, comparators, outcomes and study design. See Table 1. Eligibility for inclusion was assessed by the first author. During initial screening stages, titles and abstracts of identified studies were appraised for apparent relevance to the research question, irrelevant search results and duplicates were excluded at this stage. Studies were included for full-text review if the title and/or abstract suggested a quantitative exploration of the relationship between both moral injury and burnout. Following initial screening, the full text of articles were reviewed against the criteria outlined in Table 1 and either retained for data extraction or omitted on this basis. See Figure 1 for an outline of each stage of the search strategy and the subsequent review process.
Figure 1: Flow Chart of Study Selection Process

Studies identified from database search strategy
N = 2954

Duplicates removed
N = 1186

Studies included for Title and Abstract screening
N = 1768

Excluded on Title/Abstract basis
N = 1535

Studies identified from manual searches
N = 2

Studies included for Full Text review
N = 235

Excluded on Full text Basis
161 No burnout or moral injury measure
44 Narrative/theoretical review
8 Letter of reply
4 Wrong population
3 Books
3 Duplicates
2 Wrong study design
N = 225

Total Papers Included
N = 10
2.4 Data Extraction and Quality Appraisal

The first author used a structured data extraction tool to collate the main findings and key characteristics of the studies included. Characteristic information extracted included country of study origin, occupational population, study design, sample size, sample gender split, and mean sample age. Pearson’s correlation coefficients for the relationship between moral injury and burnout were extracted to address the primary research question of empirical overlap. Details of the measures used to assess the key constructs were collated to allow discussion of their validity and, consequently, the reliability of their findings. Other findings from the studies, such as the predictive role of demographic variables and occupational role, were extracted to explore any overlapping or discriminatory risk factors related to moral injury and/or burnout. Lastly, associations between moral injury and burnout and other related constructs, such as PTSD, were extracted to allow exploration of any distinguishable differences in patterns of convergence. No criteria were determined apriori for judging the consistency with which a factor needed to appear to be considered as a pattern of convergence or divergence, these data were considered in the narrative. Utilisation of these methods allowed an exploration of the empirical overlap between the two key constructs, whilst recognising the limitations of the contemporary evidence base.

An adapted tool, informed by the Appraisal Tool for Cross-Sectional Studies” (AXIS tool; Downes et al., 2016) and the “STROBE Statement-Checklist of items that should be included in cross-sectional studies”, was used to assess study quality. The final quality assessment tool comprised of 27 criteria pertaining to study design, methodology, results, limitations and generalisability. For each of the quality criteria, the following ratings were used: addressed (2), partly addressed (1), and not addressed/not reported (0). Total quality scores were calculated, with a maximum possible score of 54 points. Total scores were also converted into percentages and coded with a qualitative descriptor based on the following: high quality (≥75%), moderate quality (≥ 50%) and low quality (≤ 50%). The adapted quality assessment tool can be found in Appendix B.

3. Results

Searches of electronic databases initially yielded a total of 2954 papers, manual literature searches identified two further papers eligible for full-text review. Figure 1 shows the number of papers included for further screening at each step of the review process, rationales for study exclusion are also outlined.

3.1 Study Characteristics and Main Findings

Following a full text review of 235 papers, ten papers spanning 5885 participants were included in the final review; key study characteristics and results are outlined in Table 2. 225 studies were not included as they did not use quantitative measures of burnout and/or moral injury (161), they provided narrative or theoretical reviews only (44), they were letters of reply to published articles (8), they explored moral injury in military or non-occupational contexts (4), they were books (3), were duplicate papers (3), or were qualitative explorations (2).

Of note, Wang et al. (2021) provided further analysis using the same sample and outcome measures as previously published in Wang et al. (2020), but the study was retained as it provided additional findings relevant to the aims of this review. In contrast, Mantri et al. (2020) met all the inclusion criteria, but this study was not included for data extraction as the authors provided further analysis using the same sample in a subsequent publication (Mantri et al., 2021), and the first paper but did not provide any additional relevant findings. Andrukonis et al. (2020) and Andrukonis & Protopopova (2020) explored burnout and moral injury but did not report correlation coefficients for these two variables, the authors were contacted but the
information was not provided. The studies were retained as they reported additional findings relevant to the aims of this review.

All of the remaining studies utilised cross-sectional designs with convenience samples, with the exception of Andrukonis et al. (2020) which used a quasi-experimental methodology. All of the studies utilised self-report measures to collect data regarding the key variables and all but one used a single data collection time point. The research originated from the USA (7), China (1), El Salvador (1) and an international data set (1). Participants in the studies were from a variety of occupational contexts including healthcare services (5), educational institutions (2) and animal welfare personnel (2). Participants from healthcare worker populations included a wide range of occupational roles from the sector including doctors, nurses, pharmacists, housekeeping, chaplaincy, etc. Educational professionals included teachers, social workers, psychologists, counsellors, and nurses. Finally, animal welfare employees were recruited from various animal shelters and their job roles required various levels of euthanasia duties. The studies described data from 5885 participants, 5216 of whom were healthcare professionals. The mean sample size was 589. The studies included covered the period between 2015 and 2021.
Table 2: Characteristics and Main Findings of Included Studies

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Country</th>
<th>Population</th>
<th>Design</th>
<th>Mean Age (SD)</th>
<th>Sample Size (% males)</th>
<th>Burnout Measure</th>
<th>Moral Injury Measure</th>
<th>Correlation coefficient</th>
<th>Other Findings</th>
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<tbody>
<tr>
<td>Litam &amp; Balkin</td>
<td>2020</td>
<td>USA</td>
<td>Healthcare Professionals</td>
<td>CS</td>
<td>37.5 (12.39)</td>
<td>109 (24%)</td>
<td>ProQOL</td>
<td>MIES</td>
<td>0.41**</td>
<td>Physicians scored significantly higher than nurses for compassion satisfaction Welch’s t 2.86, p &lt; .01, d=.556 (95% CI [-.15, .96]) Nurses scored significantly higher than physicians for burnout Welch’s t 2.87, p &lt; .01, d=.62 (95% CI [0.19, 1.05]) Physicians scored significantly higher than nurses for moral injury, Welch’s t 4.36, p &lt; .01, d=.85 (95% CI [.43, 1.26]) However large confidence intervals noted for all 3 effects Multicollinearity observed between burnout and secondary traumatic stress (Variance Inflation Factor 4.20, low beta weight of - .04 in regression model). Burnout redundant in regression model and did not provide any significant additional contribution to variance.</td>
</tr>
<tr>
<td>Wang et al.</td>
<td>2020</td>
<td>China</td>
<td>Healthcare Professionals</td>
<td>CS</td>
<td>35.4 (8.1)</td>
<td>3009 (34.9%)</td>
<td>MBI-HSMP</td>
<td>MISS-HP</td>
<td></td>
<td>Nurses scored lower than physicians on burnout measures (statistical difference not reported). Individuals who experienced workplace violence scored significantly higher for symptoms of moral injury (β = 4.16, 95% CI = 3.21 5.10, p &lt; 0.001). Moral injury was also correlated with depression (r=.37**) and anxiety (r=.37**). Emotional exhaustion and depersonalisation correlated with depression (r=.62**, r=.59** respectively) and anxiety (r=.62**, r=.57** respectively)</td>
</tr>
<tr>
<td>Mantri, et al.</td>
<td>2021</td>
<td>USA</td>
<td>Healthcare Professionals</td>
<td>CS</td>
<td>35-44 (modal age range)</td>
<td>181 (63.5%)</td>
<td>MBI</td>
<td>MISS-HP</td>
<td>0.57****</td>
<td>Symptoms of moral injury were predicted with age &gt;45 (39.4 vs. 32.6; t = 3.41, p &lt; 0.001), fewer years of experience (r = -0.28, p &lt; 0.001), committing medical errors (41.2 vs. 32.8, t = 4.22, p &lt; 0.0001) lower religious commitment (r=0.25**), greater depression (r=0.35****), greater anxiety (r=0.37****) and higher burnout scores (r=0.57****). In the final regression model, burnout symptoms emerged as the strongest predictor of moral injury symptoms (β = 0.31, SE = 0.05, p &lt; 0.0001)</td>
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</table>
**Table 2: Characteristics and Main Findings of Included Studies**

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<thead>
<tr>
<th>Author</th>
<th>Year</th>
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<th>Population</th>
<th>Design</th>
<th>Mean Age (SD)</th>
<th>Sample Size (% males)</th>
<th>Burnout Measure</th>
<th>Moral Injury Measure</th>
<th>Correlation coefficient</th>
<th>Other Findings</th>
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<tr>
<td>Sugrue</td>
<td>2020</td>
<td>USA</td>
<td>Education Professionals</td>
<td>CS</td>
<td>42.6 (11.9)</td>
<td>218 (22.9)</td>
<td>CBI</td>
<td>MIES</td>
<td>TO-P 29**</td>
<td>Being a mental health professional ($B = 1.00, p &lt; .01$), and a higher percentage of students of colour in a school ($B = 2.26, p &lt; .0001$) were all positive predictors of higher scores on Transgressions-Other subscale of moral injury. A higher percentage of students of colour in the school was the only predictor of transgressions-self factor of moral injury ($B = 2.14, p &lt; .0001$). Women were more likely to score higher ($B = 0.45, p &lt; .05$) on betrayal subscale of moral injury and a higher percentage of students of colour predicted increased betrayal scores ($B = 1.26, p &lt; .01$).</td>
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<tr>
<td>Andrukonis, Hall &amp; Protopopova</td>
<td>2020</td>
<td>USA</td>
<td>Animal welfare employees</td>
<td>Quasi-Experimental</td>
<td>20-44 (modal age range)</td>
<td>41 (48.78%)</td>
<td>ProQOL</td>
<td>MIES</td>
<td>NR</td>
<td>No statistically significant difference in moral injury or burnout scores associated with occupational role</td>
</tr>
<tr>
<td>Andrukonis &amp; Protopopova</td>
<td>2020</td>
<td>USA</td>
<td>Animal welfare employees</td>
<td>CS</td>
<td>Not reported</td>
<td>153</td>
<td>ProQOL</td>
<td>MIES</td>
<td>NR</td>
<td>Moral injury scores appeared to differ by type of shelter but burnout did not. Euthanization duties predicted higher levels of moral injury than those who did not euthanize ($t(152) = –2.96, p &lt; .01$), not reported for burnout.</td>
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<tr>
<td>Currier et al.</td>
<td>2015</td>
<td>El Salvador</td>
<td>Education Professionals</td>
<td>CS</td>
<td>42.02 (13.12)</td>
<td>257 (31.4%)</td>
<td>SMBM</td>
<td>MIQ-T</td>
<td>PF .32**</td>
<td>Exposure to morally injurious events accounted for significant amounts of variance in PTSD symptoms and burnout, after controlling for lifetime violence exposure and demographic variables. Greater exposure to MIEs was more strongly related to burnout ($r =-0.33, p &lt; .01$) than to PTSD symptomology ($r =-0.19, p &lt; .01$). Exposure to MIEs had an indirect effect on burnout and PTSD through meaning made. Female gender ($r =-0.16, p &lt; .05$) and less lifetime exposure to violence ($r =-0.15, p &lt; .05$) was associated with lower burnout and PTSD scores via meaning making. Age, marital status, and location had no significant association with burnout.</td>
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*Note: TO, transgressions; W, transgressions-self; C, transgressions-other; B, betrayal; P, personal; W, work; C, colleagues; MIQ, moral injury questionnaire; MIQ-T, moral injury questionnaire - Transgressions subscale; SMBM, subjective meaning in burnout measure; ProQOL, professional quality of life scale; CBI, children’s behaviour inventory; MIES, moral injury experience scale; PF, personal meaning; CW, cosine weighted; EME, emotional meaning expression.*
### Table 2: Characteristics and Main Findings of Included Studies

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<th>Correlation coefficient</th>
<th>Other Findings</th>
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<tr>
<td>Dias et al. †</td>
<td>2021</td>
<td>USA</td>
<td>Healthcare Professionals</td>
<td>CS</td>
<td>40.6 (11.7)</td>
<td>86 (34.9%)</td>
<td>PFI</td>
<td>MISS-SF</td>
<td>.57**</td>
<td>Females scored significantly higher on burnout measures (1.54 + 0.84 vs. 1.13 + 0.82, p &lt; .05), and lower for professional fulfilment (2.06 + 0.87 vs. 2.58 + 0.81, p &lt; .01) and sleep quality (8.73 + 3.50 vs. 6.90 + 3.50, p &lt; .05). No difference was found in burnout scores between professional groups. Burnout positively correlated with sleep quality (r = 0.53, p &lt; .001), greater endorsement of symptoms of PTSD (r = 0.55, p &lt; .001) and symptoms of moral injury (r = -0.57, p &lt; .001), and poorer professional fulfilment (r = -0.70, p &lt; .001). Moral injury positively correlated with burnout (r=0.57, p &lt; .01) and PTSD symptoms (r=0.50, p &lt; .001). Higher age (r = -0.28, p &lt; .01) and greater professional fulfilment (r = -0.50, p &lt; .001) predicted lower moral injury scores.</td>
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<tr>
<td>Mantri, Song et al.</td>
<td>2021</td>
<td>Multi-site</td>
<td>Healthcare Professionals</td>
<td>CS</td>
<td>35-44 (modal age range)</td>
<td>Phase 1 - 450 (12.4%)</td>
<td>Phase 2 - 1381 (9.8%)</td>
<td>Total 1831 (10.21%)</td>
<td>aMBI</td>
<td>MISS-HP</td>
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Table 2: Characteristics and Main Findings of Included Studies

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<tr>
<td>Wang et al.</td>
<td>2021</td>
<td>China</td>
<td>Healthcare Professionals</td>
<td>CS</td>
<td>35.4 (8.1)</td>
<td>3009 (34.9%)</td>
<td>MBI-HSMP</td>
<td>EE .41**</td>
<td>MISS-HP</td>
<td>Moral injury scores were negatively correlated with human flourishing ($r = -0.50, p &lt; .01$) but positively correlated with depression ($r = 0.44, p &lt; .01$), anxiety ($r = 0.41, p &lt; .01$), and all dimensions of clinician burnout. Younger age (under 30), unmarried status, nursing professions, lower educational attainment, female gender (aOR 1.27 CI [1.05, 1.54] $p &lt; .01$), Buddhists/Taoists religious orientation (aOR 1.68 CI [1.09, 2.58] $p &lt; .05$), providing direct medical care to COVID 19 patients (aOR 1.28 CI [1.05, 1.56] $p &lt; .05$), having experienced workplace violence (aOR 1.44 CI [1.21, 1.71] $p &lt; .001$) obstetrics-gynaecology/paediatrics profession (aOR 1.37 CI [1.01, 1.87] $p &lt; .05$) were all associated with higher risk of moral injury.</td>
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Note: aMBI = Abbreviated Maslach Burnout Inventory, aOR = Adjusted Odds Ration, B-C = Correlation between Betrayal Subscale of Moral Injury Events Scale and Client Burnout Subscale of Copenhagen Burnout Inventory, B-P = Correlation between Betrayal Subscale of Moral Injury Events Scale and Work Burnout Subscale of Copenhagen Burnout Inventory, B = Correlation between Betrayal Subscale of Moral Injury Events Scale and Personal Burnout Subscale of Copenhagen Burnout Inventory, B-W = Correlation between Betrayal Subscale of Moral Injury Events Scale and Work Burnout Subscale of Copenhagen Burnout Inventory, CBI = Copenhagen Burnout Inventory (ref), CW – Cognitive Weariness Subscale of Shiro-m-Melamed Burnout Measure, CS = Cross-Sectional, CBI = Copenhagen Burnout Inventory (ref), CW – Cognitive Weariness Subscale of Shirom-Melamed Burnout Measure, MBI-HSMP = Maslach Burnout Inventory-Human Services Survey for Medical Personnel, MIES = Moral Injury Events Scale; MISS-HP = Moral Injury Symptom scale – Healthcare Professionals, MISS-SF = Moral Injury Symptom Scale – Short Form, MIQ-T = Moral Injury Questionnaire – Teachers, NR = Not Reported, PF = Physical Fatigue Subscale of Shirom-Melamed Burnout Measure, PFI = Professional Fulfilment Index, ProQol = Professional Quality of Life Scale, TO-C = Correlation between Transgression-Other Subscale of Moral Injury Events scale and Client Burnout Subscale of Copenhagen Burnout Inventory, TO-W = Correlation between Transgression-Other Subscale of Moral Injury Events scale and Work Burnout Subscale of Copenhagen Burnout Inventory, TS-C = Correlation between Transgression-Self Subscale of Moral Injury Events Scale and Client Burnout Subscale of Copenhagen Burnout Inventory, TS-P = Correlation between Transgression-Self Subscale of Moral Injury Events scale and Personal Burnout Subscale of Copenhagen Burnout Inventory, TS-W = Correlation between Transgression-Self Subscale of Moral Injury Events scale and Work Burnout Subscale of Copenhagen Burnout Inventory, RPA = Reduced Personal Accomplishment Subscale of Maslach Burnout Inventory, SMBM = Shirom-Melamed Burnout Measure.

* Correlation significant at $p < .05$ ** Correlation significant at $p < .01$ *** Correlation significant at $p < .001$ **** Correlation significant at $p < .0001$

† Abstract/conference poster only
**Tools and Conceptualisations**

There was considerable heterogeneity among both the tools used to measure burnout and the conceptual definitions utilised to inform underlying factor structures. Four studies used variations of the Maslach Burnout Inventory (MBI): Mantri et al. (2020) and Mantri et al. (2021) used the full scale form, Wang et al. (2020) used Maslach Burnout Inventory-Human Services Survey for Medical Personnel (Maslach, 1996), Mantri, Song et al. (2021) used the abbreviated-MBI. The MBI assumes three distinct experiences which makeup burnout: emotional exhaustion, reduced personal accomplishment, and depersonalisation.

Two studies (Andrukonis et al., 2020; Andrukonis & Hall, 2020) used the Professional Quality of Life Scale (ProQOL; Stamm, 2009) burnout subscale which provides a uni-dimensional overall burnout score. Sugrue (2020) used the Copenhagen Burnout Inventory which is comprised of three discrete sub-scales measuring core experiences of fatigue and exhaustion across different domains: personal burnout, work-related burnout and client-related burnout. Currier et al. (2015) used the Shirom-Melamed Burnout Measure (SMBM; Shirom & Melamed, 2006) which draws on Conservation of Resources Theory (Hobfoll, Shirom & Golembiewski, 2000) to suggest that emotional exhaustion, physical fatigue and cognitive weariness are the key burnout characteristics. Lastly, one study (Dias et al., 2021) employed the Stanford Professional Fulfilment Index (PFI; Trockel et al., 2018) which measures work exhaustion and interpersonal disengagement as core constructs of burnout. Exhaustion was a consistent feature amongst all the burnout tools utilised in the studies, therefore there appears to be an apparent agreement that exhaustion is a core characteristic of burnout. However, there was little consensus on additional aspects of burnout experiences, or meaningful thresholds to reliably identify those experiencing burnout. Significant variation in the studies suggests there are multiple approaches to defining and measuring burnout in the literature. The lack of conceptual and measurement standard limits the wider conclusions that can be drawn about burnout phenomena and related concepts.

Tools used to measure moral injury amongst the included studies fell into two broad categories; either those measuring levels of exposure to potentially morally injurious events or quantifying hypothesised symptoms of a moral injury. Four studies (Sugrue, 2020; Andrukonis, Hall & Protopopova, 2020; Andrukonis & Protopopova, 2020; Litam & Balkin, 2020) used the Moral Injury Events Scale (MIES) (Nash, 2013) with adapted wording. The MIES uses a 3-factor structure, consistent with Shay’s (2014) definition of potentially morally injurious events, to measure exposure to a) perceived moral transgressions committed by oneself b) perceived moral transgressions committed by another and c) perceived betrayals. One study (Currier et al., 2015) adapted the Moral Injury Questionnaire – Military Version (MIQ-M) (Currier, Holland et al., 2015) to incorporate exposure to stressors relevant to teaching professions (Moral Injury Questionnaire – Teacher Version; MIQ-T) such as specific acts of violence and mistreatment of students. The MIQ-T assessed potential causes and effects of moral injury, simultaneously measuring exposure to potentially morally injurious events and possible symptoms of moral injury.

The remaining four studies used variations of the Moral Injury Symptoms Scale (MISS; Koenig et al., 2018) to capture core symptoms experienced as a result of exposure to potentially morally injurious events. Three studies (Wang et al., 2020; Mantri et al., 2021, Mantri, Song et al. 2021) used the population-specific Moral Injury Symptoms scale- Health Professionals (MISS-HP) (Mantri et al., 2020) which is based on the Moral Injury Scale Short-Form Military Version (MISS-M-SF) (Koenig et al., 2018). The MISS-HP assesses ten proposed symptom clusters of moral injury including shame, guilt, spiritual distress, and loss of meaning. The fourth study (Dias et al., 2021) used the MISS-M-SF but modified the wording so it was applicable to healthcare settings. Whilst almost all studies used either population specific tools or modified wording of existing tools; the development of further validated tools for a wider range of civilian contexts may help improve the specificity of findings.

It is important to note that exposure to potentially morally injurious events does not necessarily equate to a moral injury per se. Therefore the literature included in this review appears to be measuring two distinct
constructs related to causes or effects of moral injury which should not be conflated. The use of exposure as a proxy of moral injury is questionable and limits what conclusions can be drawn about the consequences of experiencing moral injury, results should be interpreted with this in mind. However, findings included in this review did not appear to differ significantly based on the measure used.

It appears that there is greater disagreement in defining burnout than in defining moral injury, however moral injury is a comparatively new term and the evidence base is in its infancy. As construct validation continues, understandings of moral injury may evolve beyond current definitions and debate may emerge in the literature. Further development of psychometric tools will allow more reliable and valid conclusions to be drawn about both constructs.

**Socio-demographic Variables**

The current evidence found the role of socio-demographic characteristics in the development of burnout was inconsistent. One study (Mantri et al., 2021) found that being over aged 55 was positively correlated with higher emotional exhaustion, higher levels of depersonalisation and a decreased sense of personal accomplishment. Currier et al. (2015), however, found that age was not significantly associated with burnout. Two studies (Dias et al., 2021; Sugrue, 2020) found that female gender was correlated with higher levels of burnout, after controlling for occupational role, whereas Currier et al. (2015) found that women experienced fewer symptoms of burnout. However, highly-experienced, middle aged women were over-represented in the sample included in Currier et al. (2015) suggesting a sample bias which may partly explain these equivocal findings.

The evidence for the role of socio-demographic factors in moral injury appeared more consistent. Four studies found that younger participants were at higher risk of moral injury (Mantri et al., 2021; Mantri, Song et al., 2021; Wang et al., 2021; Dias et al., 2021). Three studies found that participants who were not currently married were at greater risk of moral injury (Mantri et al., 2021; Mantri, Song et al., 2021; Wang et al., 2021). Two studies identified women as scoring higher for moral injury (Sugrue, 2020; Wang et al., 2021). Two studies identified lower religiosity or less religious commitment as being predictive of moral injury scores (Mantri et al., 2021; Mantri, Song et al., 2021). Finally, one study identified individuals with lower educational attainment were at higher risk of moral injury (Wang et al., 2021).

The evidence in this review does not appear to support a consistent role for particular socio-demographic factors for individuals experiencing burnout. However, there is some evidence to suggest that age, gender, religiosity and marital status are particular risk factors relevant to moral injury. Those at risk of burnout, therefore, appear to fit a different socio-demographic profile to those at risk of moral injury.

**Occupational Role and Duties**

Similarly, inconsistent evidence was found for the relationship between burnout and occupational role. Studies which included a higher percentage of nurses in their samples found that nurses were significantly more burnt out than other professional groups (Litam & Balkin, 2020; Mantri, Song et al. 2021). In contrast, studies with a lower percentage of nurses found the inverse to be true, observing that nurses were less likely to be experiencing burnout compared to physicians (Mantri et al., 2021; Wang et al., 2020). As such, non-representative sampling methods may have biased estimates. A further two studies (Andrukonis et al., 2020; Dias et al. 2021) found no significant difference in burnout scores when considering occupational role, however Andrukonis et al (2020) was likely underpowered so these findings are of limited utility when extrapolating to larger populations.
Two studies identified nurses as being the most at-risk group for moral injury (Mantri et al., 2021; Wang et al., 2021) whereas Litam & Balkin (2020) found that physicians scored significantly higher for moral injury. Sugrue (2020) identified that mental health professionals were more likely to experience moral injury relating to transgressions committed by others than other educational professionals and Currier et al. (2015) suggested that people in positions of seniority and power were less prone to feelings of betrayed by others. Two studies found that exposure to workplace violence was a risk factor for moral injury (Currier et al., 2015; Wang et al., 2021) whilst two studies found that having a direct caring role for patients with COVID increased moral injury risk (Mantri et al., 2021; Wang et al. 2021). Interestingly, whilst Mantri et al. (2021) found that direct COVID care predicted increased moral injury, they found it also predicted significantly lower emotional exhaustion and non-significant trends towards increased personal accomplishment, which is suggestive of an unexpected inverse relationship between the two constructs in this context. Andrukonis & Protopopova (2020) found that animal welfare employees who euthanized animals regularly as part of their occupational duties were more likely to be experiencing moral injury.

There did not appear to be any conclusive evidence from the studies included in this review for the relevance of occupational role to the development of burnout or moral injury. Exposure to workplace violence and providing direct care to COVID patients did predict moral injury, but the latter also predicted lower burnout. Therefore, it seems possible to maintain engagement with occupational duties whilst still being injured by them. Further high quality empirical research is required to explore these relationships further.

**Functional Correlates**

Single studies identified that burnout scores were correlated with PTSD symptoms, poorer sleep quality and lower professional fulfilment (Dias et al., 2021) whilst moral injury correlated with depression and anxiety (Wang et al., 2020).

Two studies established a relationship between moral injury and PTSD symptoms however both studies observed stronger effect sizes for the relationship between moral injury and burnout (Currier et al., 2015; Dias et al., 2021). In contrast, Litam & Balkin (2020) found that burnout did not account for any significant additional variance in moral injury beyond secondary traumatic stress scores. However, unlike the others, this study utilised the Professional Quality of Life Scale (Stamm, 2009) which proposes a three-factor structure of compassion satisfaction, burnout, and secondary traumatic stress. This factor structure has not been empirically supported by confirmatory factor analyses (Geoffrion et al., 2019) with the burnout and secondary traumatic scales in particular demonstrating inadequate measurement properties (Heritage, Rees & Hegney, 2018). Therefore these findings may represent redundancies in the scale rather than significant overlap in the constructs themselves.

It appears that measures of burnout and moral injury demonstrate convergent validity with related concepts as expected. However, the strong effect sizes between moral injury and burnout may be suggestive of poorer discriminant validity of scales in distinguishing between moral injury and burnout, partially due to imprecise definitions and potential overlap in the constructs.

**Relationship between Burnout and Moral Injury**

All studies (with the exception of the related papers by Andrukonis et al., 2020, and Andrukonis & Protopopova, 2020, who did not report correlation coefficients) found that burnout was significantly predictive of moral injury. All studies but one (Mantri, Song et al., 2021) found that burnout was positively correlated with moral injury, suggesting that people who are experiencing higher levels of burnout are also likely to be
experiencing more symptoms of moral injury. Indeed, Mantri et al. (2021) found that burnout was the strongest single predictor of moral injury out of all factors studied. Analyses of some individual subscale only produced small effects, with negative correlations ranging between -.28 and -.36 and positive correlations ranging between .13 and .57, but all studies reported at least one moderate to large effect size which suggests that burnout and moral injury are strongly related concepts. Observed effect sizes did not appear to differ according to whether symptoms of moral injury or exposure to morally injurious events were being measured.

Despite this evidence, two studies reported reverse patterns in which those professions scoring at higher risk for burnout were conversely at lower risk for moral injury (Litam & Balkin, 2020; Mantri, Song et al. 2021). Furthermore, the only study which collected data at two time points (Mantri, Song et al., 2021) found that symptoms of moral injury increased between two time points whereas burnout scores remained relatively stable and, contrary to expectation, lower scores on emotional exhaustion and depersonalisation subscales were associated with higher moral injury scores.

However, Litam and Balkin (2020) noted large confidence interval for their effects, meaning their findings have to be interpreted with greater uncertainty. Furthermore, the measures used in both of these studies have been criticised for their psychometric quality; the ProQOL burnout subscale has been demonstrated to have inadequate measurement properties (Heritage, Rees & Hegney, 2018) whereas the a-MBI has been noted for its tendency to over-estimate the presence of burnout and generate false positives (Lim et al., 2020). Mantri, Song et al. (2021) did not report internal consistency estimates so the reliability of the scale remains unclear in this instance, however other studies have reported Cronbach’s alphas below the acceptable limit (Zuraida and Zainal, 2015). As such, the possibility that measurement unreliability biased these results cannot be excluded.

Whilst not a repeated measures design, Mantri, Song et al. (2021) found that both moral injury scores and levels of functional impairment were higher at a second data collection point, whereas burnout scores were comparable in both phases. These findings suggest that the two constructs are distinct with moral injury accounting for additional functional impairment beyond what is currently explained by burnout. By their nature cross-sectional methodologies preclude the establishment of any temporal relationships between variables so it is possible that there is a time-lag response between the two constructs that is not being adequately captured by methodological constraints.

Reduced personal accomplishment correlated with higher moral injury scores (Wang et al., 2020; Wang et al., 2021) whilst a greater sense of personal accomplishment was associated with lower moral injury scores (Mantri, Song et al., 2021). Currier et al. (2015) found that exposure to morally injurious events had an indirect effect on burnout through meaning made. These findings are theoretically consistent with Litz et al. (2009) definition. The ability to contextualise one’s work within a framework of personal meaning and to positively appraise the worth of one’s work may protect against moral injury. These findings are further indicative of a possible temporal relationship whereby stressors which violate moral beliefs cultivate a diminished sense of meaning in occupational activity, thus damaging an individual’s psychological relationship with work resulting in a state of burnout.

The evidence included in this review suggests that, under current conceptualisations and definitions, it appears that burnout and moral injury are strongly related but distinct constructs. Efforts to explore the temporal relationships between these two constructs and the protective role of meaning may be beneficial in advancing the existing knowledge base.
Table 3: Quality Assessment of Included Studies

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† Items were reverse scored

*Dias et al. (2021) could not be included for quality assessment as full paper manuscript was not available.*
3.4 Assessment of Methodological Quality

Ratings of study quality as assessed using the quality appraisal checklist can be found in Table 3. The table provides an overview of areas of relative methodological strengths and weaknesses between the studies. Research findings should be interpreted in consideration of the overall quality assessment. There appeared to be a trend whereby larger effect sizes were noted in higher quality studies which suggests that lower quality studies were not contributing to an over-estimation of effects.

Quality Assessment Findings

Dias et al. (2021) could not be included in the quality assessment as only the abstract was available. The authors were contacted and confirmed the full paper manuscript was not yet complete at time of writing.

All of the studies utilised convenience sampling where participants were self-selecting. It is possible that only individuals experiencing particularly high or particularly low levels of burnout and/or moral injury chose to take part. Where explicitly stated, the samples represented only a small percentage of eligible participants (Sugrue et al., 2020; Wang et al., 2020) but the size of the potential participant pool could not be determined in the majority of the studies. Only four studies provided detailed inclusion/exclusion criteria (Mantri et al., 2021; Mantri, Song et al., 2021; Wang et al., 2020; Wang et al., 2021). Of the three studies which compared completers and non-completers, two found some significant differences in demographic and professional characteristics (Mantri et al. 2021; Mantri, Song et al. 2021). As such, it is likely that self-selection and non-representativeness of participants has introduced a high risk of sampling bias amongst the studies included here, results should be interpreted with this in mind.

In general, the studies included provided adequate justifications for their selection of measures. Only one study did not report internal any reliability estimates for their chosen measures (Mantri, Song et al. 2021). Where reported, Cronbach’s alpha statistics were above the threshold considered adequate (i.e. >.70) and ranged between .70 and .92, as such the measures used in the included studies had acceptable to excellent internal reliability. No one measure of burnout or moral injury was used consistently, however the measures selected had been previously trialled and validated with the exception of the MIQ-T (Currier et al., 2015). Effort was taken to select population specific measures where available, or adapt wording of existing tools to maximise specificity.

Five of the studies reported the statistical methods employed to manage missing data (Currier et al., 2015; Mantri et al., 2021; Mantri, Song et al., 2021; Wang et al., 2020; Wang et al., 2021). All the studies accounted for potentially confounding variables and controlled for these in subsequent statistical data analysis, however one study controlled for exposure to non-occupational traumatic events (Currier et al, 2015). Sample sizes appeared generally adequate, however, only one study reported a-priori power calculations to justify their sample size (Litam & Balkin, 2020). Andrukonis et al. (2020) included 41 subjects across three groups and explored a number of variables; therefore it is likely this study was not adequately powered. Whilst some studies reported steps taken to minimise biased estimates and preserve statistical power, the lack of sample size justifications means the risk of statistical errors cannot be ruled out for the majority of included studies.

Across the studies as a whole, the evidence included was of moderate-to-high quality. Areas of general methodological merit included use of validated measures, adequate internal consistency of scales used, and control of confounding variables. Domains of methodological weakness included inadequate justifications for sample size, non-representativeness of eligible populations, controlling for exposure to non-occupational trauma, and single data collection points.

4. Discussion
4.1 Main findings

To the author’s knowledge, this is the first systematic review of the literature measuring both burnout and moral injury. The review, therefore, represents a first step in examining the empirical overlap between the two constructs whilst considering the strength and quality of the available evidence. The evidence included was of moderate-to-high quality with all studies that reported correlations finding at least one moderate-to-high effect size between subscales. This suggests that burnout and moral injury are empirically related concepts. Interestingly, personal accomplishment domains of burnout were inversely linked with moral injury in that greater personal accomplishment predicted lower moral injury and vice versa. There was also evidence to suggest that exposure to morally injurious events had an indirect effect on burnout through meaning made. This is indicative of a potential temporal relationship whereby morally injurious events may diminish meaning derived from occupational activity, thus damaging an individual’s psychological relationship with work and resulting in a state of burnout. As such, moral injury may represent a key pathway to burnout, or alternatively it is possible the two constructs are mutually constitutive.

Whilst the empirical relationship is apparent, what is not clear is the degree to which the two constructs are phenomenologically related. As demonstrated, the tools used to measure both constructs varied considerably; the validity of the current definitions of the key constructs remain ambiguous and there is little consensus on their measurement. There is, therefore, insufficient evidence to conclude that the correlations between burnout and moral injury are indicative of shared characteristics and causal mechanisms rather than a reflection of imprecise theoretical definitions and poor discriminant validity of existing scales in distinguishing between the two constructs.

As such, the review also considered whether additional findings, such as predictor variables and relationships with other existing constructs, could add to our understanding of the similarities and differences between moral injury and burnout. Correlations were demonstrated between moral injury, burnout, and constructs like PTSD, however the key variables demonstrated stronger relationships with each other. However, moral injury appeared to account for additional functional impairment beyond that currently explained by burnout. Therefore, moral injury appears to relate to a distinct phenomenon, contributing to additional and significant occupational distress, that is not adequately captured by current definitions of burnout.

There was also preliminary evidence to suggest that socio-demographic characteristics, such as age, marital status, gender, and religious commitment, predicted moral injury risk, but the evidence did not support a consistent role in socio-demographic factors for individuals experiencing burnout. This suggests that the profiles of those at risk may differ between construct which has the potential to inform primary prevention interventions. There was no consistent evidence to support the relevance of specific job roles in predicting either construct. However, exposure to workplace violence and providing direct care to COVID patients were found to predict moral injury. Interestingly, an unexpected inverse relationship was observed whereby providing direct COVID care predicted higher moral injury but lower burnout scores. This is further evidence to support the discrete nature of moral injury whilst also pointing to distinct mechanisms of injury. For interventions to be effective, they must be tailored to the appropriate mechanisms or drivers of distress. Therefore, it is unlikely that addressing moral injury with burnout reduction strategies will be efficacious.

It appears then, that the relationship between moral injury and burnout is complex. Whilst the two constructs share an empirical relationship and may be temporally linked, the evidence collected from this review suggests that moral injury is a fundamentally distinct form of occupational distress, which describes an additional, but discrete, psychological injury to burnout. Narratives surrounding occupational distress may benefit from a shift towards a multi-construct definition of psychological injury which requires a multi-level intervention approach. Continuing to mis-conceptualise experiences of moral injury is likely to obstruct the identification and treatment of occupational distress and negatively impact long-term outcomes at the individual and organisational level. The conclusions that can be drawn from this review are limited given paucity of empirical literature and the methodological constraints of the evidence currently available, however it is hoped these findings can provoke further relevant theoretical and empirical research.
4.2 Practical Implications

Moral injury is in an emerging construct and the evidence base is in its infancy, as is the observation of any potential overlap with burnout. Both topics have been hampered by lack of conceptual clarity around definitions, which has limited research and development in these areas. The development of theoretically, empirically and contextually valid psychometric tools with clinically meaningful thresholds will be essential to further advance the evidence base.

Further high-quality research would be valuable to establish unique characteristics associated with each construct as well as any additional contribution moral injury provides to symptoms of occupational distress and functional impairment beyond that explained by current conceptualisations of burnout. Future research would also benefit from prospective and longitudinal designs to aid the identification of any temporal relationships and the thresholds at which the two constructs become conflated or divergent.

Due to the considerable overlap and apparent predictive relationship between the two constructs, routine screening for moral injury should be considered where burnout is suspected. It remains to be seen whether interventions efficacious for burnout could be of utility for moral injury however, the development of appropriate interventions for moral injury more generally, and specifically in occupational contexts is emerging (Nieuwsma et al., 2015; Farnsworth et al., 2017). Exploration of variables which facilitate moral resilience and moral repair is needed to tailor interventions which operate at individual, organisational and systemic levels.

4.3 Strengths and Limitations

To the authors’ knowledge, this is the first review to directly compare the constructs of moral injury and burnout. The significant heterogeneity in population, country of origin, and definition and measurement of key constructs indicated narrative synthesis and precluded meta-analysis of the available data. Therefore, consideration should be given to the significant heterogeneity when interpreting the findings of this review.

A significant limitation of the studies included is with regards to outcome measures. As yet there is no gold-standard outcome measure for moral injury although efforts continue in this regard. Indeed, there is no universally agreed upon definition of potentially morally injurious events or established clinical thresholds of moral injury. Similar issues apply to the burnout research as definitions and key components of burnout vary significantly between studies. Indeed, a number of differential explanations have been posited so the nosological status of burnout remains ambiguous. There is some evidence to suggest discrimination thresholds on individual measures such as the MBI (Schaufeli et al., 2007); however the same limitations regarding the definition of burnout apply.

On a related note, all the studies, with the exception of Andrukonis et al. (2020), relied solely on self-report measures. Andrukonis et al. (2020) included physiological measures such as cortisol levels and heart rate variability in combination with psychometric measures. Incorporating such biological markers of stress alongside measures of functional impairment from additional sources may be valuable in reducing responding bias and bolstering findings.

Almost all of the studies included in this review employed cross-sectional designs and, with the exception of Mantri et al. (2021), at single data collection points. Therefore, any causality or temporal relationships between burnout and moral injury cannot be established. Prospective, longitudinal research with multiple data collection points would be useful in mapping out the patterns of relationship between these variables.

It appears that research exploring moral injury and burnout is currently limited to a narrow scope of professions. As such, only three occupations were included in this review: healthcare employees, educational professionals, and animal welfare personnel. The paucity of literature exploring moral injury and burnout across varied occupational contexts has limited the evaluation of occupational and organisational role as
potential factors discriminating between moral injury and burnout. Further research which includes a broad range of occupational contexts is required before firm conclusions can be drawn with regards to the role of occupation in the development of moral injury and burnout.

The current review excluded qualitative explorations of burnout and moral injury, but a number of qualitative design studies (Hancock et al., 2020; Murray et al., 2018) do also explore these topics. Indeed, qualitative designs may be less hampered by the definition and measurement issues noted in this review, therefore, future reviews should consider employing a mixed method approach. Qualitative research may be valuable in augmenting understandings of workplace wellbeing and identifying core characteristics of constructs. Such qualitative explorations could be meta-synthesised and presented to international experts using a Delphi study paradigm to form the foundation for definitional consensus. Measure development and validation could then commence based on this definition. Qualitative findings may also be useful in indentifying any factors which facilitate moral resilience and moral repair post moral injury.

Lastly, data was collected from a number of countries. As morality is a socially-informed construct, it is unclear how cultural differences, particularly values and expectations, may affect understandings of moral injury. Therefore, findings may not be generalisable beyond the local context.

4.4 Conclusion

This review has highlighted the paucity of empirical evidence currently available and has highlighted a number of gaps in the literature. At present, there is some evidence to suggest that burnout and moral injury are moderate to strongly positively correlated, but distinct, concepts. Preliminary evidence is indicative of a possible temporal relationship between these constructs. Exploratory evidence demonstrated trends in socio-demographic characteristics related to risk of moral injury. However, issues with construct validity and measurement have hampered advancement of the evidence base. Further prospective and longitudinal research is required to strengthen the current evidence.
References


The COVID-19 pandemic significantly disrupted research activity during the planning and development stages of this thesis. The indefinite hold on recruitment from clinical samples and/or staff groups via NHS services meant an initial study could not be continued. A second research study evaluating a newly-developed occupational wellbeing tool for social care staff was then designed and planned; however the research supervisor and the associated well-being tool subsequently left the University of Edinburgh. Due to the limited remaining timeframe, to safeguard against any further disruption to research activity, and to preserve some of the background research conducted, a secondary analysis on an existing data set relating to occupational wellbeing emerged as the most viable option.

The original study in which the data was collected explored the role of personal resources in the development of burnout. Coping style, self-compassion, cognitive fusion and valued living were classed as personal resources. Multiple simple moderation models were conducted to explore whether any of these personal resources independently buffered the relationship between job demands and exhaustion dimensions of burnout. A multiple mediation model was used to explore whether job resources had an indirect effect on the disengagement dimension of burnout through these personal resources. Further details of the models tested and analysis used in the original research paper can be found in Appendix C.

The current study developed a theoretically driven hypothetical model to suggest that a) job demands have a direct effect on burnout b) job demands exert an indirect effect on burnout via avoidant coping and engaged living and c) cognitive fusion and self compassion will moderate both direct and indirect pathways between job demands and burnout. Conditional process analysis was used to integrate mediation and moderation hypotheses to simultaneously test direct and indirect statistical relationships and the parameters at which these relationships are significant. As such, the current study addressed the existing data set with both novel hypotheses and additional statistical analysis techniques.
II: Empirical Study

Exploring the role of self-compassion, psychological flexibility, and coping style as predictors of burnout in mental health nurses

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Prepared for submission to the \textit{Journal of Clinical Nursing}

(Author guidelines can be found in Appendix A)

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Word Count (excluding tables, figures and references): 7416
Abstract

**Aims and Objectives:** The study investigated the relative strength of psychological flexibility, self-compassion, avoidant coping, and engaged living as predictors of burnout, and further modelled these statistical relationships as mediators and moderators of the relationship between job demands and burnout.

**Background:** Burnout is a response to chronic occupational-related stress and is characterised by feelings of exhaustion, cynicism and reduced professional efficacy. It is associated with a number of negative outcomes for individuals and organisations. Despite garnering much attention, burnout remains a complex phenomenon. Further evidence is required to elucidate causal mechanisms between job demands and burnout, to inform effective interventions for burnout.

**Design:** A cross-sectional design was utilised to recruit registered mental health nurses (n=214) from across Scotland. Participants completed an online psychometric battery which included the Self-Compassion Scale, Cognitive Fusion Questionnaire, Engaged Living Scale, Brief COPE Inventory, Mental Health Professionals Stress Scale, and the Oldenburg Burnout Inventory, in addition to demographic information. Regression analyses and conditional process analyses were used to explore hypothesised relationships between variables.

**Results:** Job demands and engaged living emerged as the only significant predictors of burnout. Conditional process analysis demonstrated that avoidant coping and less engaged living mediated the relationship between job demands and burnout. Self-compassion moderated the effect of job demands on avoidant coping, and cognitive fusion moderated the direct effect between job demands and burnout. However, neither self-compassion or cognitive fusion moderated the overall indirect effect.

**Conclusions:** Third wave interventions targeted at reducing cognitive fusion, facilitating adaptive coping and an engaged, value-driven response-style, may be effective in reducing burnout. Such interventions may benefit from a self-compassion component. Clinical implications and future research directions are discussed.

**Relevance to Clinical Practice:** Findings identify specific treatment targets and offer preliminary empirical support for the use of third wave interventions for mental health nurses experiencing burnout.

**Conflicts of Interest:** The authors declare no conflicts of interest.

**Funding:** The study did not receive any funding.

Keywords: burnout, self compassion, psychological flexibility, cognitive fusion, engaged living, avoidant coping, job demands
1. Introduction

Burnout can be described as a psychological syndrome primarily driven by chronic work-related stress. Although definitions vary, the predominant conceptualisation of burnout describes three dimensions (Maslach & Jackson, 1981; Maslach, Schaufeli, & Leiter, 2001). First is a psychological disconnection from one’s occupation with implications for identity and motivation (depersonalization/cynicism). The second dimension relates to feelings of being emotionally and physically depleted (emotional exhaustion). Lastly, the third dimension encapsulates feelings of inefficacy and reduced productivity (low personal accomplishment).

Although certainly not unique to healthcare providers, the physical, psychological and emotional demands of providing care means burnout is a common experience amongst health professionals. Demands on healthcare services continue to grow whilst funding remains limited, therefore healthcare professionals are operating under increasing levels of pressure often to the detriment of their occupational wellbeing. The impact of burnout can be significant, not only for the individual, but also for organizations and individuals who use services. High absenteeism and increased staff turnover (Ybema, Smulders & Bongers, 2010), low productivity (Dewa et al., 2014), secondary traumatic stress (Ogińska-Bulik & Michalska, 2020) and risk of occupational error (Williams et al., 2007) have all been associated with burnout. Therefore, the consequences of burnout can be serious and widespread with significant organisational and personal costs.

Models of Burnout

One development framework of burnout is the job demands-resources model (JD-R) (Bakker & Demerouti, 2007; Demerouti et al., 2001). The JD-R proposes two main components of working conditions integral to burnout: job demands and available resources. Job demands can be considered as the various aspects of the job which are negatively appraised and that necessitate prolonged psychological and/or physical effort with corresponding psychological and/or physical costs. When costs are high, it can lead to a health impairment process resulting in high levels of burnout and negative outcomes. Job resources refer to positively-valued aspects of the job that can offset the costs of job demands, cultivating development and personal growth and facilitating goal achievement (Demerouti & Bakker, 2011). Job resources can stimulate a motivational process which leads to higher work engagement and positive outcomes. See Figure 1.

Figure 1. The job demands-resources model (reproduced from Schaufeli, 2017, p. 122)

The JD-R model proposes that burnout occurs when individuals experience continual job demands and are inadequately resourced to counteract the impact of said demands and, therefore, have to draw on personal resources instead. A chronic imbalance between job demands and resources will prevent any opportunity for
the replenishment of resources and may lead to exhaustion. Over time, this can prompt disengagement as individuals try to conserve valued resources and prevent further loss (Fila, Purl & Griffeth, 2017; Hobfall, Shirom & Golembiewski, 2000).

The JD-R model represents a broad and flexible theoretical framework for burnout; and meta-analyses have revealed that the JD-R model is empirically well supported (Lesener, Gusy & Wolter, 2019).

The JD-R model has been subsequently augmented by the addition of values-based processes. Leiter’s process model (Leiter, 2008) combines the imbalance of demands and resources with the conflicts arising from mismatched individual and organisational values. Leiter suggests that perceived incongruence of personal and organisational values can cause ongoing strain which depletes energy and increases exhaustion. Such incongruence can also foster cynicism as individuals become de-motivated and disengaged from non-valued occupational activity. Finally, value incongruence undermines an individual’s sense of efficacy required to achieve objectives, resulting in low occupational accomplishment. Through these processes, lack of congruence between the values of an organisation and those of its employees can damage the relationship between employees and their employer (Leiter, 2008). This process model has been supported as further empirical studies have demonstrated that value incongruence, in combination with chronic job demands, is related to work disengagement and burnout in both cross-sectional (Leiter, Frank & Matheson, 2009; McFadden, Mallett & Leiter, 2018; Sortheix et al., 2013; Veage et al., 2014) and longitudinal methodologies (Langballe et al., 2011).

More recently, conceptual understandings and treatment targets for occupational burnout have been derived from third-wave therapies such as Acceptance and Commitment Therapy (ACT) (Hayes, 1999) and Compassion Focused Therapy (Gilbert & Procter, 2006). Such approaches are trans-diagnostic, non-pathological models of wellbeing with specific core processes.

**Psychological Flexibility**

Acceptance and Commitment Therapy (ACT) suggests that psychological distress arises when entanglement with cognitions (cognitive fusion) in combination with experiential avoidance results in a state of psychological inflexibility. This inflexibility also disrupts goal attainment and prevents an individual from living meaningfully in accordance with their own values. Psychological flexibility can be defined as “the ability to contact the present moment more fully as a conscious human being, and based on what the situation affords, to change or persist in behaviour in order to serve valued ends” (Luoma, Hayes, & Walser, 2007, p. 17). Meaning and values, defined as organising principles for action, (Hayes, 1999) are core principles in informing therapeutic change.

ACT-based interventions aim to facilitate an individual’s capacity for psychological flexibility in the following ways: by reducing entanglement with thoughts and emotions (cognitive defusion); allowing experience of difficult or unwanted thoughts and feeling without modification (acceptance); developing a platform of awareness of the present moment (awareness); becoming a witness to thoughts, feelings and actions at any moment (observing self); connecting to a deeper sense of purpose, direction and valued behaviour (values); and setting goals and behaviours in line with these values in the service of a rich and meaningful life (committed action). These six sub-processes are referred to as the hexaflex and they represent overlapping and interdependent processes that combine to produce psychological flexibility or inflexibility. These sub-processes can be organised as either relating to commitment and behaviour change or to mindfulness and acceptance as seen in Figure 2.
Specifically, inverse associations have been found between psychological flexibility and burnout scores (Ortiz-Fune, Kanter & Arias, 2020; Ruiz & Odriozola-Gonzalez, 2017). Randomised controlled trials have demonstrated that increased psychological flexibility is the mechanism of change whereby ACT interventions improve psychological distress related to workplace stress (Bond & Bunce, 2000; Flaxman & Bond, 2010; Stockton et al., 2019).

The ACT model has gained empirical support; psychological inflexibility has been found to predict many common forms of psychopathology (Hayes et al., 2006; Stockton et al., 2019) and meta-analysis has demonstrated that ACT interventions are efficacious for a broad range of presentations (Gloster et al., 2020). Although not superior to cognitive behavioural therapy, ACT appears to be a viable alternative intervention for psychological distress. Further high quality, methodologically rigorous studies would be valuable in evaluating the relationships between aspects of the psychological flexibility model and occupational stress and burnout. The future use of conceptually relevant and valid outcome measures would facilitate the identification of potential intervention targets in the context of burnout experienced by healthcare professionals.

The ACT model of psychological flexibility may, therefore, offer an alternative framework for the development of burnout which compliments both the JD-R and dual process models. Psychological flexibility, as represented in the hexaflex, is comprised of several co-related sub-processes but there is a lack of specificity as to which of these sub-processes or skills have the most utility in increasing overall psychological flexibility. Therefore, specific treatment targets for ACT-interventions in the context of burnout remain unclear.
Self-Compassion

Therapies such as Compassion focused Therapy (CFT) (Gilbert & Procter, 2006) suggest uncompassionate self-responding can prolong and exacerbate distress and suffering. Neff (2003) suggests that compassionate self-responding is formed of three overlapping concepts. The first concept is self-kindness vs. self judgment; responding to distress with empathy and understanding instead of self-criticism and judgement. The second concept is common humanity vs. isolation; recognising struggle and inadequacy as a shared human experience rather than a shame-inducing and unique individual deficit. Lastly, mindfulness vs. over-identification; recognising and accepting the present moment including thoughts and feelings, without efforts to suppress, avoid or judge them.

Evidence suggests that self-compassion may buffer against stress, anxiety, and depression and interventions targeting the cultivation of self compassion have found associated improvements in psychopathology across a number of primary outcome measures (Armstrong & Rimes, 2016; Koszyci et al., 2016). Similarly, numerous studies have demonstrated that self-compassion is inversely associated with burnout (Beaumont et al., 2016; Sinclair et al., 2017; Vaillancourt & Wasyliw, 2019) and this effect is replicated in longitudinal designs (Kemper et al., 2019). Self-compassionate individuals appear to manage stress more effectively so that job demands do not exhaust their personal resources (Alkema et al., 2008; Figley, 2002; Vigna et al., 2018); but few studies have attempted to explain how this might occur. Preliminary evidence suggests that self-compassionate people use more adaptive coping responses such as positive re-structuring and acceptance, and fewer maladaptive strategies, such as avoidance and behavioural disengagement (Allen & Leary 2010; Sirois, Molnar, & Hirsch, 2015). And there is evidence to suggest self-compassionate individuals are more able to re-engage with alternative goal-related activity when existing goals become frustrated or unattainable (Neely et al. 2009). However, these mechanisms require further exploration in the context of occupational stress and burnout.

The Self-Compassion Scale (SCS) (Neff, 2003), which is widely used in the literature, has drawn criticism for its psychometric and theoretical validity (Costa et al., 2016; Williams et al., 2014). It has been argued that the self-coldness factors of the SCS measure symptoms of general psychopathology rather than accurately reflecting an absence of self-compassion (Muris & Otgaar, 2020; Muris & Petrocchi, 2017). Neff refutes this standpoint, stating that whilst a two-factor structure comprised of self-compassion and self-coldness for the SCS is not psychometrically supported, the data does support six specific factors reflecting compassionate self-responding (kindness, common humanity, and mindfulness) and uncompassionate self-responding (self-judgement, isolation, over-identification) operating in tandem. Therefore, it is argued that the SCS can provide a valid, overall total score of self-compassion as a system-level balance between these two distinct but related ways of self-responding (Neff, 2019; Neff, 2020). However, questions regarding the robustness of relevant psychometric measures and other methodological quality issues such as lack of control groups, have hampered advancements in compassion-related research. Exactly how self-compassion impacts the experience of occupational stress, and whether this can be usefully managed with compassion-related interventions, remains unclear.

Coping Styles

Avoidant coping, characterised by cognitive and behavioural efforts to disconnect from sources of stress, has been associated with increased emotional exhaustion, depersonalisation and workplace disengagement (Brittle, 2020; Ogoma, 2020). Coping styles appear to predict dimensions of burnout but also mediate the effects of workplace stress on burnout (Howlett et al., 2015; Li et al., 2014). Meta-analytic review (Shin et al., 2014) found large effect sizes between dominant coping strategies and burnout scores for those in nursing occupations, suggesting coping style is a significant factor for psychological resilience in this particular staff group. This finding is important as it may inform occupationally relevant interventions for burnout.
Kroska et al. (2017) found that higher levels of avoidance and decreased value-based behaviour were associated with depersonalisation, emotional exhaustion and depressive symptomology; but the relationship between these predictor variables was not investigated further. It is possible that avoidant coping is a form of functional disengagement where, in the face of multiple job demands, individuals divert energy away from non-valued occupational activity and towards preservations of remaining resources. However, avoidant coping responses may hinder the recognition of value-based opportunities, and therefore limit the enactment of these opportunities. Over time, a reciprocal dynamic may emerge where value incongruence prompts further disengagement and avoidance and vice versa, ultimately culminating in burnout. However, these relationships have yet to be explored.

The Proposed Model

The role of job-demands in contributing to burnout has been well-established empirically (Lesener, Gusy & Wolter, 2019), therefore the proposed model predicts a direct relationship between job demands and burnout. It has also been demonstrated that value incongruence, in combination with chronic job demands, is a significant predictor of burnout (Langballe et al., 2011; Leiter, Frank & Matheson, 2009; McFadden, Mallett & Leiter, 2018; Sortheix et al., 2013; Veage et al., 2014). ACT theory suggests that experiential avoidance, and efforts to regulate and control internal events, may impact an individual’s ability to be in contact with the present moment, thus restricting available response repertoires and decreasing the likelihood of talking value-based actions (Hayes et al., 2006). Although the ACT model makes no assumptions as to the temporal relationships between these sub-processes, empirical findings suggest that experiential avoidance acts as a barrier to enactment of value-based behaviour (Kashdan et al., 2006; Trindade et al., 2018), and significant indirect pathways between mechanisms of experiential avoidance and committed action have been observed in a serial mediation model explaining the impact of anxiety on quality of life (Coutinho, Trindade & Ferreira, 2021). As such, consistent with theoretical rationale and previous findings, the current model proposes a serial mediation model whereby engagement with experiential avoidance strategies, i.e., avoidant coping, to manage the impact of job demands leads to behavioural patterns which restrict the enactment of value-aligned behaviour, which in turn, influences burnout.

As previously discussed, the ACT model describes six interrelated processes of psychological flexibility. Hayes et al. (2012) suggest that each of these sub-processes can be combined with another, fundamentally linked, sub-process to create three “process pairs” or response styles: open/closed (combining sub-processes of experiential avoidance and cognitive fusion); centred/de-centred (represented by an attachment to conceptualized self and reduced contact with the present-moment); and engaged/disengaged (comprised of unclear values and unworkable action). Whilst disequilibrium between any of these response styles may contribute to psychological distress, it has been theorized that the open/closed response style (comprised of cognitive fusion and experiential avoidance) is particularly relevant to the development of psychopathology (Hayes, Strosahl, & Wilson, 2011). The ACT model suggests that cognitive fusion and experiential avoidance operate in tandem, and it is the combination of the two processes which compounds psychological distress, rather than either factor operating in isolation (Bond et al., 2006; Hayes et al., 2012). Until relatively recently, there was little empirical evidence to support this theorised relationship, however, research has demonstrated that cognitive fusion predicts the strength of relationships between experiential avoidance and various outcome measures (Bardeen & Fergus, 2016). Interestingly, despite the ACT model not making uni-directional predictions, serial associations between cognitive fusion and experiential avoidance have also been observed (Cookson et al., 2020; Dinis et al., 2015). Experiential avoidance encompasses both cognitive and behavioural strategies (Kashdan et al., 2006) such as thought suppression (Wenzlaff & Wegner, 2000) and avoidant coping (Penley, Tomaka, & Wiebe, 2002) meaning the more experientially avoidant people are, the more they tend to use avoidant coping strategies. In fact, experiential avoidance and avoidant coping appear so highly related that both constructs loaded onto a single factor in a factor analysis (Karekla & Panayiotou, 2011). Therefore, the hypothesised model suggests that the use of experientially avoidant strategies such as avoidant coping,
and consequently the ability to enact value-based behaviour will vary as a function of cognitive fusion.

Lastly, it is suggested that self-compassion is motivational system evolved to regulate negative affect, which includes cognitive, affective and behavioural elements (Gilbert, 2006). Evidence suggests that self-compassionate people use fewer maladaptive strategies, such as avoidance and behavioural disengagement (Allen & Leary 2010; Sirosi, Molnar, & Hirsch, 2015) and are more able to re-engage with alternative goal-related activity when existing goals become frustrated or unattainable (Neely et al. 2009). Furthermore, self-compassion and experiential avoidance predict psychological distress in a chronic pain sample (Costa & Pinto-Gouveia, 2013) and individuals higher in self-compassion report fewer depressive symptoms across all levels of experiential avoidance in a moderated mediation model (Farr, Ononaiye & Irons, 2021). Therefore, the current model hypothesises that self-compassion will moderate avoidant coping and the ability to enact personally meaningful, goal-based behaviour.

1.1 Aims of the Current Study

The existing literature highlights the complex and multi-factorial nature of burnout. Whilst there are some suggestive trends regarding the combination of individual and organisational stressors which lead to burnout, a large, high quality and consistent evidence base is lacking. It appears that coping styles, specifically avoidant coping, and values-based processes may mediate the effects of workplace stress on burnout whilst factors such as self compassion and psychological flexibility may moderate the effects of workplace stress. However exploration of the interactions between these factors has been limited and, as a result, the nature and direction of the relationships between risk and protective factors remain ambiguous and poorly understood. Therefore, established and hypothesised predictors were entered into a regression analysis to explore which variables directly predict burnout. Conditional process analysis was then used to explore whether avoidant coping and reduced engagement in valued living mediated the effect of job demands on burnout. Finally, it was hypothesised that these direct and indirect paths between job demands and burnout would be moderated by self-compassion and cognitive fusion, a key sub-process of psychological flexibility. It is hoped that elucidation of these interactions will enhance conceptual clarity, highlight potential mechanisms of change, and inform treatment targets to prevent the actualization of burnout in at-risk individuals and support recovery for those already experiencing burnout.

Hypothesis 1: Burnout will be predicted by job demands, coping style, engaged living, self-compassion and cognitive fusion.

Hypothesis 2: The relationship between job demands and burnout will be mediated by avoidant coping and engaged-living.

Hypothesis 3: Self-compassion and cognitive fusion will moderate the direct effect of job demands on burnout.

Hypothesis 4: Self-compassion and cognitive fusion will moderate the mediation effect of job demands on burnout through avoidant coping engaged living.

2. Methods

The data used in this study was from an existing data set collected previously between 2015 and 2016 (Hall, 2016) utilising the same study design described in this paper. The model tested in the original study explored the role of personal resources in the development of dimensions of burnout and can be found in Appendix C. All data collected as part of the previous study were utilised in the current study however novel hypotheses and analyses are applied.

2.1 Design
Cross-sectional online surveys were used to explore relationships between job demands, coping style, engaged living, self-compassion, cognitive fusion and burnout. The original study had multi-site ethical approval from both the University of Edinburgh’s ethics committee and NHS Grampian’s research and development team (reference NRS-15/GH141) and further ethical approval was granted for re-use of data (see Appendices E and F).

2.2 Participants

Eligibility

Registered Mental Health Nurses in employment with an NHS Scotland health board during the study period, having passed their probationary period, were eligible to participate in the study. Exclusion criteria comprised Registered Nurses employed outside NHS Scotland, employed nurses yet to pass probationary periods, and to potential participants without sufficient fluency in English to provide informed consent to participate and/or to accurately complete the outcome measures.

2.3 Measures

Oldenburg Burnout Inventory (Demerouti & Bakker, 2008): a 16 item self-report tool measuring symptoms of burnout across two subscales: exhaustion and disengagement. Respondents rate their level of agreement with item statements across a 4 point Likert scale with higher scores reflecting higher levels of burnout. The OLBI has demonstrated good factorial, convergent, and discriminant validity. Internal reliability coefficients have ranged between 0.74 to 0.85 and 0.73 to 0.85 for the exhaustion and disengagement subscales respectively. Cronbach’s alpha ranged between 0.76 and 0.79 in the current study.

The Mental Health Professionals Stress Scale (MHPSS, Cushway, Tyler & Nolan, 1996): comprises 42 self-report items measuring potential sources of stress for mental health professionals. For the purposes of this study, and in line with empirical findings (Demerouti et al., 2001; Schaufeli & Taris, 2014) the following sub-scales were classified as job demands: client-related difficulties, home-work conflict, workload and relationships with other professionals. Scores were calculated such that higher total scores were indicative of greater job demands. All scales of the MHPSS have been demonstrated to show acceptable internal consistency (Cronbach’s alphas ranging from 0.60 to 0.87) and, notably, excellent internal consistency for mental health nurses (Cronbach’s alpha = .94). Cronbach’s alpha was 0.86 for Job Demands in the current study.

Cognitive Fusion Questionnaire (CFQ, Gillanders et al., 2014): a 7-item self-report scale measuring cognitive fusion by exploring responses to thoughts such as entanglement, struggle, taking thoughts literally, over analysis and dominance of thinking on behaviour choices. Responses use a 7 point Likert scale where higher scores reflect a higher degree of cognitive fusion. The CFQ has demonstrated good reliability, discriminant validity and Cronbach’s alpha have ranged between .88 and .93, depending on sample. The CFQ has demonstrated good concurrent validity with related constructs such as thought processes as well as psychological wellbeing (Gillanders et al., 2014). Cronbach’s alpha for the current study was 0.94. The CFQ has demonstrated strong associations with experiential avoidance and therefore is used here as a core component of the psychological flexibility model.

Engaged Living Scale (ELS, Trompetter et al., 2013): a 16-item self-report measure of an engaged response style, in line with personal values, as conceptualized in acceptance and commitment therapy (ACT). 10 items refer to the Valued Living subscale with items such as “I believe my values are really reflected in my behaviour”, and 6 items relate to the Life Fulfilment subscale with items such as “I make time for things I consider important”. Responses are measured on a 5-point Likert scale, with higher scores indicative of greater commitment to value-based action. The ELS demonstrates good internal consistency with Cronbach’s alpha.
ranging between 0.86 and 0.90. Correlations with conceptually-related processes and outcome measures, such as psychological flexibility and distress, have offered further evidence for the validity of the ELS (Trindade et al., 2016; Trompetter et al., 2013). Reliability of both subscales was .90 in the current study.

Brief-COPE Inventory (COPE, Carver, 1997): an abbreviated version of the COPE Inventory (Coping Orientation to Problems Experienced), the Brief-COPE is a 28-item self-report questionnaire developed to assess a range of coping responses across 3 broad subscales: emotion-focused coping (including strategies such as social support, humour, reframing etc); problem-focused coping (including planning, using instrumental support etc); and avoidant coping (e.g. behaviour disengagement, denial, distraction). Higher scores on each subscale represent greater use of that coping response. In previous studies, Cronbach’s alpha has ranged between 0.50 and 0.90 (Shapiro et al., 2010), coefficients ranged between 0.76 and 0.84 in the current study.

Self-Compassion Scale - Short Form (SCS-SF, Raes et al., 2011): a 12-item short form of Neff’s Self-Compassion Scale (Neff, 2003) measuring items such as self-kindness, self-judgement, and mindfulness. Higher scores reflect greater levels of self-compassion. Validation studies have shown high correlation between the short and long-form (r ≥ .97 in three samples; Raes et al., 2011), excellent internal reliability (Cronbach’s alpha = 0.93; Wren et al., 2012) and good construct validity via correlations to related measures of depression, anxiety and life satisfaction (Neff, 2003). Cronbach’s alpha in the current study was 0.89.

2.4 Procedure

An email invitation to participate in the online questionnaire was distributed to mental health nursing staff by participating NHS Boards and via the Scottish Mental Health Nurses Forum. Upon following the link, potential participants were presented with a study information sheet and a study consent form. The data from completed questionnaires was then extracted to University databases for storage and analysis. 221 participants responded, however cases in which more than 20% of data was missing were removed from the data set. Seven participants met this criterion (3.2%), resulting in a final sample size of 214 participants. Demographic information was collected to illustrate relevant sample characteristics.

2.5 Statistical Analysis

Power and Sample Size

To ensure analyses were adequately powered, power calculations were conducted to establish sufficient sample size. Power calculations conducted using G*Power (Faul et al., 2009) estimated that 183 participants were required to detect a medium effect size, using a linear regression model with nine predictors at an alpha level of .05 (p < 0.5) and a power of .80 (Green, 1991). Relationships between job demands, avoidant coping, engaged living, self-compassion, and cognitive fusion have not previously been studied. However, a study investigating the mediating effect of coping style on occupational stress and burnout found effect sizes of .35 on alpha pathways and .25 on beta pathways (Zhang, Zhang & Hua, 2019). Whilst there is some contention about calculating sample size for conditional process analysis, Fritz and MacKinnon (2007) detailed sample sizes required to adequately power mediation effects; a sample size of 148 is required to identify effect sizes of .26 on both the alpha and beta paths.

2.6 Analytic Plan

All analyses were conducted using IBM SPSS Statistics for Windows (Version 25) (IBM Corporation, 2020). Planned analyses included descriptive data, linear regression, and conditional process analysis.
**Missing Data**

Data was excluded from further analysis where ≥20% of data was missing per case due to the likelihood of biasing further analyses (Bennet, 2001; Dong & Peng, 2013); this left a data set with no missing values for key variables.

**Assumptions of Parametric Data**

Preliminary analysis of data was conducted to identify any outliers, skew and kurtosis for key variables. Visual inspection of histograms and p-p plots confirmed normality of distribution for key variables (Field, 2018) and no violations for the assumptions of linearity and homoscedasticity were observed. There was no evidence to support multi-collinearity of key variables, as Pearson correlations did not exceed 0.73; therefore, the data met test assumptions for parametric analysis and all variables appeared suitable for inclusion in further analysis. Cronbach’s alpha reliability coefficients for key variables ranged between adequate and excellent (0.67 and 0.94).

**Regression**

A simultaneous forced entry multiple linear regression analysis was used to establish the predictors of burnout. Inputting the data in this way allows the comparison of each variable’s individual importance and unique power in predicting the dependent variable relative to other variables included in the model. Standard residual plots, Cook’s distance and Mahalanobis distance were examined to determine the presence of any outliers. Linearity and homoscedasticity were assessed by inspection of standardised residual plots. Data met the assumption of independent errors (Durbin Watson = 2.138); variance inflation factor (VIF) scores ranged from 1.000 to 2.875 (Field, 2018) and tolerance scores ranged from .348 to 1.00, therefore multi-collinearity was not considered an issue. Assumptions for regression testing were met.

**Conditional Process Analysis**

It was hypothesised that avoidant coping and engaged living would mediate the predictive effect of job demands on burnout. Additional hypotheses predicted that cognitive fusion and self-compassion would independently moderate both the direct relationship between job demands and burnout and the indirect relationship between job demands and burnout via avoidant coping and engaged living. Conditional process analysis was employed to explore these more complex interactions between predictor variables in two moderated-mediation models. Process macro 92 for SPSS (version 3.5.3) (Hayes, 2017) was chosen as it allows simultaneous testing of both mediation and moderation effects. Due to their validity and power in testing mediation effects, bootstrap procedures (with 10,000 resamples) were utilised to create 95% confidence intervals around the standardised estimates of the direct and indirect effects (Hayes, 2017; MacKinnon, Lockwood & Williams, 2004). Mediating effects are considered significant ($p < .05$) if the lower and upper bounds of the confidence intervals do not span zero. Moderated mediation occurs when the strength or direction of an indirect effect is conditional upon the level of moderating variable (Hayes, 2017). Therefore, for the purposes of moderation, levels of cognitive fusion and self-compassion were classed as “low” at minus one standard deviation from the mean, and “high” when at plus one standard deviation from the mean. Moderation effects were probed using the Johnson-Neyman technique and by plotting simple slopes (Hayes, 2017). Moderated mediation effects were assessed using indices of moderated mediation. As PROCESS does not provide fit statistics, the overall variance accounted for by each model was assessed using $R^2$ values. Cook’s distance and Mahalanobis distance were observed at acceptable levels (Field, 2018).
3. Results

3.1 Sample Characteristics

The demographic characteristics of the sample are presented in Table 1. 214 registered mental health nurses participated in the study. Statistics indicate there were 10672 mental health nurses registered to practice in Scotland in 2016 (Nursing and Midwifery Council, 2020) so the sample in the current study represents approximately 2.00% of the workforce. 136 of the participants were female (63.6%) compared to 74 males (34.6%). The largest group of participants were aged between 50-59 (36.4%); the second largest proportion of participants fell in the 40-49 age range (34.6%). An undergraduate degree was the highest educational level most frequently attained (48.1%) with 13.6% having completed further post-graduate qualifications. Respondents were from varying locations across Scotland with 11 out of 14 health boards represented in the study. Consistent with health board population and staffing numbers, 78 respondents indicated they worked in NHS Greater Glasgow and Clyde (36.4%), followed by 30 in NHS Lanarkshire (14.0%), and 26 in NHS Lothian (12.1%). No data was collected from staff who indicated they were employed in Western Isles, Orkney, or Forth Valley. Regarding job grade, participants were mostly employed at Bands 5 and 6 (25.7% and 30.4% respectively). Most respondents were employed full time (86.0%) worked regular fixed hours (65.9%) and were based in the community (56.1%), in hospitals (32.7%) or both (10.7%). Participants had an average of 18.95 years of experience, with the largest group having 20-29 years of experience (32.7%). Adult mental health was the most common speciality (73.4%) followed by Older Adults (20.1%) and 53 respondents (24.8%) indicated dementia screening was part of their duties.
Table 1: Sample demographics and characteristics

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<td>Adult Mental Health</td>
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<td>73.4</td>
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<td>Intellectual Disability</td>
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<td>Older Adult</td>
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<td>CAMHS</td>
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<tr>
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<td>0.9</td>
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<tr>
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<tr>
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<tr>
<td><strong>Dementia Screening</strong></td>
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<tr>
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<td>53</td>
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<td>69</td>
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<tr>
<td>Missing</td>
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<tr>
<td>&gt;10</td>
<td>46</td>
<td>21.5</td>
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<tr>
<td>10-19</td>
<td>57</td>
<td>26.6</td>
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<td>20-29</td>
<td>70</td>
<td>32.7</td>
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<tr>
<td>30-39</td>
<td>37</td>
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<tr>
<td>Missing</td>
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<td>1.9</td>
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<tr>
<td><strong>Job Base</strong></td>
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<tr>
<td>Community</td>
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<tr>
<td>Hospital</td>
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<td>32.7</td>
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<tr>
<td>Community &amp; Hospital</td>
<td>23</td>
<td>10.7</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.5</td>
</tr>
</tbody>
</table>
3.2 Control Variables

Independent t-tests and analysis of variance (ANOVA) were used to explore any mean-level differences between gender and age respectively on dependent variables. No significant differences were found for job demands or burnout scores, therefore these demographic variables were not controlled for in further regression analyses. Descriptive statistics for all variables can be seen in Table 2.
Table 2: Descriptive Statistics for Predictor and Outcome Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible Range</th>
<th>Minimum Score</th>
<th>Maximum Score</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>Comparative Data Means</th>
<th>Comparative Data Standard Deviation</th>
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</thead>
<tbody>
<tr>
<td>Job Demands</td>
<td>0-72</td>
<td>2</td>
<td>63</td>
<td>34.435</td>
<td>11.741</td>
<td>Not Available</td>
<td>Not Available</td>
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<tr>
<td>Burnout</td>
<td>16-64</td>
<td>23</td>
<td>60</td>
<td>40.818</td>
<td>6.955</td>
<td>38.360†</td>
<td>5.680†</td>
</tr>
<tr>
<td>Problem Coping</td>
<td>8-32</td>
<td>8</td>
<td>29</td>
<td>16.530</td>
<td>4.923</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Emotion Coping</td>
<td>10-40</td>
<td>10</td>
<td>34</td>
<td>22.554</td>
<td>5.940</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Avoidant Coping</td>
<td>10-40</td>
<td>10</td>
<td>34</td>
<td>15.843</td>
<td>4.304</td>
<td>Not Available</td>
<td>Not Available</td>
</tr>
<tr>
<td>Engaged Living</td>
<td>16-80</td>
<td>27</td>
<td>80</td>
<td>58.983</td>
<td>10.438</td>
<td>56.750‡</td>
<td>9.980‡</td>
</tr>
<tr>
<td>Cognitive Fusion</td>
<td>7-49</td>
<td>7</td>
<td>42</td>
<td>20.319</td>
<td>8.323</td>
<td>33.940‡</td>
<td>8.670‡</td>
</tr>
<tr>
<td>Self Compassion</td>
<td>5-60</td>
<td>14</td>
<td>60</td>
<td>38.360</td>
<td>7.974</td>
<td>38.800§</td>
<td>8.040§</td>
</tr>
</tbody>
</table>

Job Demands measured by the Mental Health Professional Stress Scale (MHPSS), Burnout measured by the Oldenburg Burnout Inventory (OLBI) Problem Coping, Emotion Coping and Avoidant Coping measured by the Brief COPE; Self Compassion measured by the Self-Compassion Scale Short Form (SCS-SF); Engaged Living measured by the Engaged Living Scale (ELS), Cognitive Fusion measured by the Cognitive Fusion Questionnaire (CFQ)

† From Mbanga et al., 2019
‡ From Kent et al., 2019
§ From Dev, Fernando & Consedine, 2020
Table 3: Pearson’s correlation coefficients for key variables

<table>
<thead>
<tr>
<th>Job Demands</th>
<th>Problem Coping</th>
<th>Emotion Coping</th>
<th>Avoidant Coping</th>
<th>Self-Compassion</th>
<th>Burnout</th>
<th>Engaged Living</th>
<th>Cognitive Fusion</th>
<th>Age</th>
<th>Years of Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Demands</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Coping</td>
<td>.145*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotion Coping</td>
<td>.188**</td>
<td>.726**</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Avoidant Coping</td>
<td>.285**</td>
<td>.312**</td>
<td>.454**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Self-Compassion</td>
<td>-.217**</td>
<td>-.002</td>
<td>-.046</td>
<td>-.515**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Burnout</td>
<td>.503**</td>
<td>.094</td>
<td>.211**</td>
<td>.460**</td>
<td>-.425**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engaged Living</td>
<td>-.172*</td>
<td>.056</td>
<td>-.080</td>
<td>-.524**</td>
<td>.479**</td>
<td>-.526**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Fusion</td>
<td>.255**</td>
<td>.253**</td>
<td>.326**</td>
<td>.646**</td>
<td>-.709**</td>
<td>.433**</td>
<td>-.477**</td>
<td>1</td>
<td></td>
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<tr>
<td>Age</td>
<td>-.034</td>
<td>-.067</td>
<td>-.077</td>
<td>-.060</td>
<td>.170**</td>
<td>-.096</td>
<td>.098</td>
<td>-.044</td>
<td>1</td>
</tr>
<tr>
<td>Years of Experience</td>
<td>-.037</td>
<td>-.014</td>
<td>.002</td>
<td>-.058</td>
<td>.098</td>
<td>.016</td>
<td>-.035</td>
<td>-.003</td>
<td>.652**</td>
</tr>
</tbody>
</table>

Job Demands measured by the Mental Health Professional Stress Scale (MHPSS), Burnout measured by the Oldenburg Burnout Inventory (OLBI) Problem Coping, Emotion Coping and Avoidant Coping measured by the Brief COPE; Self Compassion measured by the Self-Compassion Scale Short Form (SCS-SF); Engaged Living measured by the Engaged Living Scale (ELS), Cognitive Fusion measured by the Cognitive Fusion Questionnaire (CFQ)

* Correlation significant at 0.05 level; ** Correlation significant at .001 level
3.3 Regression Analysis

Predicting burnout

To reduce noise and preserve power, variables with non-significant associations with burnout scores (see Table 3) were excluded from the regression model; age, years of experience, and problem coping were not included in the regression model. This model explained 48% of the variance in total burnout scores $R^2 = 0.481 \, F(6,207) = 31.976, \, p < .001$, $\eta^2 = 0.927$. Only two variables emerged as statistically significant predictors of burnout; job demands ($\beta = 0.225, \, p < .01$) and engaged living ($\beta = -0.238, \, p < .01$). The coefficients suggest that greater job demands predicted higher levels of burnout, whereas greater engaged living predicted lower levels of burnout. Coefficients for all variables are presented in Table 4.
Table 4: Summary of multiple regression model predicting burnout

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>Beta Standardised</th>
<th>t</th>
<th>P-Value</th>
<th>R</th>
<th>R2</th>
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<tr>
<td>Job Demands</td>
<td>.225</td>
<td>.380</td>
<td>7.210</td>
<td>&lt; .001**</td>
<td>0.694</td>
<td>0.481</td>
</tr>
<tr>
<td>Emotion Coping</td>
<td>.090</td>
<td>.076</td>
<td>1.258</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoidant Coping</td>
<td>.086</td>
<td>.053</td>
<td>.694</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Compassion</td>
<td>-.113</td>
<td>-.130</td>
<td>-1.689</td>
<td>.093 ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engaged Living</td>
<td>-.238</td>
<td>-.358</td>
<td>-5.732</td>
<td>&lt; .001**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Fusion</td>
<td>.012</td>
<td>.015</td>
<td>.176</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Job Demands measured by the Mental Health Professional Stress Scale (MHPSS), Burnout measured by the Oldenburg Burnout Inventory (OLBI) Problem Coping, Emotion Coping and Avoidant Coping measured by the Brief COPE; Self-Compassion measured by the Self-Compassion Scale Short Form (SCS-SF); Valued Living and Life Fulfilment measured by the Engaged Living Scale (ELS), Cognitive Fusion measured by the Cognitive Fusion Questionnaire (CFQ)

** Correlation significant at .001 level, ns Correlation non-significant
### 3.4 Conditional Process Analysis

Two moderated mediation models were used in the conditional process analysis. Model 1 tested whether avoidant coping and engaged living mediated the relationship between job demands and burnout, while simultaneously testing if this mediation was moderated by cognitive fusion. This model demonstrated that 48.3% of variance in burnout scores was explained by the main and indirect effects: $R^2 = .483$, $F(7,206) = 27.50$, $p<.0001$ $f^2 = 0.934$.

Model 2 tested whether avoidant coping and engaged living mediated the relationship between job demands and burnout, but this time simultaneously testing if this mediation was moderated by self-compassion. This model demonstrated that 48.5% of variance in burnout scores was explained by the main and indirect effects $R^2 = .485$, $F(7,206) = 27.70$, $p<.0001$ $f^2 = 0.942$.

Summaries of the models, including coefficients and bootstrapped confidence intervals (BCI) based on 10000 re-samples can be seen in Table 5. The effects of paths are considered significant ($p < .05$) if the confidence intervals do not span 0.

**Indirect Effects of Job Demands on Burnout via Avoidant Coping and Engaged Living**

In model 1, results showed that job demands exerted a significant indirect effect on burnout via avoidant coping and engaged living, $b = .011$, 95% [0.001, 0.025], although neither path was significant alone (demands to avoidant coping to burnout $b = .006$, 95% [-.003, .021], demands to engaged living to burnout $b = .001$, 95% [-.028, .030]).

Similar patterns were observed in model 2, the self-compassion moderated model. Job demands exerted a significant indirect effect indirect on burnout via avoidant coping and engaged living, $b = .015$, 95% [0.004, .031]. Again, neither path was significant alone (demands to avoidant coping to burnout $b = .008$, 95% [-.005, .025], demands to engaged living to burnout $b = .001$, 95% [-.026, .039]).

**Moderation of Direct Effects of Job Demands on Burnout**

In Model 1, as expected, job demands directly influence burnout, $t (206) = 7.602$, $p < .0001$. A significant interaction between demands and cognitive fusion when predicting burnout was indicated, $t (206) = 2.001$ $p = .047$; test of highest order unconditional interaction: $R^2 = .0107$, $p = .047$, $f = 4.005$) this interaction was probed using the Johnson-Neyman technique which revealed no statistically significant transition points, i.e., the effect of job demands on burnout was significant at all values of cognitive fusion. A visual representation of this interaction was generated (see Figure 3). As can be seen the effect of job demands on burnout appears consistently positive, however, the slopes linking job demands and burnout appear steeper as levels of cognitive fusion increase, suggesting that the strength of the direct effect between job demands and burnout is conditional on level of cognitive fusion.

In model 2, again, job demands directly predicted burnout, $t (206) = 6.886$, $p < .0001$, however there was no significant interaction indicated between job demands self-compassion when predicting burnout $t (206) = -1.315$, $p = .190$; test of highest order unconditional interaction: $R^2 = .004$, $p = .190$, $f = 1.729$. Therefore, self-compassion did not appear to moderate this relationship.

**Moderation of Indirect Effects of Job Demands on Burnout via Avoidant Coping and Engaged Living**
In model 1, the overall indirect path (job demands to avoidant coping to engaged living to burnout) was not moderated by cognitive fusion: index of moderation mediation = .001, 95% BCI [-.002, .002]. As such, the indirect effect was not conditional on cognitive fusion.

In model 2, self-compassion moderated the relationship between demands and avoidant coping: index of moderation mediation = -.003, 95% BCI [-.007, -.001], suggesting that for those individuals who relate to themselves with greater compassion, job demands do not predict avoidant coping as strongly. However, self-compassion did not moderate the overall indirect effect associated with this path (demands to avoidant coping, to engaged living to burnout): index of moderation mediation = .000, 95% BCI [-.002, .001]. As such, the overall indirect effect was not conditional on self-compassion.

The conditional process analysis models are represented diagrammatically in Figure 4. Only significant paths are included for clarity.
Figure 3: Visual Representation of the Moderation of the Effect of Job Demands on Burnout by Cognitive Fusion

Job Demands measured by the Mental Health Professional Stress Scale (MHPSS), Burnout measured by the Oldenburg Burnout Inventory (OLBI); Cognitive Fusion measured by the Cognitive Fusion Questionnaire (CFQ)

Low CF = -1SD, High CF = +1SD
**Table 5:** Standardised Regression Coefficients estimating the effects of Job Demands predicting Burnout mediated by Avoidant Coping and Engaged Living and moderated by Cognitive Flexibility and Self-Compassion

### Model 1: Cognitive Fusion as Moderator

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>SE</th>
<th>BCI LL</th>
<th>BCI UL</th>
<th>p</th>
</tr>
</thead>
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<tr>
<td><strong>Avoidant Coping as Endogenous Dependent Variable</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Constant</td>
<td>-.073</td>
<td>.231</td>
<td>-.538</td>
<td>.382</td>
<td>.752 ns</td>
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<tr>
<td>Job Demands (JD)</td>
<td>.052</td>
<td>.020</td>
<td>.012</td>
<td>.091</td>
<td>p&lt;.001</td>
</tr>
<tr>
<td>Cognitive Fusion (CF)</td>
<td>.312</td>
<td>.028</td>
<td>.257</td>
<td>.368</td>
<td>p &lt;.01</td>
</tr>
<tr>
<td>CF x JD</td>
<td>.003</td>
<td>.003</td>
<td>-.002</td>
<td>.008</td>
<td>.247 ns</td>
</tr>
</tbody>
</table>

$R^2 = .437$

$F(3,210) = 54.302, p<.0001$

$f^2 = 0.776$

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>SE</th>
<th>BCI LL</th>
<th>BCI UL</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engaged Living as Endogenous Dependent Variable</strong></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Constant</td>
<td>.107</td>
<td>.704</td>
<td>-1.281</td>
<td>1.495</td>
<td>.879 ns</td>
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<tr>
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<td>.055</td>
<td>-.104</td>
<td>.112</td>
<td>.942 ns</td>
</tr>
<tr>
<td>Avoidant Coping (AC)</td>
<td>-.867</td>
<td>.193</td>
<td>-1.247</td>
<td>-.487</td>
<td>p&lt;.001</td>
</tr>
<tr>
<td>Cognitive Fusion (CF)</td>
<td>-.299</td>
<td>.095</td>
<td>-.487</td>
<td>-.111</td>
<td>p &lt;.01</td>
</tr>
<tr>
<td>CF x JD</td>
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<td>.007</td>
<td>-.007</td>
<td>.021</td>
<td>.320 ns</td>
</tr>
<tr>
<td>CF x AC</td>
<td>-.012</td>
<td>.016</td>
<td>-.044</td>
<td>.019</td>
<td>.446 ns</td>
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</tbody>
</table>

$R^2 = .312$

$F(5,208) = 18.853, p<.0001$

$f^2 = 0.453$

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>SE</th>
<th>BCI LL</th>
<th>BCI UL</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Burnout as Endogenous Dependent Variable</strong></td>
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</tr>
<tr>
<td>Constant</td>
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<td>.410</td>
<td>39.863</td>
<td>39.863</td>
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<td>.179</td>
<td>.305</td>
<td>p&lt;.001</td>
</tr>
<tr>
<td>Avoidant Coping (AC)</td>
<td>.135</td>
<td>.117</td>
<td>-.096</td>
<td>.366</td>
<td>.250 ns</td>
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<tr>
<td>Engaged Living (EL)</td>
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<td>.040</td>
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<td>-.166</td>
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</tr>
<tr>
<td>Cognitive Fusion (CF)</td>
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<td>.057</td>
<td>-.035</td>
<td>.189</td>
<td>.174 ns</td>
</tr>
<tr>
<td>CF x JD</td>
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<td>.004</td>
<td>.001</td>
<td>.016</td>
<td>p &lt;.05</td>
</tr>
<tr>
<td>CF x AC</td>
<td>.003</td>
<td>.012</td>
<td>-.021</td>
<td>.027</td>
<td>.803 ns</td>
</tr>
<tr>
<td>CF x EL</td>
<td>.003</td>
<td>.005</td>
<td>-.007</td>
<td>.014</td>
<td>.567 ns</td>
</tr>
</tbody>
</table>

Direct and Indirect effects at Low Cognitive Fusion

Demands to burnout | .166 | .045 | .078 | .254 | p<.001 |
Demands to avoidant coping to burnout  |  β | SE  | BCI LL | BCI UL | p  |
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Demands to engaged living to burnout</td>
<td>.017</td>
<td>-.021</td>
<td>.057</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>Demands to avoidant coping to engaged living to burnout</td>
<td>.005</td>
<td>-.004</td>
<td>.018</td>
<td>ns</td>
<td></td>
</tr>
</tbody>
</table>

| Direct and Indirect effects at Mean Cognitive Fusion |
|--------------------------------------|----|------|--------|--------|----|
| Demands to burnout                  | .235| .031 | .174   | .297   | p<.001|
| Demands to avoidant coping to burnout| .006| -.003| .021   | ns     |
| Demands to engaged living to burnout | .001| -.028| .030   | ns     |
| Demands to avoidant coping to engaged living to burnout | .011| .001 | .025   | p < .05|

| Direct and Indirect effects at High Cognitive Fusion |
|--------------------------------------|----|------|--------|--------|----|
| Demands to burnout                  | .313| .052 | .210   | .416   | p<.001|
| Demands to avoidant coping to burnout| .012| -.008| .016   | ns     |
| Demands to engaged living to burnout | -.014| -.060| .029   | ns     |
| Demands to avoidant coping to engaged living to burnout | .017| .000 | .044   | p < .05|

Total Model: $R^2 = .483$
$F(7,206) = 27.50, p<.0001$
$f^2 = 0.934$

**Model 2: Self Compassion as Moderator**

| Avoidant Coping as Endogenous Dependent Variable |
|--------------------------------------|----|------|--------|--------|----|
| Constant                             | -.121| .253 | -.619  | .377   | .631 ns |
| Job Demands (JD)                     | .072| .022 | .029   | .114   | p < .01 |
| Self Compassion (SC)                 | -.261| .032 | -.323  | -.198  | p < .001|
| SC x JD                              | -.006| .003 | -.012  | .000   | p < .05 |

$R^2 = .311$
$F(3,210) = 31.365, p<.0001$
$f^2 = 0.451$

<p>| Engaged Living as Endogenous Dependent Variable |
|--------------------------------------|----|------|--------|--------|----|
| Constant                             | .098| .658 | -1.200 | 1.395  | .882 ns |
| Job Demands (JD)                     | .007| .053 | -.100  | .111   | -.908 ns |
| Avoidant Coping (AC)                 | -.888| .173 | -1.223 | -.547  | p &lt; .001|
| Self Compassion (SC)                 | .358| .087 | .187   | .529   | p &lt; .001|
| SC x JD                              | -.011| .007 | -.026  | .003   | .111 ns |
| SC x AC                              | .019| .018 | -.016  | .053   | .287 ns |</p>
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<th>BCI LL</th>
<th>BCI UL</th>
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<td>SC x JD</td>
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<td>-.014</td>
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<tr>
<td>SC x AC</td>
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<td>.014</td>
<td>-.041</td>
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<td>.290 ns</td>
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<tr>
<td>SC x EL</td>
<td>-.007</td>
<td>.006</td>
<td>-.018</td>
<td>.005</td>
<td>.234 ns</td>
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</table>

Direct and Indirect effects at Low Self-Compassion

| Demands to burnout | .272  | .047 | .179   | .365   | <.001 |
| Demands to avoidant coping to burnout | .027  | -.001 | .064   | ns     |
| Demands to engaged living to burnout | -.018 | -.057 | .022   | ns     |
| Demands to avoidant coping to engaged living to burnout | .004  | .005 | .052   | <.05   |

Direct and Indirect effects at Mean Self-Compassion

| Demands to burnout | .227  | .031 | .165   | .289   | <.001 |
| Demands to avoidant coping to burnout | .008  | -.005 | .025   | ns     |
| Demands to engaged living to burnout | .001  | -.026 | .029   | ns     |
| Demands to avoidant coping to engaged living to burnout | .015  | .004 | .031   | <.05   |

Direct and Indirect effects at High Self-Compassion

| Demands to burnout | .182  | .046 | .091   | .273   | <.001 |
| Demands to avoidant coping to burnout | .000  | -.010 | .010   | ns     |
| Demands to engaged living to burnout | .029  | -.027 | .030   | ns     |
| Demands to avoidant coping to engaged living to burnout | .004  | -.006 | .017   | ns     |

Total Model: $R^2 = .485$

$F(7,206) = 27.70, p<.0001$

$\eta^2 = 0.942$
BCI = Bootstrapped Confidence Intervals LL = Lower Limit UL = Upper Limit
ns = Interaction non-significant

Job Demands measured by the Mental Health Professional Stress Scale (MHPSS), Burnout measured by the Oldenburg Burnout Inventory (OLBI); Avoidant Coping measured by the Brief COPE; Self Compassion measured by the Self-Compassion Scale Short Form (SCS-SF); Valued Living and Life Fulfilment measured by the Engaged Living Scale (ELS), Cognitive Fusion measured by the Cognitive Fusion Questionnaire (CFQ)

Low CF = -1SD, High CF = +1SD
Low SC = -1SD, High SC = +1SD
Figure 4: Diagrammatic Representation of Conditional Process Analyses

Key:

Direct Path → Indirect Path ←→ Moderator

Numbers on the path represent standardised B coefficients  * p < .05  ** p < .01  *** p < .001  **** p < .0001

CF – Cognitive Fusion, Low CF = -1SD, High CF = +1SD
SC – Self-compassion, Low SC = -1SD, High SC = +1SD
4. Discussion

4.1 Summary of findings

The current study aimed to address three primary research questions: whether psychological factors such as coping style, cognitive fusion, engaged living and self-compassion were predictive of burnout alongside job demands; whether coping and value-based processes mediated the effect of job demands on burnout; and whether psychological processes such as self-compassion and cognitive fusion moderated these relationships. The results demonstrated that higher job demands, and lower engaged living predicted approximately equal amounts of variance in burnout scores whereas coping style, self-compassion and cognitive fusion were not significantly predictive of burnout. Conditional process analysis showed that the higher job demands had their effect on burnout in part via the process of avoidant coping and reduced engagement with values; self-compassion attenuated the pathway between demands and avoidant coping whereas cognitive fusion predicted the strength of the relationship between job demands and burnout, but the overall indirect pathways were not attenuated by either level of cognitive fusion or self-compassion.

Consistent with prevailing models of burnout, the findings in this study support the significant role of job demands in the development of burnout (Bakker & Demerouti, 2007; Demerouti et al., 2001; Leiter, 2008). The inverse relationship between engaged living and burnout observed in the current study bolsters previous findings suggesting a protective role for value-based behaviour in shielding against occupational distress (Kuitunen & Rantala, 2015; Leiter, 2008; Veage et al., 2014). Simultaneous forced regression revealed that job demands and engaged living had similar explanatory power in predicting burnout which is congruous with former research demonstrating equally, if not more, powerful relationships between value-based processes and burnout compared to organisational factors (Vilardaga et al., 2011).

Contrary to previous evidence, neither coping style, cognitive fusion, or self-compassion emerged as significant independent predictors of burnout in the regression model (Beaumont et al., 2016; Brittle, 2020; Kemper et al., 2019; Ogoma, 2020; Sinclair et al., 2017; Sadri Damirchi & Samadifard. 2018; Vaillancourt & Wasyliw, 2019). Despite previous evidence demonstrating a predictive relationship between cognitive fusion and experiential avoidance (Bardeen & Fergus, 2016; Cookson et al., 2019; Dinis et al., 2015), this association was not replicated in the current study. Self-compassion attenuated the pathway between job demands and avoidant coping suggesting that for those individuals who relate to themselves with greater compassion, job demands do not predict avoidant coping as strongly. This is consistent with previous findings where higher self-compassion predicted the use of fewer maladaptive coping strategies (Allen & Leary 2010; Sirois et al, 2015) and less experiential avoidance (Farr et al., 2021). However, the findings of the current study ultimately did not support a role for self-compassion as a moderator of either the direct or overall indirect effects of job demands on burnout. Although cognitive fusion did not directly predict burnout as expected, there did appear to be a significant difference in the strength of the direct effect between job demands and burnout conditional on level of fusion. However, cognitive fusion did not appear to moderate the indirect effect.

Findings from the current study suggest avoidant coping and engaged living mediated the relationship between job demands and burnout. This builds on previous evidence suggesting that experiential avoidance may act as a barrier to the enactment of valued behaviour (Coutinho, et al., 2019; Kashdan et al., 2006) by demonstrating a significant serial mediation effect and extending its application to the sphere of occupational distress.

Predicting Burnout

As predicted, increased job demands were found to significantly predict higher levels of burnout. This is consistent with predominant conceptualisations of burnout, including the JD-R model. Furthermore, these findings offer further support, consistent with meta-analytic review (O’Connor, Neff & Pitman, 2018), for the significant contribution of organisational factors, such as workload, in developing chronic levels of stress and
burnout. These findings highlight the need for organisational, systemic, economic, and socio-political interventions to shape the work environment and lessen the psychological impact of job demands.

As hypothesised, engaged-living was found to have a significant inverse relationship with burnout. The beta-coefficients suggest engaged-living has approximately equal power as job-demands for predicting burnout. These findings offer support for both the JD-R and Leiter’s dual process model. Greater value-based behaviour appears to be protective against burnout; a sense of life fulfilment and personal meaning arising from engaged living (Trompetter, 2013) may be considered as a personal resource which can be utilised to offset the impact of continual job demands. These findings are consistent with the ACT conceptual model; sub-processes of psychological flexibility related to commitment and behavioural change facilitate effective, value-based behaviour in the service of a more meaningful life. Future research, including qualitative designs, exploring the role of idiosyncratic meaning would be valuable in identifying mechanisms by which engaged living acts to cultivate resilience to work-related stress and burnout.

Contrary to previous findings, coping style, cognitive fusion, and self-compassion did not emerge as significant independent predictors of burnout in the regression model. Given that ACT aims to enable individuals to live a rich and meaningful life and commit to value-based behaviours despite difficulty, it is perhaps not surprising that cognitive fusion did not necessarily predict a measure of distress. The theoretical concepts which underpin the ACT approach, which utilise values and meaning as anchor points to drive behavioural change or persistence, may better lend themselves to a dependent variable which measures effective behaviour such as job engagement. Constructs of job engagement include strong identification with the role and dedication (Schaufeli & Bakker, 2004), which may map onto values-congruence and commitment to values-based behaviour sub-processes respectively. Job engagement and burnout are sometimes considered as conceptually opposite, however individuals can experience emotional exhaustion but maintain job engagement (Korunka et al., 2009; Peterson et al., 2008). The two constructs, therefore, cannot be measured simultaneously using the same tools (Schaufeli & Bakker, 2004). Designs which measure both burnout and job engagement would allow exploration of correlated relationships and potential processes across the full spectrum of workplace wellbeing (Afrahi et al., 2021).

Avoidant Coping and Engaged Living as Mediators

It was hypothesised that avoidant coping and engaged living would mediate the relationship between job demands and burnout. The findings from the current study support this hypothesis, because the indirect effect was significant. As job demands increase, people may employ avoidant coping strategies; use of such rigid repertoires of behavioural response could undermine an individual’s ability to recognise opportunities for valued-based behaviour and/or undermine their sense of self-efficacy required to act in accordance with what is personally important to them. Over time, growing value incongruence may foster a sense of psychological tension ultimately culminating in disengagement and burnout. This is an interesting finding and provides additional understanding of the relationships between individual risk factors in contributing to burnout, a concept for which there is little empirical evidence. Avoidance reduction and commitment to actions that are personally meaningful are processes which are central to ACT interventions; therefore, the findings from the current study suggest the ACT model may provide a useful framework to understand and reduce burnout.

Interventions targeted at reducing job demands, facilitating adaptive coping and assisting people to take action towards personally meaningful behaviour may be useful in reducing burnout. Future experimental studies using single case experimental designs or experience sampling methodologies would be beneficial to examine the causal effects of manipulation of intervention targets on processes and outcomes. This would determine under what conditions, for whom, and in which temporal order values-based or coping-based interventions have optimum benefit in the context of occupational stress and burnout.
Contrary to previous evidence, the findings of the current study did not support either self-compassion or cognitive fusion as moderators of the indirect effects of job demands on burnout. This is surprising as theory would suggest high levels of cognitive fusion should predict use of experiential avoidance strategies including avoidant coping styles (Hayes, 1999). Interestingly, self-compassion did moderate the relationship between job demands and avoidance, suggesting job demands do not predict avoidant coping as strongly when people relate to themselves with greater compassion. Therefore, self-compassion may be a useful component of a broader intervention targeting adaptive coping and engaged living. Cognitive fusion appeared to predict the strength of the relationship between job demands and burnout, suggesting that for those who can defuse from their thoughts, job demands does not predict burnout as strongly. However, further exploration with high quality methodologies is required before any firm conclusions can be drawn.

Theoretical Implications

The current study builds on previous research by empirically testing a theoretically derived model in which various constructs, previously established in the literature as relevant to occupational distress, act in complex and inter-related ways to predict burnout outcomes. The findings of the conditional process analysis provided evidence that job demands predict burnout directly and via avoidance and disengagement with value-based behaviour. Consistent with ACT theory, avoidance behaviour act as a barrier to engagement with personally meaningful activity which in turn impacts burnout; these findings shed additional light on the behavioural disengagement process that leads to burnout. Cognitive fusion moderated the direct effect between job demands and burnout, suggesting the degree to which thoughts dominate behavioural regulation strategies predicts the influence job demands exert on burnout outcomes. Self-compassion, which is also relevant to the ACT-model (Hill et al., 2020; Kohle et al., 2021; Tirch, Schoendorff & Silberstein, 2014), moderated the relationship between job demands and avoidant coping, suggesting that high self-compassion reduces the behavioural regulatory impact of job demands. As such, it appears that processes core to the ACT model (cognitive fusion, avoidance behaviour and value-based living) represent salient theoretical factors relevant to the development of burnout. These empirical findings, therefore, lend support to the development of ACT-based frameworks to further test and enhance theory concerned with how inter-related processes such as cognitive fusion, self-compassion, avoidance behaviour, and engaged response styles vary as functions of one another to influence burnout. Such approaches may also be useful in facilitating partnerships between the various strands of occupational wellbeing research.

Surprisingly, although positively correlated (see Table 3), cognitive fusion did not moderate avoidant coping as theoretically predicted. The normative data in Table 2 suggests that mean cognitive fusion scores in the current sample fell in a range greater than one standard deviation below those of a comparative population, i.e., the sample included here appear to be significantly less cognitively fused. However, the current sample is limited by the use of cross-sectional data and self-selection recruitment, both of which may have biased outcome scores. It is also important to note that experiential avoidance was not directly assessed in the current study, and although highly related to avoidant coping, they are not identical constructs (Karekla & Panayiotou, 2011). Further studies which include a direct measure of experiential avoidance and utilise longitudinal designs with less-biased sampling methods would be valuable in further testing this hypothesis.
4.2 Relevance to Clinical Practice

These findings suggest that interventions targeted at reducing job demands, encouraging cognitive defusion, minimising the use of avoidant coping strategies, and facilitating behaviour, which is more aligned with personal values, may be effective in reducing burnout. Decreasing cognitive fusion and experiential avoidance, and encouraging more effective, value-based behaviour are key treatment goals in Acceptance and Commitment Therapy (Hayes, 1999) and future intervention developers may also find value in incorporating self-compassion strategies to support more adaptive coping responses. Therefore, third-wave approaches specifically targeting these processes may prove efficacious for use with individuals experiencing occupational stress and burnout. Improving self-compassion is not unique to compassion-specific modalities and ACT interventions also appear to be efficacious in improving self-compassion (Wilson et al., 2018; Yadavaia, Hayes, Vilardaga, 2014). Further evidence is emerging into hybrid self-compassionate ACT approaches (Hill et al., 2020; Kohle et al., 2021; Tirch, Schoendorff & Silberstein, 2014) suggesting these are complimentary approaches. These findings provide clear direction for future research and build on the existing evidence base by advocating for the clarification of intervention targets for individuals and organisations experiencing burnout.

4.3 Limitations

The cross-sectional methodology utilised in the current study precludes causal inference as well as the identification of any temporal relationships between the variables studied; therefore, findings are to be interpreted with this in mind. Indeed the use of conditional process analysis using cross-sectional data is somewhat controversial. Some authors suggest that such analyses are at high risk of bias even when employing large sample sizes as they can overestimate the presence of indirect effects when there is actually no underlying longitudinal meditational process. Therefore, it has been suggested that attempts to extrapolate results of cross-sectional conditional process analyses to make inferences about longitudinal processes is flawed and ineffectual (Maxwell, Cole & Mitchell, 2011). However, Hayes & Rockwood (2020) rebut this extreme view and suggest conditional process analysis is a tool which can be used flexibly with both cross-sectional and longitudinal data providing limitations are recognised and interpretations are appropriately caveated.

Whilst a number of risk factors for burnout have been identified, including in the current study, findings of cross-sectional studies have not always been replicated in longitudinal designs (Burish, 2002). Further longitudinal and prospective studies testing the validity of the model identified in the current study would be valuable to further elucidate temporal precipitants, patterns of relationships between relevant variables, and mechanisms of change in burnout phenomenology. Such longitudinal studies would benefit from the application of data analysis techniques such as latent growth curve modelling which allow comparison of change at the individual level as well as global patterns.

Volunteer recruitment may have introduced bias into the sample in that potentially only the most burnt out employees chose to participate, or conversely the most burnt out, and therefore, the most disengaged, may not have responded at all. Literature has demonstrated that experiencing high levels of burnout and work-related stress early in a newly qualified nurse’s career predicts intention to leave the profession (Arslan Yurumezoglu & Kocaman, 2016; Suzuki et al. 2010) and career leavers scored higher on burnout measures than those who remained in position (Suzuki et al., 2010). This suggests that those who remain in post beyond this period may be more “robust” to the effect of work-related stress creating a survival bias. The demographic information in the current study indicates that the majority of the sample (71%) was aged 40-59, outside the riskiest period for career leaving and burnout (Maslach et al., 2001). Furthermore, neither age nor work experience were found to significantly correlate with burnout. Both of these factors may indicate the presence
of survival bias. Eligibility criteria excluded career leavers and may have unintentionally excluded those not working through illness and those who have made lateral career moves away from direct clinical care. Therefore, the sample used in the current study may not be representative of burnout experiences present in the workforce.

Whilst the measures used in the current study are widely used in the literature, they are not without criticism. The OLBI only measures two of Maslach & Jackson’s (1981) burnout dimensions and therefore may not adequately capture all of burnout experiences as lived by the participants, although Maslach & Jackson’s triad has also drawn criticism for its construct validity (Schaufeli, 2003). Similarly, the SCS-SF (Raes et al., 2011) has been criticised for it psychometric and theoretical validity; there is an assumption that overall scores measure a global, unified construct of overall self-compassion level and there are contradictory findings regarding whether this is supported by a single higher-order latent variable (Brenner et al., 2017; Neff, Whittaker & Karl, 2017). Furthermore, the SCS-SF does not appear to reflect the range of cognitive, behavioural and affective competencies related to compassion as suggested by the literature (Goetz, Keltner & Simon-Thomas, 2010; Straus et al., 2016). Lack of consensus in definition of key constructs has hampered assessment and intervention research; further robust psychometrics which are theoretically and empirically validated would be valuable in advancing the evidence base.

As ACT is a contextual behavioural approach, theory suggests psychological flexibility can vary across contexts dependent on mindfulness and relative importance of values in a given situation (Hayes et al., 2006). Workplace specific measures of psychological flexibility are more sensitive to work-related outcomes than more general measures of psychological flexibility (Bond, Lloyd & Guenole, 2013); it may be that job demands and occupational stresses do give rise to psychological inflexibility within occupational contexts but cross-sectional methodology, single time point data, and lack of measure specificity have not adequately captured this. Furthermore, only the cognitive fusion sub-process of psychological flexibility was directly assessed in this study. Whilst avoidant coping is a form of experiential avoidance, and the two constructs have been found to be highly related, there is evidence to suggest that experiential avoidance accounts for some additional variance beyond what is explained by avoidant coping (Karekla & Panayiotou, 2011). As this study does not directly assess experiential avoidance and does not capture broader ACT processes, the findings cannot be extrapolated to evaluate the role of the overarching construct of psychological flexibility in burnout. Since the data was collected, more general measures of psychological flexibility which assess all six sub-processes have been developed and validated (Francis, Dawson & Golijani-Moghaddam, 2016), future use of such measures would allow for further exploration of psychological flexibility as a general construct, as well as the interactional nature of specific sub-processes and their relation to burnout.

Lastly, it is worth noting the ethnocentricity of the current research. Meta-analysis of global data suggests the JD-R model of burnout appears to have limited application cross-culturally (Rattrie, Kittle & Paul, 2020). Additionally, the presentation of burnout and the influence of individual psychological factors appear to differ by occupational role (Dev et al., 2020). As such, it is unclear whether the findings demonstrated in this research would have validity when applied across other cultural contexts or beyond idiosyncratic stresses specific to job role and organisation.

4.4 Conclusion

This cross-sectional study corroborates previous evidence regarding the role of job demands and value-based processes as being predictors of burnout. Contrary to expectations, coping style, cognitive fusion and self-compassion did not emerge as significant independent predictors of burnout. The study expands the existing literature base by using conditional process analyses to demonstrate a theoretically-driven, statistical model wherein job demands exerted direct and indirect effect on burnout via avoidant coping and engaged living.
References


Hall, L. (2016) Burnout prevention interventions for mental health professionals: a systematic review and investigation into the role of personal resources in the development of burnout in mental health nurses. *Unpublished Doctoral manuscript, University of Edinburgh*. As accessed online: https://era.ed.ac.uk/handle/1842/25521


Appendices
Appendix A: Journal Author Guidelines

Journal of Clinical Nursing Author Guidelines

1. SUBMISSION
2. AIMS AND SCOPE
3. MANUSCRIPT CATEGORIES AND REQUIREMENTS
4. PREPARING YOUR SUBMISSION
5. EDITORIAL POLICIES AND ETHICAL CONSIDERATIONS
6. AUTHOR LICENSING
7. PUBLICATION PROCESS AFTER ACCEPTANCE
8. POST PUBLICATION
9. EDITORIAL OFFICE CONTACT DETAILS

1. SUBMISSION
Thank you for your interest in the Journal of Clinical Nursing. Note that submission implies that the content has not been published or submitted for publication elsewhere except as a brief abstract in the proceedings of a scientific meeting or symposium. See Cover letter in Section 4 Preparing Your Submission for further details.

Once you have prepared your submission in accordance with the Guidelines, manuscripts should be submitted online at https://mc.manuscriptcentral.com/jcnur

The submission system will prompt you to use an ORCID iD (a unique author identifier) to help distinguish your work from that of other researchers. Click here to find out more.

Click here for more details on how to use ScholarOne

For help with submissions, please contact: JCN@wiley.com

We look forward to your submission.

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The Journal of Clinical Nursing (JCN) will consider for review articles previously available as preprints. Authors may also post the submitted version of a manuscript to a preprint server at any time. Authors are requested to update any pre-publication versions with a link to the final published article.
Data Sharing and Data Availability
This journal expects data sharing. Review Wiley’s Data Sharing policy where you will be able to see and select the data availability statement that is right for your submission.

Data Citation
Please review Wiley’s Data Citation policy.

2. AIMS AND SCOPE
The Journal of Clinical Nursing (JCN) is an international, peer reviewed, scientific journal that seeks to promote the development and exchange of knowledge that is directly relevant to all spheres of nursing practice. The primary aim is to promote a high standard of clinically related scholarship which advances and supports the practice and discipline of nursing. The Journal also aims to promote the international exchange of ideas and experience that draws from the different cultures in which practice takes place. Further, JCN seeks to enrich insight into clinical need and the implications for nursing intervention and models of service delivery. Emphasis is placed on promoting critical debate on the art and science of nursing practice.

JCN is essential reading for anyone involved in nursing practice, whether clinicians, researchers, educators, managers, policy makers, or students. The development of clinical practice and the changing patterns of inter-professional working are also central to JCN’s scope of interest. Contributions are welcomed from other health professionals on issues that have a direct impact on nursing practice.

We publish high quality papers from across the methodological spectrum that make an important and novel contribution to the field of clinical nursing (regardless of where care is provided), and which demonstrate clinical application and international relevance.

Topics include but are not limited to:

- Development of clinical research, evaluation, evidence-based practice and scientific enquiry;
- Patient and family experiences of health and health care; illness and recovery;
- Nursing research to enhance patient safety and reduce harm to patients;
- The nature of nursing need, intervention, social interaction and models of service delivery;
- Clinical nursing leadership;
- Examination of clinical decision-making;
- Exploration of organisational or systemic factors that enhance or impede the provision of effective, high-quality nursing care;
- Application and dissemination of clinical knowledge and theory;
- Role development and inter-disciplinary working, exploring the scope and changing boundaries of clinical nursing; and
- Cultural comparisons and evaluations of nursing practice in different health sectors, social and geographical settings.

Useful Resources
Nurse Author & Editor is a valuable resource for authors, editors and reviewers involved or wanting to become involved in nursing journals and the free Nurse Author & Editor newsletter contains useful articles including the Writing for Publication booklet which you may find helpful.

If you are presenting a paper from a study from which publications have already been drawn, or are planned, please carefully read our guidance pertaining to multiple publications from a single study.

3. MANUSCRIPT CATEGORIES AND REQUIREMENTS
i. Original Articles
Pilot studies are not suitable for publication as original articles.

*Word limit*: 8,000 words maximum (quotations are included in the overall word count of articles, and abstract, references, tables and figures are excluded).

*Abstract*: 300 words maximum, no abbreviations. Structured under the sub-headings: Aims and objectives; Background (stating what is already known about this topic); Design; Methods (for both qualitative and quantitative studies state n); Results (do not report p values, confidence intervals and other statistical parameters); Conclusions (stating what this study adds to the topic); Relevance to clinical practice. Trial registration details (if required).

*Main text structure*: Introduction (putting the paper in context - policy, practice or research); Background (literature); Methods (design, data collection and analysis); Results; Discussion; Conclusion; Relevance to clinical practice.

*References*: 50 maximum

*Impact Statement*: should contain 2-3 bullet points under the heading 'What does this paper contribute to the wider global clinical community?'

*Research Reporting Checklist*: May be required. Please see Section 5.

ii. Review Articles
Literature reviews on any area of research relevant to clinical nursing are welcomed. We encourage authors to prospectively register their reviews with a registry such as PROSPERO (https://www.crd.york.ac.uk/prospero/) or the Joanna Briggs Institute (https://joannabriggs.org/ebp/systematic_review_register).

*Word limit*: 8,000 words maximum (quotations are included in the overall word count of articles, and abstract, references, tables and figures are excluded).

*Main text structure*: Review Articles should be structures, under the sub-headings: Introduction, Aims, Methods, Results, Discussion, Conclusion, and Relevance to Clinical Practice.

*References*: 50 maximum

*Research Reporting Checklist*: Required. Please see Section 5.

iii. Discursive Articles

*Word limit*: 8,000 words maximum.

*Main text structure*: Aims; Background; Design (stating that it is a position paper or critical review, for example); Method (how the issues were approached); Conclusions, Relevance to clinical practice.

iv. Special Issue Articles
Authors interested in submitting a paper for a forthcoming Special Issue must contact the Editorial Office to discuss and agree submission of the paper with the designated Special Issue Guest Editor before submission to the journal takes place. Upon submission, Authors must indicate that the paper is to be considered for a Special Issue.

v. Registered Report
Journal of Clinical Nursing is now considering submissions of Registered Reports. Registered Reports are a new form of empirical article in which the methods and proposed analyses are pre-registered and reviewed prior to research being conducted. For more information please refer to our Registered Reports guidelines.

vi. Commentaries
The Journal accepts two types of commentaries, with the first being preferable:
• Written in response to a paper published in the Journal, offering expert opinion from one or more people (who may agree or disagree) on a current understanding/status of an area, or how practice should be undertaken. No abstract; limit references to 5 or less; 2,000 words maximum.

• Expert opinion from one or more people (who may agree or disagree) on a current understanding/status of an area, or how practice should be undertaken. No abstract; limit references to 5 or less; 2,000 words maximum.

vii. Letter to the Editor

a. Reserved for discussion about published papers.

b. No abstract; four or less references.

c. The Editorial Board reserves the right to accept or reject, edit, and condense letters for publication and to publish an author or editor response to letters.

d. If a Letter to the Editor is accepted for publication, the authors of the article you are writing about will have an opportunity to review their Letter and respond with a Letter to the Editor of their own in response if they wish. You will not be given another opportunity to respond to the author’s response to you.

e. Letters to the Editor undergo review, but they do need to have a full standard peer review. The Editor-in-Chief might choose to accept or reject the Letter themselves, or consult with board members, or send the letter out for full peer review.

f. Letters by article authors in response to Letters to the Editor disputing their articles are usually accepted for publication after the same type of review described above in e.

g. If a Letter to the Editor is accepted for publication, the Editor-in-Chief will decide when and how it will be published.

viii. Editorial

To convey an opinion, or overview of an issue, by the Editor or someone invited by the editor. No abstract; limit references to four or less; 1,500 words maximum.

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The manuscript should be submitted in separate files: title page; main text file; figures.

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### Appendix B: Quality Assessment Tool

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>Partly</th>
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<th>Not reported</th>
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<td><strong>Introduction</strong></td>
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<td>Were the aims/objectives of the study, including any pre-specified hypotheses, clearly described?</td>
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<td><strong>Methods</strong></td>
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<td>Was the sample size justified?</td>
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<td>Was the target/reference population clearly defined? eligibility criteria, and the sources and methods of selection of participants</td>
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<td>Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?</td>
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<td>Was the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection described?</td>
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<td>Were measures undertaken to address and categorise non-responders?</td>
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<td>Were the risk factor and outcome variables measured appropriate to aims of the study?</td>
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<td>Were risk factors and outcome variables measured correctly using measures previously trialled/piloted/published?</td>
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<td>Is it clear what was used to determine statistical significance?</td>
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<td>Were the methods (including statistical methods) sufficiently described to enable them to be repeated?</td>
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<td>Were all statistical methods, including those used to control for confounding, adequately described?</td>
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<td>Was an explain given for how missing data were addressed?</td>
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<td><strong>Results</strong></td>
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<td>Did the descriptive data indicate number of participants with missing data for each variable of interest?</td>
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<td>Did the descriptive data give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders?</td>
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<td>Were the basic data adequately described?</td>
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<td>Does the response rate raise concerns about non-response bias?</td>
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<td>If appropriate, was information about non-responders described?</td>
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<td>Were the numbers of individuals at each stage of the study reported? —eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed</td>
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<td>Were reasons for non-participation given at each stage of the study process?</td>
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</table>
Were the results internally consistent?
Were results presented for all analyses described in the methods?

Discussion
Were key results summarised with reference to study objectives?
Were authors' discussions and conclusions justified by results? considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Was the generalisability (external validity) of the study results discussed?

Other
Were there any funding sources or conflicts of interest that may affect authors' interpretations of results?
Was ethical approval or consent attained?

Total Score:
Appendix C: Statistical Models from Original Research Paper

Note: * p < .001

**Figure 2:** Multiple mediation model of relationships between job resources, multiple mediations, and disengagement
### Table 8: Models of the relationship between job demands and exhaustion moderated by personal resources

<table>
<thead>
<tr>
<th>Moderation Model</th>
<th>B</th>
<th>SE B</th>
<th>Bootstrapping BCa 95% CI</th>
<th>t (210)</th>
<th>P</th>
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<tr>
<td><strong>Model 1</strong></td>
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<td><strong>Outcome:</strong></td>
<td>Exhaustion</td>
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<tr>
<td><strong>Overall model:</strong></td>
<td>$F(3, 210) = 32.42, p = .00, R^2 = .33$</td>
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<tr>
<td>Self-compassion</td>
<td>-.15</td>
<td>.03</td>
<td>-21</td>
<td>-.09</td>
<td>-4.80</td>
</tr>
<tr>
<td>Job demands</td>
<td>.14</td>
<td>.02</td>
<td>.10</td>
<td>.19</td>
<td>6.47</td>
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<tr>
<td>Self-compassion x Job demands</td>
<td>.00</td>
<td>.00</td>
<td>-01</td>
<td>.00</td>
<td>- .62</td>
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</tbody>
</table>

| **Model 2**      |     |      |                          |         |     |
| **Outcome:**     | Exhaustion |     |                          |         |     |
| **Overall model:** | $F(3, 210) = 35.02, p = .00, R^2 = .35$ |     |                          |         |     |
| Cognitive fusion | .16 | .03  | .10                      | .21     | 5.31  | .00 |
| Job demands      | .13 | .02  | .09                      | .17     | 6.43  | .00 |
| Cognitive fusion x Job demands | .00 | .00  | 00                      | .01     | .72  | .47 |

| **Model 3**      |     |      |                          |         |     |
| **Outcome:**     | Exhaustion |     |                          |         |     |
| **Overall model:** | $F(4, 208) = 33.07, p = .00, R^2 = .41$ |     |                          |         |     |
| Engaged living   | -.15| .02  | -.19                     | -.11    | t(208) = -7.03 | .00 |
| Job demands      | .16 | .02  | .12                      | .20     | t(208) = 7.82 | .00 |
| Engaged living x Job demands | .00 | .00  | .00                      | .00     | t(208) = .57 | .57 |
| Job base         | -.83| .31  | -1.43                    | -.23    | t(208) = -2.71 | .01 |

| **Model 4**      |     |      |                          |         |     |
| **Outcome:**     | Exhaustion |     |                          |         |     |
| **Overall model:** | $F(3, 10) = 22.72, p = .00, R^2 = .28$ |     |                          |         |     |
| Active emotion coping | .13 | .04  | .05                      | .21     | 3.13  | .00 |
| Job demands      | .16 | .02  | .12                      | .20     | 7.49  | .00 |
| Active emotion coping x Job demands | .00 | .00  | .00                      | .01     | .80  | .42 |

| **Model 5**      |     |      |                          |         |     |
| **Outcome:**     | Exhaustion |     |                          |         |     |
| **Overall model:** | $F(3, 10) = 25.06, p = .00, R^2 = .32$ |     |                          |         |     |
| Avoidant coping  | .27 | .07  | .14                      | .40     | 4.09  | .00 |
| Job demands      | .14 | .02  | .10                      | .18     | 6.43  | .00 |
| Avoidant coping x Job demands | .00 | .01  | -.01                     | .01     | .02  | .98 |
Appendix D: Research Proposal

Doctorate in Clinical Psychology

Thesis Research Proposal

(For Methodological Review Only)

This form is for methodological review of projects that are not being submitted as assessed work for Research 1. (e.g. where a trainee has already received a pass mark for Research 1, but subsequently changed the intended thesis project)

The form will be reviewed by a member of the academic team and will receive feedback including an evaluation of the viability of the project and any recommended adjustments. Significant concerns about viability will be flagged to the Programme Director and Research Director and a decision made about whether the project can proceed in its current form.

We expect 2-3 pages A4 for sections 1-8

<table>
<thead>
<tr>
<th>Trainee Name</th>
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<tbody>
<tr>
<td>Bethan Parry</td>
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<tr>
<th>Provisional Thesis Title</th>
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<tr>
<td>Do individual psychological factors moderate the effect of coping style on professional stress and burnout in mental health nurses?</td>
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<th>Proposed Setting</th>
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<td>Allocated Thesis Project Supervisors</td>
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<tr>
<td><strong>Clinical</strong></td>
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<td>N/A</td>
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<tr>
<td><strong>Academic 1</strong></td>
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<tr>
<td>Dr David Gillanders</td>
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<tr>
<td><strong>Academic 2</strong></td>
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<tr>
<th>Anticipated Month / Year of Submission</th>
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<tr>
<td>(Usually May of final year)</td>
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<td>May 2021</td>
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<th>Date Form Submitted / Version</th>
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<td>14/12/2020 Version 1</td>
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**Please Note:** Whilst this is not an ethics review process, where questions have some similarities to questions contained in the NHS IRAS Research Ethics form, the corresponding IRAS question numbers are given in parentheses. This is intended to facilitate completion of NHS ethics where such approval is needed.

**Section 1: Introduction**

**Provide a brief overview of the rationale and scientific justification for the research**

500 words maximum

**Relevant to IRAS A12**

Burnout can be described as a psychological syndrome of depersonalization, emotional exhaustion, and low personal accomplishment within an occupational context, which is primarily driven by chronic work-related stress. The impact of burnout can be significant, not only for the individual, but for service users and the wider organization. High absenteeism and increased staff turnover (Ybema et al., 2010), low productivity (Dewa et al., 2014), risk of occupational error (Williams et al., 2007) and secondary traumatic stress (McCain et al., 2018) are all associated with burnout. Therefore, the consequences of burnout can be serious and widespread with significant organizational and personal costs.

Due to the highly interpersonal and emotionally demanding nature of the work, work-related stress and burnout are particular occupational hazards for those in helping professions such as such as social workers, physicians, psychologists and nurses. The drivers of burnout can be broadly categorized into organizational or individual factors. Organizational values and culture, leadership style, management support, autonomy, job satisfaction, job demand and increased expectations around performance have all been associated with burnout amongst helper staff groups. However, the literature suggests individual factors such as personal trauma history, coping style and ability to living a meaningful life, as well as psychological factors like self-compassion and psychological flexibility also influence burnout.
Treatment targets for occupational burnout have been derived from developments in third-wave cognitive behavioural therapies such as Acceptance and Commitment Therapy (ACT) and Compassion-Focused Therapy (CFT). Evidence suggests that self-compassion may buffer against stress, anxiety and depression in the general population and interventions targeting the cultivation of self compassion have found associated improvements in psychopathology across a number of primary outcome measures (Armstrong & Rimes, 2016; Koszycki et al., 2016). The CFT model proposes three affective systems: drive, threat and soothing. When faced with states of negative threat-based affect, individuals can activate this soothing system, access positive affective and motivational states (such as self-compassion) and use these states to down-regulate the threat system. CFT interventions promote the development of compassionate attributes including distress tolerance, non-judgment and empathy to cultivate safe, soothing affect and therefore alleviate psychological distress. 

The ACT approach suggests that psychological distress arises when entanglement with cognitions (cognitive fusion) alongside experiential avoidance results in a state of psychological inflexibility, preventing an individual living meaningfully in accordance with their values. Similarly to levels of self-compassion, evidence suggests that psychological inflexibility predicts many forms of psychopathology. ACT interventions aim to facilitate an individual’s capacity for psychological flexibility in the following ways: reducing entanglement with thoughts and emotions (cognitive defusion); allowing difficult or unwanted thoughts, feelings and urges to come and go without struggle or modification (acceptance); developing a platform of awareness of the present moment (awareness); becoming a witness to thoughts, feelings and actions at any moment (observing self); connecting to a deeper sense of purpose, direction and valued behaviour (values); and setting goals and behaviours in line with these values in the service of a rich and meaningful life (committed action)

Both high levels of self-compassion and psychological flexibility have been demonstrated to be inversely associated with levels of burnout (Beaumont et al., 2016; Kemper et al., 2019; Ruiz & Ordiozola-Gonzalez, 2017). Randomised control trials of both ACT and CFT based approaches for burnout show that interventions are generally effective in reducing symptoms of stress and burnout suggesting that these psychological factors buffer against the effects of workplace stress. Meanwhile, individual factors such as coping styles have been found to mediate the effects of workplace stress on burnout (Li et al., 2014; Howlett et al., 2015). Whilst the literature has identified a number of factors that appear to contribute to the development of workplace stress (e.g. coping style, personal history of trauma etc.) and factors that appear to buffer against the effects of workplace stress (e.g. self-compassion and psychological flexibility) the patterns of relationships between these different variables remain unclear. The current study proposes analyzing both individual coping styles and psychological factors such as self-compassion and psychological flexibility together using quantitative methods (conditional process analysis) to identify the patterns of relationships between factors, elucidate potential mechanisms of change, and to inform potential intervention targets.

Section 2: Research Questions / Objectives

What are the principal and secondary research questions / objectives?

IRAS A10

1) Is there a direct effect between levels of workplace stress and burnout?
2) Is the direct effect of workplace stress on burnout mediated by indirect effects of coping style and ability to live a meaningful and engaged life?
3) Do psychological factors such as cognitive fusion and self-compassion moderate these pathways of direct and indirect action?

Section 3: Methodology

Give a summary of your design and methodology

This should be clear enough for reader to know what will happen at each stage of the project.
The study proposes using a previously collected data set for further analysis. Permission has been given by the original data custodian for re-use of the previously collected data and ethical approval (level 1) will be sought for data re-use.

The Data Set

**Ethical Approval:** The original study had multi-site ethical approval from the University’s ethics committee and NHS Grampian research and development team (reference NRS-15/GH141).

**Methodology:** An online questionnaire was distributed to nursing staff by participating NHS Boards and via the Scottish Mental Health Nurses Forum. The sample was cross-sectional and recruited using voluntary sampling.

**Inclusion criteria:** Registered mental health nurses, currently working in an NHS Scotland health board, and having passed their probation period were eligible to take part in the study.

**Sample characteristics:** 221 respondents participated, however cases where more than 20% of data was missing were removed from the data set resulting in a final sample size of 214. Respondents ages ranged between 23-66 years old with a mean age of 46 years, all respondents were registered mental health nurses working in both community and hospital settings with an average of 19.98 years of experience.

The data set has been completely anonymised and does not contain any identifiable information.

**Measures:**
1) **Mental Health Professionals Stress Scale** (Cushway et al., 1996): a 42 item self-report measure with 7 subscales representing potential sources of stress for mental health professionals: home/work conflict, client/patient related difficulties, organisational structures and processes, lack of resources, work load, professional self-doubt and conflicts with other professionals. All scales of the MHPSS have been demonstrated to show acceptable internal consistency with Cronbach’s alphas ranging from 0.60 to 0.87 and overall good internal consistency for mental health nurses (Cronbach’s alpha = .94).

2) **Cognitive Fusion** Questionnaire (Gillanders et al., 2014). The CFQ is a 7-item, 7-point Likert scale measuring cognitive fusion, where higher scores reflect higher degree of cognitive fusion. Validation studies of the CFQ demonstrate that it has good reliability, temporal stability, convergent, divergent, and discriminant validity, and is sensitive to treatment effects.

3) **Engaged Living** Scale (Trompetter et al., 2013) is a 16-item self-report measure to assess an engaged response style as conceptualized in acceptance and commitment therapy (ACT) across 2 subscales: Valued Living (10 items) and Life Fulfillment (6 items).

4) **Brief COPE** (Carver, 1997) The Brief-COPE is an abbreviated version of the COPE (Coping Orientation to Problems Experienced) Inventory, a self-report questionnaire developed to assess a broad range of coping responses across 14 subscales which are categorized as follows: acceptance, emotional social support, humor, positive reframing, and religion as emotion focused coping. Active coping, instrumental support, and planning are considered as problem-focused strategies. Finally, behavioral disengagement, denial, self-distraction, self-blaming, and substance use and venting are considered as dysfunctional coping.
strategies. The scales have adequate internal reliability (ranging from range from $\alpha = .50$ to $\alpha = .73$).

5) *Oldenburg Burnout Inventory* (Demerouti & Bakker, 2008) a self-report measure measuring symptoms of burnout across two subscales: exhaustion and disengagement. The OLBI demonstrates acceptable reliability (test–retest reliability and internal consistency) as well as factorial, convergent, and discriminant validity. The reliability of the exhaustion subscale has been found to range from $\alpha = .74$ to $\alpha = .85$, and the reliability of the disengagement subscale varies from .73 to .85 across studies.

6) *Self-Compassion Scale - Short Form* (SCS-SF, Raes, Pommier, Neff, & Van Gucht, 2011): This is a 12-item short form of Neff’s Self-Compassion Scale (Neff, 2003). Validation studies have showed high correlation between the short and long-form (r ≥ .97 in three samples; Raes et al., 2011). This scale has been shown to demonstrate good validity and reliability in non-clinical samples especially when measuring overall levels of compassion.

---

**Section 4: Sample Size**

**What sample size is needed for the research and how did you determine this?**

For quantitative projects, outline the relevant Power calculations and the rationale for assuming given effect sizes. For qualitative projects, outline your reasoning for assuming that this sample size will be sufficient to address the study’s aims. If data is to be collected outline reasons for your confidence in being able to achieve a sample of at least this size.

*IRAS A59 and IRAS A60*

Fritz and MacKinnon (2007) detailed sample sizes required to adequately power mediation effects. To identify an effect size of 0.26 on both the alpha and beta paths would require a sample size of 148 which is smaller than the sample size in this proposed study. Previous analysis on the data have identified effect sizes ranging between 0.28-0.32 on such pathways.

---

**Section 5: Analysis**

**Describe the methods of analysis (statistical or other appropriate methods, e.g. for qualitative methods) by which the data will be evaluated to meet the study objectives**

*IRAS A62*

The dataset meets all requirements for parametric analysis.

A conditional process analysis will be conducted with two serial mediators and two moderators as follows:
Should the proposed model not fit the data adequately, consideration has been given to modifications to the above model a priori:

1) Consider parallel mediation
2) Removal of a mediator
3) Removal of a moderator

Section 6: Project Management / Timetable

Outline a timetable for completion of key stages of the project

E.g. ethics submission, start and end of data collection, data analysis

Level 1 ethical approval for re-use of data will be submitted in 2021. Data analysis will being once ethical approval is granted (expected January 2021).

First draft: March 2020.

Section 7: Management of Risks to Project

Please summarise the main potential risks to your study, perceived likelihood of occurrence of these risks, and how you will respond to identified risks if they should occur (you do not need to repeat information provided in section 4).
As analyses will be performed on an existing data set, risks to the study are minimal.

Section 8: Are the any potential costs for the project?
Outline any potential financial costs to the project and justify why these are necessary; including how costs will be met. Please separate these into potential costs for the University and potential costs for your NHS Board. You should ask your NHS Board to meet stationery, printing, postage and travel costs.

No costs identified.

Section 9: Confirmation of Supervisors’ Approval
“I confirm that both my Academic and Clinical Thesis Supervisors have seen and approved this research proposal and have both completed the supervisors’ appraisal forms below.”

Delete as appropriate

Yes

Main Academic Supervisor’s Appraisal of Project Risk

Supervisor’s Name
David Gillanders

Date
16.12.2020

Do you consider that the project should proceed in broadly its current form?
Delete as appropriate

Yes
Outline the reasons for the above response

Highlight any areas of risk to the completion of the project that have not been fully addressed within the proposal and any steps that could be taken to reduce risks

The data set is already available, it is on a topic that Bethan was due to study anyway and so using this dataset allows her to preserve the reading she has already done, and still address the data with novel hypotheses. I can confirm that the analysis and hypotheses that Bethan is proposing is quite different to the previous analyses run with this data set, and that Bethan has developed these original analyses herself, with the usual level of supervision and support that one would expect of a DClinPsychol supervisor. I believe this project represents a good vehicle for Bethan being able to get back on track to finish on time, and will still allow her to produce a doctoral level original thesis.
Appendix E: Ethical Approval for Original Study

Louise Hall
Trainee Clinical Psychologist

16 February 2015

Dear Louise,

Application for Level 2/3 Approval

Re: Burnout among Mental Health Nurses: An examination of the differential roles of nurse burden, self-compassion and acceptance and commitment related processes

Thank you for submitting the above research project for review by the Section of Clinical Psychology Ethics Research Panel. I can confirm that the submission has been independently reviewed and was approved on the 13th January 2015.

Should there be any change to the research protocol it is important that you alert us to this as this may necessitate further review.

Yours sincerely,

Kirsty Gardner
Administrator
Clinical Psychology
Appendix F: Ethical Approval for Re-Use of Data

Subsequent to submission of this form, both the applicant and their supervisor should review any alterations in the proposed methodology of the project. If the change to methodology results in a change to any answer on the form, then a resubmission to the Ethics subgroup is required.

The principal investigator is responsible for ensuring compliance with any additional ethical requirements that might apply, and/or for compliance with any additional requirements for review by external bodies.

ALL forms should be submitted in electronic format. Digital signatures or scanned in originals are acceptable. The applicant should keep a copy of all forms for inclusion in their thesis.

Applicant’s Name: Bethan Parry      Applicant’s Signature: __________________________      Date signed: 18/01/2020

__________________________________________________________
David Gillanders 21.01.21

*Supervisor Signature

Supervisor Name Date

*NOTE to Supervisor: Ethical review will be based only on the information contained in this form. If countersigning this check-list as truly warranting all ‘No’ answers, you are taking responsibility, on behalf of the HSS and UoE, that the research proposed truly poses no ethical risks.

ISSUES ARISING FROM THE PROPOSAL

1 Not required for staff applications
The applicant’s response to our request for further clarification or amendments has now satisfied the requirements for ethical practice and the application has therefore been approved.

Signature: [Signature]

Position: Ethics and Integrity Lead

Date: 29.1.21