

Self-diagnosed burnout: an examination of its definition, symptoms, and relationship with clinical depression

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Publication Date:

2023

DOI:

<https://doi.org/10.26190/unsworks/24763>

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Self-diagnosed burnout: an examination of its definition, symptoms, and relationship with clinical depression

Gabriela Tavella

A thesis in fulfilment of the requirements for the degree of
Doctor of Philosophy

Discipline of Psychiatry and Mental Health
School of Clinical Medicine
Faculty of Medicine and Health

January 2023

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Abstract

Burnout is hot topic in public discourse, with members of the general public quick to self-diagnose as suffering from the syndrome. However, there is a lack of consensus among scientists and practitioners as to how burnout should best be conceptualised and whether/how it should be diagnosed. This thesis reports five studies examining self-diagnosed burnout and how it should best be defined, measured and distinguished from clinical depression. The literature review presented in Part I critiques the currently promulgated three-factor conceptualisation of burnout and highlights the inconclusive research findings regarding burnout's overlap with depression. Part II contains three studies designed to re-define the burnout syndrome. In Study 1, qualitative and quantitative analyses were used to identify key syndromal features of self-diagnosed burnout. In Study 2, a series of bifactor analyses was undertaken to derive a new definitional model and preliminary measure of the syndrome. In Study 3, mixture modelling was used to examine whether the new burnout definition was best modelled dimensionally or categorically. The results of Part II indicated that burnout as experienced by the general population is characterised by several symptoms beyond the traditional triadic symptom model, and that categorical differences in burnout may exist between those with and without a history of mental illness. Part III contains two studies undertaken to evaluate the degree of overlap between burnout and depression. Study 4 assessed for qualitative differences between burnout and depression experienced by participants who reported having experienced both states. Study 5 compared participants with self-diagnosed burnout to participants with clinically-diagnosed depression across several symptom and causal variables. The results of Part III indicated that the new definitional burnout model derived in Part II showed poor differentiation overall between burnout and depression, but that several other phenomenological, symptom and causal differences are

likely to exist between the two states. The results of Study 5 also suggested that burnout overlaps more with non-melancholic than melancholic depression. When taken together, as discussed in Part IV, the studies in this thesis extend knowledge of how self-diagnosed burnout should be defined and illuminate how burnout both converges with and diverges from clinical depression.

Acknowledgements

Being able to submit this thesis is a milestone that seemed almost impossible a few months ago. I am eternally grateful for the team of people that helped to make this happen. First, to my primary supervisor, Professor Gordon Parker. Gordon, it is impossible to articulate how thankful I am for the countless opportunities you have provided and the support you have given me over the past six years. I am so grateful for your wisdom and guidance. Most of all, thank you for believing in my abilities when I haven't believed in them myself, and for encouraging me to keep going when I felt like giving up.

To my co-supervisors, Dr Adam Bayes and Associate Professor Vijaya Manicavasagar. Adam, thank you for being both an excellent teacher and a great friend. You have grounded me in moments when my neuroses have started to get the better of me, and helped me to see the forest for the trees. Vij, thank you for taking me on as a student without hesitation. Having your additional perspective on this thesis has been of great benefit. In addition, thanks to you both, and to Dr Artin Jebejian and Peter Walker, for making the clinical studies in this thesis possible.

To Dusan, thank you for your extensive statistical wisdom and ongoing support. I cannot thank you enough for putting up with my millions of questions and emails. Whenever I have felt out of my depth you have been there to solve the problems that I didn't think could be solved. This thesis would not exist without your input.

To the rest of Gordon's research team. Michael, you have helped me with so many things with no questions asked over the past few years. I am so thankful and am constantly in awe of your genius. Penny, you are always there, whether to lend a helping hand or just to have a chat, thank you for making work so much brighter. To Tahlia, thank you for always being there for me, I am grateful to have made a life-long friend through our work. Kerrie, it

has been a pleasure to work with such a smart, funny, and creative woman. I have learnt a lot from you.

To Sarah Robuck, thank you for all you have done for me over the years. I am lucky to have such an amazing mentor who has always encouraged me and provided such wise footsteps for me to follow.

To my friends, especially Gab, Aimee and Megan. Thank you for always believing in me and for providing me with endless laughs and distractions. I would not have reached this milestone without you three rallying behind me.

To my sister, Giorgia, thank you for always being there for me. Whenever anxiety has started to get the better of me you have been there to support me and remind me of the bigger picture, while making me laugh constantly along the way. To my brother, Patrick, thank you for always being there to provide guaranteed laughs. You are the weirdest person I know and life is a lot funnier with you in it.

To my parents, Luisa and Tony. Mum, you have always provided so much for me, and have shown me what a hard-working, dedicated woman looks like. You always drop everything to make sure I'm okay and I am so thankful for that. Finally, Dad. The sacrifices that you made so that I could get to where I am today are immeasurable. I am so lucky to have been gifted with the most supportive, funny, and caring father, and I am so grateful to have had you here when I started this PhD journey. I wish that you were here now to see me reach the end. I dedicate this thesis to you.

Abbreviations

4-DSQ: Four-Dimensional Symptom Questionnaire

ANOVA: analysis of variance

APA: American Psychiatric Association

AUC: area under the curve

AW model: areas of work-life model

BAT: Burnout Assessment Tool

BDI: Beck Depression Inventory

BLRT: bootstrapped likelihood ratio test

BM: Burnout Measure

BO-all: burnout-all group

BO-reduced: burnout-reduced group

CBI: Copenhagen Burnout Inventory

CE: common era

CFA: confirmatory factor analysis

CFI: comparative fit index

CFS: chronic fatigue syndrome

COR model: conservation of resources model

CSE: core self-evaluation

DEP-all: depression-all group

DEP-mel: depression-melancholic group

DEP-nonmel: depression-non-melancholic group

DSM-5: Diagnostic and Statistical Manual of Mental Disorders (5th edition)

D-value: degree of severity value

ECT: electroconvulsive therapy

EFA: exploratory factor analysis

EM: expectation-maximisation

FDR: false discovery rate

GAD-7: Generalised Anxiety Disorder Scale

GF: general factor

GHQ: General Health Questionnaire

HDRS: Hamilton Depression Rating Scale

ICC: item characteristic curve

ICD: International Statistical Classification of Diseases and Related Health Problems

ICD-10: International Statistical Classification of Diseases and Related Health Problems (10th edition)

ICD-11: International Statistical Classification of Diseases and Related Health Problems (11th edition)

JD-R model: job demands-resources model

MADRS-S: Montgomery Åsberg Depression Rating Scale-Self-assessment

MANOVA: multivariate analysis of variance

MBI: Maslach Burnout Inventory

MBI-ES: Maslach Burnout Inventory Educators Survey

MBI-GS: Maslach Burnout Inventory General Survey

MBI-GS(S): Maslach Burnout Inventory General Survey for Students

MBI-HSS: Maslach Burnout Inventory Human Services Survey

MBI-HSS (MP): Maslach Burnout Inventory for Medical Personnel

MDD: major depressive disorder

MDE: major depressive episode

MET: Multifaceted Empathy Test

NA: negative affect

NSPD: non-specific psychological distress

ODI: Occupational Depression Inventory

OLBI: Oldenburg Burnout Inventory

PBI: Parental Burnout Inventory

PHQ-9: Patient Health Questionnaire

PISCF: participant information statement and consent form

PTSD: posttraumatic stress disorder

RMSEA: root mean square error approximation

ROC: receiver operating characteristic

SBM: Sydney Burnout Measure

SBMB: Shirom-Melamed Burnout Measure

SCID-5: Structured Clinical Interview for DSM-5

SD: standard deviation

SE: standard error

SF: specific factor

SMPI: Sydney Melancholic Prototypic Index

SRMR: standardised root mean square residual

STS: secondary traumatic stress

TLI: Tucker–Lewis index

TPQ: Temperament and Personality Questionnaire

UNSW HREC: University of New South Wales Human Research Ethics Committee

WHO: World Health Organization

WLSMV: weighted least squares mean and variance

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Relevant Publications During Candidature

Publications adapted into thesis chapters

1. **Tavella, G.** & Parker, G. (2020). A qualitative re-examination of the key features of burnout. *Journal of Nervous and Mental Disease*, 208, 452-458. doi: 10.1097/NMD.0000000000001155
 - The contents of this paper form the basis of Chapter 6 (Study 1, Analysis 1A)
2. **Tavella, G.**, Hadzi-Pavlovic, D., & Parker, G. (2020). Burnout: Re-examining its key constructs. *Psychiatry Research*, 287, 112917. doi: 10.1016/j.psychres.2020.112917
 - The contents of this paper form the basis of Chapter 6 (Study 1, Analysis 1B)
3. **Tavella, G.**, Hadzi-Pavlovic, D., & Parker, G. (2021). Burnout: redefining its key symptoms. *Psychiatry Research*, 302, 114023. doi: 10.1016/j.psychres.2021.114023
 - The contents of this paper form the basis of Chapter 7 (Study 2)
4. **Tavella, G.**, Spoelma, M., Hadzi-Pavlovic, D., Bayes, A., Jebejian, A., Manicavasagar, V., Walker, P., & Parker, G. (2022). Modelling self-diagnosed burnout as a categorical syndrome. *Acta Neuropsychiatrica*, 1-9. doi: 10.1017/neu.2022.25
 - The contents of this paper form the basis of Chapter 8 (Study 3)
5. **Tavella, G.** & Parker, G. (2020). Distinguishing burnout from depression: An exploratory qualitative study. *Psychiatry Research*, 291, 113212. doi: 10.1016/j.psychres.2020.113212
 - The contents of this paper form the basis of Chapter 9 (Study 4)

Other relevant publications

1. Parker, G., **Tavella, G.**, Ricciardi, T., & Hadzi-Pavlovic, D. (2020). Differentiating clinical and non-clinical depression: a heuristic study offering a template for extension studies. *Acta Psychiatrica Scandinavica*, 141, 340-349. doi: 10.1111/acps.13130
2. Parker, G., **Tavella, G.** & Eyers, K. (2021, 2023). *Burnout: Identifying burnout patterns and pathways to recovery*. Sydney, Australia: Allen & Unwin; London, UK: Taylor & Francis.
3. Parker, G. and **Tavella, G.** (2021). Distinguishing burnout from clinical depression: a theoretical differentiation template. *Journal of Affective Disorders*, 281, 168-173. doi: 10.1016/j.jad.2020.12.022
4. Bayes, A., **Tavella, G.**, & Parker, G. (2021). The biology of burnout: causes and consequences. *The World Journal of Biological Psychiatry*, 22, 686-698. doi: 10.1080/15622975.2021.1907713

5. Parker, G. & **Tavella, G.** (2021). Burnout: Modelling, Measuring and Managing. *Australasian Psychiatry*, 29, 625–627. doi: 10.1177/10398562211037332
6. Parker, G. & **Tavella, G.** (2022). The diagnosis of burnout: some challenges. *Journal of Nervous and Mental Disease*, 210, 475-478. doi: 10.1097/NMD.0000000000001492
7. Parker, G. & **Tavella, G.** (2022). Is burnout simply a stress reaction?. *Australian and New Zealand Journal of Psychiatry*, 56, 1065-1067. doi: 10.1177/00048674211070221
8. Parker, G. & **Tavella, G.** (2022). Burnout: a case for its formal inclusion in classification systems. *World Psychiatry*, 21, 467-468. doi: 10.1002/wps.21025

Under review

1. **Tavella, G.**, Hadzi-Pavlovic, D., Bayes, A., Jebejian, A., Manicavasagar, V., Walker, P., & Parker, G. (submitted). Self-diagnosed burnout and clinically-diagnosed depression: points of convergence and divergence.
 - The contents of this paper form the basis of Chapter 10 (Study 5)
2. Parker, G., **Tavella, G.**, & Hopcraft, M. (submitted). Exploring the validity of the Sydney Burnout Measure - and extension definitional and classification issues.
3. **Tavella, G.**, Spoelma, M., & Parker, G. (submitted). Detecting burnout: identifying key symptoms using standard and machine learning methods.
4. Hopcraft, M., McGrath R., Stormon, N., **Tavella, G.**, & Parker, G. (submitted). Australian dental practitioners' experiences of burnout.

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Introduction

Burnout is a topic of great public and research interest, with prevalence rates reportedly so high and on the rise so as to suggest we are in the midst of a burnout “epidemic” (Hauck & Gabbard, 2019; Lemaire & Wallace, 2017; Moss, 2021; Seo et al., 2021). Burnout is generally viewed as a negative and chronic psychological syndrome that results from exposure to a persistently stressful work environment. Studies have reported many consequences for individuals with burnout, including reduced wellbeing and life satisfaction (Kareaga et al., 2009; Lambert et al., 2010a; Uchmanowicz et al., 2019), work absenteeism and presenteeism (Dyrbye et al., 2019; Pei et al., 2020), resignation from career paths (Chirico & Leiter, 2022; Lambert et al., 2010a), as well as increased risks of medical conditions such as high blood pressure, heart attacks and strokes (Toppinen-Tanner et al., 2009; von Känel et al., 2020). Consequently, burnout affects a significant burden on the global economy. In Australia alone, work absenteeism and presenteeism have been calculated to cost up to \$17 billion dollars per year (Australian Government Productivity Commission, 2020), while the global annual cost of burnout has been estimated to be more than US\$300 billion (Bretland & Thorsteinsson, 2015).

Reported prevalence rates are high and appear to have increased rapidly over the last few decades, with a further increase having reportedly occurred recently as a consequence of the COVID-19 pandemic (Aubusson, 2021; Chirico & Leiter, 2022; Hartley, 2020; Lufkin, 2020). Point prevalence rates reported for burnout in the general working population are in the order of thirty per cent (Ahola et al., 2005; Shanafelt et al., 2012; Shanafelt et al., 2015; Shanafelt et al., 2019), with rates even higher in occupational sectors with higher work demands and lower work resources, such as healthcare. For instance, prevalence rates of

more than fifty percent have been reported for United States physicians (Shanafelt et al., 2015) and close to eighty percent in Australian physician trainees (Axisa et al., 2019).

Despite burnout's apparent high prevalence and 'hot topic' status in public discourse, scientists and clinicians are yet to agree on the syndrome's precise definition, its symptoms, how it should be measured and how it can be distinguished from several other psychological states (Bianchi & Brisson, 2019; Heinemann & Heinemann, 2017; Nadon et al., 2022). The prevailing definition of burnout weights a triadic symptom model of (i) exhaustion, (ii) cynicism or empathy loss, and (iii) compromised work performance, with these features captured in the most widely used measure of burnout, the Maslach Burnout Inventory (MBI; Maslach et al., 2016). However, there is widespread debate as to whether the MBI's conceptualisation of burnout is valid, and questions abound as to whether application of the MBI risks inaccurate 'diagnosis' and estimates of prevalence. Some researchers and clinicians have even questioned the utility of burnout as a distinct syndrome at all, with some suggesting that the term is simply "psychobabble" (Kaschka et al., 2011; Roberts, 1986).

Burnout's apparent overlap with other psychological conditions further fuels the debate as to whether the syndrome is deserving of nosological status. Most notably, whether burnout can be differentiated from depression has received extensive empirical examination, however the findings from such research remain inconclusive. For instance, the degree of symptom overlap and the strength of the correlation between burnout and depression varies considerably across studies, while factor analyses have variably placed burnout and depression on the same or separate factors (Bianchi et al., 2015a). Furthermore, studies examining the biological correlates of both states have shown points of both overlap and distinction (Bayes et al., 2021). Thus, whether burnout should be considered a nosological entity distinct from depression remains an open question.

While debate continues as to whether burnout should be a diagnosable condition, the burnout label resonates broadly with the general population and many individuals readily self-diagnose as being ‘burnt out’. Indeed, for the lay community, “there seems to be no doubt that burnout is a real and serious phenomenon” (Heinemann & Heinemann, 2017). Individuals who have presented to a medical professional for management of burnout symptoms have reported a worsening of their condition when their doctor either does not take their complaints seriously, or interprets their symptoms as being due to depression and thus implements treatment for this condition rather than burnout (Engebretsen & Bjorbækmo, 2019). Evidently, there is a disconnect between perceptions of the medical community and the experiences of the lay community when it comes to the burnout ‘enigma’.

This thesis reports a body of work that was broadly designed to examine how burnout is experienced by the lay population, and to what extent a definition of burnout based on such experiences is distinct from experiences of clinical depression. The thesis is divided into four sections. **Part I** (Chapters 1 to 5) comprises of **a review of the existing burnout literature**, detailing how burnout has been defined and measured (Chapter 1), as well as modelled (Chapter 2) since its inception as a psychological syndrome, how its apparent overlap with other medical and psychological disorders, especially depression, has hindered its recognition as a nosological entity (Chapter 3), and other factors that have influenced the diagnostic landscape as it pertains to burnout (Chapter 4). The conclusions drawn from this review of the literature provide a rationale for the empirical studies included in this thesis, with this rationale detailed in Chapter 5. **Part II** (Chapters 6 to 8) reports three studies designed to **re-define the burnout syndrome** through first identifying key syndromal features of burnout as reported by members of the lay community (Study 1), developing a new definitional model of such constructs and constituent symptoms represented by a preliminary measure of the syndrome (Study 2), and examining whether this new burnout definition is best modelled

dimensionally or categorically (Study 3). **Part III** (Chapters 9 and 10) contains two studies undertaken to **examine the degree of overlap between burnout and depression**, first by analysing qualitative data from participants who reported having experienced both burnout and depression (Study 4), and then by comparing symptoms and causal attribution nuances between participants reporting burnout and participants with a clinically-diagnosed depressive condition (Study 5). The final section, **Part IV** (Chapter 11), contains a **General Discussion of the research findings and concludes the thesis** by considering the significance and implications of the results of all five studies, while also suggesting directions for future research. Taken together, the research reported in this thesis contributes novel information to the ongoing debate relating to burnout definition and conceptualisation, and whether and how it should be distinguished from depression.

PART I: BACKGROUND

1. Defining and measuring burnout

This chapter outlines how burnout has been defined and conceptualised historically, as well as details the development of the most widely accepted definition and measure of the syndrome used today. The current conceptualisation of burnout is critiqued, providing justification as to why burnout might benefit from further empirical examination and potential re-definition.

1.1. Burnout throughout history.

Contemporary research into burnout originated in America during the 1970s. However, syndromes akin to our modern understanding of burnout have been described for centuries, albeit under different designations. Two biblical figures have been nominated as potentially exhibiting burnout (Schaufeli, 2017). The first is the prophet Elijah who, after expending his energy serving God and performing several miracles, collapsed in despair and fell into a deep sleep. Elijah has since been described as ‘The Exhausted Prophet’, with ‘Elijah’s fatigue’ including symptoms such as extreme exhaustion and social withdrawal that mirror current-day perceptions of burnout. A second syndrome akin to burnout is referred to in the Book of Exodus, when Moses is warned by God that doing work that is “too heavy” will “wear you out” (Exodus 18:17-18).

Moving into the common era (CE), the monastic saint John Cassian described a syndrome that appears to align with modern burnout (Finlay-Jones, 1983). Specifically, he wrote of eight cardinal sins faced by Christian monks in the fourth century as they meditated in the Egyptian desert, with the last of these being “acedia” - a state of non-caring. Acedia was associated with lethargy, non-caring and cognitive impairment, preventing the monks from accomplishing anything through their meditation and making them question whether there was “any point in it all” (Finlay-Jones, 1983, p. 150). These features correspond with

(but extend, especially in regard to the cognitive component) the current conceptualisation of burnout, as shortly described. Thus, burnout is unlikely to be a contemporary phenomenon, having been described long before it was identified as an important workplace concern in the late 20th century.

Contemporary research into burnout originated in America during the 1970s. In a paper titled “Staff burn-out”, psychologist Herbert Freudenberger (1974) described burnout as experienced by himself and colleagues while working at a free drug abuse clinic in New York City. The burnout syndrome detailed by Freudenberger manifested itself through niggling physical symptoms including fatigue, headaches, gastrointestinal disturbances and the inability to overcome a common cold. Behavioural signs included irritability, short-temperedness and emotional outbursts, with other features listed including paranoia and stubbornness.

In the same decade, a team of social psychologists led by Christina Maslach began investigating burnout in California. Maslach published her first anecdotal descriptions of burnout generated from interviews with human services workers in 1976. In asking such workers how they coped with the emotional loads of their jobs, Maslach observed that many interviewees nominated themselves as experiencing “burnout”, which they described as including feelings of emotional exhaustion and detachment from their service recipients, as well as a reduced sense of professional accomplishment (Maslach, 1976). Both Freudenberger and Maslach identified burnout as a problem for those who do “people-work” (i.e., in the human services industry), with the syndrome seemingly resulting from and subsequently impacting on workers’ emotionally-demanding interactions with service recipients.

The term ‘burnout’ thereafter began to be used ubiquitously to label a work-related psychological syndrome encompassing exhaustion and other symptoms. Schaufeli et al.

(2009) elaborated on the reasons behind the label of burnout having been applied to the syndrome, stating that “As a metaphor for the draining of energy...It implies that once a fire was burning, but the fire cannot continue burning brightly unless there are sufficient resources that keep being replenished” (p. 205). Since descriptions of such a syndrome in the 1970s, there has been increasing acceptance in general discourse of the concept of burnout being a prevalent and important concern for the global workforce. The proliferation of burnout since the 1970s has been attributed to the transition to a more individualistic and increasingly narcissistic culture, where professional accomplishment is highly valued and avenues for social support are minimised (Schaufeli et al., 2009). Since its proliferation, there has been some debate as to whether burnout is more prevalent in white-collar compared to blue-collar industries, because of the inherent intellectual and emotional demands of the former (Toppinen-Tanner et al., 2002). However, stressors specific to blue-collar industries, such as low workplace autonomy and high risks of accidents, are gaining recognition as contributors to burnout, and thus burnout in these industries is being increasingly acknowledged (Hulsegge et al., 2020; Wardani & Firmansyah, 2019). Nonetheless, in the last decade the impact of technological demands (e.g., being on call or contactable on a 24/7 basis) across all industries has been held to be a key driver of increased prevalence rates (Kossek, 2016; Maier et al., 2015). Public interest in burnout is evidently rampant, with media outlets commonly proclaiming that society is in the midst of a burnout “epidemic” (e.g., Rough, 2019; Sarner, 2018).

Such recognition by the general public, however, is not matched in the medical field. The nosological status and definition of burnout, as well as its measurement, have been debated intensely by researchers and health practitioners in recent decades, reflecting ambiguous results of studies attempting to define burnout. Such contention is best illustrated

by the development of the Maslach Burnout Inventory (Maslach & Jackson, 1981) and its subsequent evaluation.

1.2. The Maslach Burnout Inventory.

The prevalence of self-reported burnout in Maslach's interview subjects led her team to pursue the condition by undertaking a set of empirical research studies. In a seminal paper, Maslach and Jackson (1981) defined burnout as being comprised of three components that were derived primarily through the earlier interviews with human services workers. The first component, emotional exhaustion, was described as resulting from the depletion of an individual's emotional resources which psychologically drains them and prevents them from being able to exert any effort. The second component involved development of negative attitudes or feelings of cynicism towards their clients. The final component was manifested by feelings of professional inadequacy or dissatisfaction in one's work performance.

The authors then went on to describe the development of their burnout measure, the Maslach Burnout Inventory (MBI) and which they "designed to measure hypothesised aspects of the burnout syndrome" (Maslach & Jackson, 1981, p. 100). Items for the measure were derived from their earlier interviews as well as from a review of the literature, resulting in a preliminary 47-item questionnaire that was then completed by 605 people employed in the human services sector. A factor analysis (with varimax [orthogonal] rotation) of the data was undertaken and generated 10 factors, with four of these accounting for over seventy-five per cent of the variance. The item set was then reduced to 25 items by retaining only those items that had a factor loading greater than 0.40 on a single factor, a high item-total correlation, as well as a wide range of responses but a low percentage of "never" responses. The refined 25-item questionnaire was then administered to a new sample of 420 human services workers, with data combined with that of the original sample. A four-factor solution

was generated by this combined sample ($n = 1025$), with three of these having eigenvalues greater than unity and thus retained as the three subscales of the MBI and bringing the total item set down to 22 items. The “emotional exhaustion” subscale comprised nine items capturing feeling fatigued, emotionally drained and overworked. The “depersonalization” subscale had five items encompassing detachment and loss of empathy towards service recipients. Finally, the “personal accomplishment” subscale contained eight items capturing feelings of efficacy and achievement at work (effectively generating scores in the opposite direction to the first two subscales).

The authors therefore positioned burnout as positively associated with the first two subscales (i.e., higher scores on these scales indicate a higher degree of burnout) but negatively associated with the third subscale (i.e., higher scores on this subscale indicate a lower degree of burnout). In terms of reliability of the three subscales, the authors reported high internal consistency (lowest Cronbach’s coefficient alpha = 0.72) and moderate to high test-retest reliability (lowest test-retest reliability coefficient = 0.53). They also reported the scale’s convergent validity to be supported by consistency of self-report scores with ratings made by family members or co-workers, and correlations between MBI scores and job characteristics (e.g., higher workloads) or personal outcomes (e.g., difficulties in personal relationships) hypothesised as related to burnout.

A user’s manual published to accompany the MBI is now in its fourth edition (Maslach et al., 2016). The MBI manual lists the original MBI as the *MBI: Maslach Burnout Inventory Human Services Survey* or MBI-HSS, signifying its development from and intention for use in the human services sector only. Additional versions of the questionnaire adapted from the MBI-HSS are also included in the manual for use in other occupational fields, with the current versions being *MBI for Medical Personnel (MBI-HSS (MP))*, *MBI Educators Survey (MBI-ES)*, *MBI General Survey (MBI-GS)*, *MBI General Survey for*

Students (MBI-GS(S)). For those versions still pertaining to “people-work” (i.e., the MBI-HSS, the MBI-HSS (MP) and the MBI-ES), the wording of several items differs slightly between versions to better reflect nuances of the specific occupational setting in which each version is to be used, such as “recipients” from the MBI-HSS being replaced with “patients” and “students” in the MBI-HSS (MP) and MBI-ES respectively. The MBI-GS, on the other hand, was adapted to measure burnout experienced by those who do not work in the human services sector. To reflect this difference, the depersonalisation subscale was replaced by a “cynicism” scale to measure feelings of detachment towards work itself rather than to service recipients, while the professional accomplishment subscale was replaced by a “Professional Efficacy” scale to assess an individual's feelings of effectiveness at work, although the authors note that the items in both scales remain similar to those in the MBI-HSS.

1.3. Critique of the Maslach Burnout Inventory and other measures of burnout.

The Maslach triadic symptom definition of burnout and the MBI measure dominate the burnout literature, with the measure used in almost ninety percent of published burnout research (Hadžibajramović et al., 2020; Schaufeli, 2021). Despite such dominance, the measure and its conceptualisation of burnout has been widely critiqued.

1.3.1 Interpretability issues and their impact on calculating prevalence.

One concern is how scores on the MBI should be interpreted. Specifically, while burnout is conceptualised as the simultaneous occurrence of all three symptom constructs, the MBI manual stipulates that scores on the three subscales should be calculated independently and should not be combined into a single burnout score (Maslach et al., 2016). As a result, the MBI effectively contains three separate measures of a single condition (Kristensen et al., 2005), with questions arising concerning how to interpret burnout levels in someone with a

score indicative of burnout on one or two subscales of the MBI but not on the remaining subscale(s).

Furthermore, burnout is positioned in all versions of the MBI as a dimensional rather than a categorical construct. There are therefore no cut-off scores for measuring burnout included in the manual, with the authors arguing that there is “no definitive score that ‘proves’ a person is ‘burned out’” (Maslach et al., 2016, p. 23). Despite this positioning, many authors have since derived cut-off scores for diagnostic purposes (Schaufeli et al., 2009), but such cut-offs are themselves problematic as most appear to have been chosen arbitrarily and are not consistent across studies (Bianchi et al., 2018).

As a result, prevalence rates reported across studies are highly variable. For instance, one meta-analysis of 182 studies examining rates of burnout in physicians (in which 85.7% of studies used the MBI to calculate prevalence rates) reported that prevalence rates across studies ranged from 0% to 80.5% (Rotenstein et al., 2018). Such variable cut-off scores bring the validity of reported prevalence rates into question and lead to predictable concerns as to what constitutes a true ‘case’ of burnout.

1.3.2. Scope.

Another criticism of the MBI is its initial restriction to those in the human services industry. In their first paper describing its development, Maslach and Jackson (1981) explained burnout as occurring in those “who do people work of some kind” (p. 99). They later argued (Maslach & Jackson, 1986) that burnout not only affected a worker’s interaction with their recipients, but was also *caused* by such interactions, thus restricting burnout, by definition, as experienced only by those working in the human services sector (Kristensen et al., 2005). As noted earlier, Maslach and colleagues did later broaden the MBI’s scope to include burnout in employment contexts outside of the human services industry, adapting the original MBI (the MBI-HSS) into the MBI-GS. Since then, multiple non-specific (i.e., not

pertaining solely to human services work) work stressors have been associated with burnout (described in more detail in Chapter 2), including factors such as work overload, insufficient recognition for work performance from managers and having low work autonomy (Leiter & Maslach, 2003).

Despite the expansion of the MBI's scope, the way in which the measure was adapted has not escaped criticism. Specifically, while the authors of the MBI state that “burnout as measured by the MBI-GS (shares) many features with burnout as measured by the MBI-HSS” (Maslach et al., 2016, p. 37), others have questioned the validity of this extrapolation (e.g., Bianchi et al., 2018; Shirom, 2003). For example, Salanova et al. (2005) reported that a four-factor model of burnout containing separate factors for depersonalisation and cynicism fitted their data (from samples of teachers and blue-collar workers) better than a three-factor model incorporating depersonalisation and cynicism into a single factor. Similarly, depersonalisation and cynicism were reported to be separate constructs in factor analyses undertaken in a sample of teachers (Simbula & Guglielmi, 2010), as well as in a broader sample of workers from eight different human services professions (Larsen et al., 2017). Such results indicate that there may be pitfalls in expanding the conceptualisation of burnout as it pertains to the human services industry into a broader definition for the entire working population.

Furthermore, some have questioned whether burnout should be restricted to formal (i.e., paid) employment contexts. For example, several recent studies have reported the occurrence of burnout occurring in contexts outside of paid employment, such as in parenting (e.g., Mikolajczak et al., 2018; Roskam et al., 2017) and caregiving (e.g., Gérain & Zech, 2019; Norberg, 2007) roles, and a range of other contexts discussed in more detail in Chapter 2. In one study of health professionals, fewer than half (44%) of participants with burnout symptoms attributed their job as having caused such symptoms (Bianchi & Brisson, 2019).

Thus, whether burnout's definition should be based solely on the experiences of those in formal employment contexts is open to challenge. Instead, there has been increasing recognition that, while burnout should be considered a work-related psychological state, such work may be informal (i.e., unpaid) in nature. From this perspective, "work" has been defined as any structured activity that is deemed necessary to undertake so to achieve a specific goal and which requires the exertion of energy (Schaufeli et al., 2020).

1.3.3. Factorial structure.

Perhaps the greatest debate relating to the MBI's conceptualisation is its triadic structure. Some argue that, rather than being a three-factor construct, burnout can be captured by a single dimension and is simply analogous with exhaustion (e.g., Pines & Aronson, 1981; Shirom & Melamed, 2006). In relation to the MBI specifically, it has been suggested that the MBI's emotional exhaustion factor is the sole symptom needed to capture the burnout syndrome, while the depersonalisation/cynicism construct represents a set of coping strategies and the lack of accomplishment/efficacy construct captures consequences associated with such exhaustion (Bianchi et al., 2018). Interestingly, Maslach's team put forward a parsimonious sequential model (Leiter & Maslach, 1988; Maslach & Jackson, 1982) to account for the development of burnout as conceptualised by the MBI. The model suggests that a person first experiences emotional exhaustion after exposure to emotionally taxing work demands. Next, the individual begins to disconnect from their work and those they work with – that is, they exhibit depersonalisation – in order to cope with such emotional exhaustion. Finally, prolonged depersonalisation eventually leads to poor work performance, and thus the person would begin to feel ineffective at their job and experience reduced personal accomplishment. This model is relatively straight-forward and there has been some longitudinal research supporting such a sequence (Bakker et al., 2000; Toppinen-Tanner et al., 2002). However, while incorporating all three components of Maslach and

colleague's burnout definition, the sequential model also aligns with the alternative argument (as just mentioned) that exhaustion is the sole defining symptom of burnout, as the model implies that depersonalisation and reduced personal accomplishment are indeed coping strategies and a consequence of emotional exhaustion, respectively.

Some proponents of the unitary model have created new measures of burnout that are effectively measures of exhaustion. For instance, the Shirom-Melamed Burnout Measure (SMBM) characterises burnout as consisting of physical, cognitive and emotional fatigue (Shirom & Melamed, 2006). Similarly, the Burnout Measure (BM) created by Pines and Aronson (1981) captures a burnout syndrome that they define to be 'a state of physical, emotional and mental exhaustion caused by long-term involvement in situations that are emotionally demanding'. The BM is the second most frequently used measure of the condition after the MBI (Enzmann et al., 1998), but generates only a single score to measure burnout, calculated by summing scores on 21 items assessing experiencing feelings such as being "trapped", "weak" or "rundown".

Another burnout measure that primarily focuses on measuring exhaustion is the Copenhagen Burnout Inventory (CBI; Kristensen et al., 2005). This measure captures three domains of burnout (i.e., personal, work-related and client-related burnout). The subscale assessing personal burnout is based on items from the BM and is described by the authors as a "generic" scale intended to simply assess the level of exhaustion experienced by any individual, whether employed, unemployed or retired. The remaining two scales (assessing work-related burnout and client-related burnout) assess an individual's level of exhaustion that they perceive to be associated with aspects of their work (i.e., paid employment) or in their interaction with clients, respectively. Comparing an individual's scores on the work- and client-related scales with their score on the personal burnout scale is said to indicate whether their fatigue is attributable to work scenarios or whether they attribute their exhaustion to

non-work factors (e.g., family demands). When considering the CBI's scope, it is unclear whether the authors are suggesting that those with exhaustion attributed exclusively to non-work factors (i.e., those with personal burnout) should actually be considered as suffering from burnout. They first emphasised that, while exhaustion is the key symptom of burnout, it must be accompanied by "the *attribution* of fatigue and exhaustion to specific domains or spheres in the person's life...one such domain is work and a more specific domain is client work" (p. 197). This implies that those who attribute their exhaustion solely to non-work factors cannot be experiencing burnout. Indeed, they go on to clarify that they included the label "burnout" in the personal burnout scale's title to signify it belongs to the CBI but that it is ultimately equivalent to a measure of fatigue. It therefore seems reasonable to infer that the CBI conceptualises burnout as fatigue and exhaustion resulting from stressors faced at work or with clients.

Burnout measures focusing on single construct of exhaustion have not escaped criticism. For instance, in a study assessing the BM's construct and discriminant validity, Enzmann et al. (1998) concluded that the BM is not a good substitute for the MBI. Specifically, the BM's items were criticised for being too general to distinguish burnout from other psychological constructs like lethargy and low affect, and it is therefore more useful as a measure of general well-being.

More generally, some oppose positioning burnout as analogous with exhaustion by defending the three-factor structure of the MBI. Schaufeli et al. (2009) argued for the rigour of the MBI's development by highlighting that its formation involved an iterative process employing both in-depth qualitative interviews of workers and statistical confirmation of findings through repeated factor analyses. More broadly, those same authors argue that the ready take-up of the label "burnout" in general discourse reflects the lay community's acceptance of the syndrome as being a distinct and relatable experience, rather than merely

synonymous with the common experience of exhaustion. Thus, Maslach and colleagues maintain that, in defining burnout, exhaustion is a necessary feature, but not wholly sufficient in defining the syndrome (Maslach & Leiter, 2017).

Other researchers oppose both the unitary exhaustion model as well as the MBI burnout model. Demerouti et al. (2003) suggest that a two-factor model of burnout is adequate in capturing the syndrome, and consequently created the Oldenburg Burnout Inventory (OLBI), which includes two subscales measuring experiences of exhaustion and disengagement, respectively (Halbesleben & Demerouti, 2005). De Beer and Bianchi (2017) similarly identified a two-factor model as sufficient using Bayesian structural equation modelling, with their first factor being an amalgamation of the MBI's emotional exhaustion and depersonalisation subscales, while the second factor comprised the MBI's personal accomplishment items. Further research indicates that while two of the MBI's factors, emotional exhaustion and cynicism/depersonalisation, may be core symptoms of burnout, the third MBI factor, professional accomplishment/efficacy, may be a more independent construct (Mészáros et al., 2014; Sandrin et al., 2022).

Some posit that the one-, two- and three-factor models of burnout are in fact all inadequate, suggesting instead that burnout may comprise more than three factors. Specifically, it has been argued that the MBI was derived through factor analysing only a small set of "arbitrary" items (Schaufeli, 2003, p. 3), and that it was designed specifically to measure Maslach and Jackson's hypothesised definition of burnout, being namely "a syndrome of emotional exhaustion, depersonalisation, and reduced personal accomplishment" (Maslach & Jackson, 1981, p. 1) – in essence a reifying strategy. Their burnout definition therefore effectively became unfalsifiable in that their original 47-item measure only included items relating to the three factors of their burnout construct. On this point, Kristensen et al. (2005) have argued that the burnout definition and the MBI are "two sides of the same coin:

Burnout is what the MBI measures, and the MBI measures what burnout is” (p. 193). The question then arises as to whether the three-factor MBI burnout definition would have been very different if a more exhaustive list of items had been included in the analysis and other possible dimensions of burnout were considered (Bianchi et al., 2015c). Of particular concern is whether symptoms of other psychological states, such as depression, which were not assessed for inclusion in the MBI, are in fact integral to the definition of burnout. This issue will be discussed in more detail in Chapter 3.

The likely exclusion of important burnout symptoms in the MBI was recently highlighted by Schaufeli et al. (2020), who have subsequently created a new measure of burnout called the Burnout Assessment Tool (BAT). Citing research suggesting cognitive deficits, psychological distress symptoms (e.g., irritability, sleeping problems) and symptoms of depression as likely key features of a burnout syndrome, the authors’ burnout measure includes items depicting exhaustion, mental distancing (e.g., feeling indifferent about one’s job), cognitive impairment (e.g., forgetfulness) and emotional impairment (e.g., irritability) as the core symptoms of burnout, with psychological (e.g., worrying, panic attacks) and psychosomatic (e.g., heart palpitations, chest pains) complaints making up secondary burnout symptoms. Their conceptualisation of burnout was derived following semi-structured interviews with general practitioners, psychologists and occupational physicians who routinely deal with individuals with burnout. They then administered the BAT to 1500 Flemish employees and quantified it as having both adequate reliability (Cronbach’s alpha for all subscales > 0.80) and construct and discriminant validity when examined against other burnout measures (the MBI and OLBI).

While a much broader conceptualisation of burnout than that put forward by the MBI, two elements of the BAT should be noted. First, while the authors note that depressed mood should be considered a secondary symptom of burnout, they did not include items capturing

this symptom or other depressive symptoms in their item set for analysis. They argued instead that the depression subscale of the Four-Dimensional Symptom Questionnaire (4-DSQ; Terluin et al., 2006), which measures mild symptoms of depression, should be administered in conjunction with the BAT when assessing for burnout. Second, they noted a limitation of their research being that their conceptualisation of burnout was based on the clinical experience of professionals who deal with burnout patients rather than on the experiences of those individuals who suffer from burnout themselves. They suggested that future research should examine the experiences of individuals with burnout to validate their conceptualisation of burnout and the symptoms they identified.

Recently, a systematic review of the psychometric properties of several measures of burnout concluded that the CBI was the most robust (Shoman et al., 2021). However, as noted, the CBI essentially equates burnout with exhaustion, which is viewed as the key feature of burnout (in all burnout measures), and therefore findings supporting its validity are not wholly surprising, while the problems of equating burnout with exhaustion have also been discussed earlier in this Chapter. Furthermore, the BAT, which includes several additional symptom constructs as core symptoms of burnout, was not evaluated in the review (presumably reflecting the recency of the BAT's development), and thus whether this newer measure is superior to other burnout measures remains to be determined.

1.4. Symptoms of burnout: the need for clarity.

Importantly, all burnout measures considered in this chapter position exhaustion as a cardinal feature of burnout. Thus, it is not disputed that “exhaustion is the central quality of burnout and the most obvious manifestation of this complex syndrome” (Maslach et al., 2001, p. 402). Rather, questions remain as to whether an exhaustion factor alone is sufficient in adequately capturing burnout, or whether additional factors are required – and, if so, how

many such factors are necessary and what their representative symptoms might be. These concerns have been repeated recently, with Bianchi et al. (2019) emphasising that there still exists no clear and agreed-upon definition of burnout and its key symptoms, while the possibility remains that a very different definition of burnout than that promulgated by the MBI would exist if a more exhaustive list of items had been examined for inclusion in the preliminary defining studies (Bianchi et al., 2015c). On this issue, Schaufeli and Enzmann (1998) reported that over 132 individual symptoms have been associated with burnout across studies. Such an exhaustive list of symptoms is problematic as it risks a non-specific syndrome being defined, but also indicates that some important symptoms of burnout may have been overlooked for inclusion in the MBI.

2. The development and causes of burnout: contrasting models

This chapter describes some of the models put forward to explain the developmental trajectory and causes of burnout. Putative predisposing diathesis factors as well as precipitating stress factors are considered.

2.1. Early models.

Initial models proposed variable stages or phases in the development of burnout (as conceptualised in the MBI), such as the sequential burnout model proposed by Leiter and Maslach (1988) that was detailed in Chapter 1. An alternative sequential model of burnout is the phase model proposed by Golembiewski et al. (1983). This model dichotomised each of the MBI burnout constructs into high and low categories (with the personal accomplishment scale reverse scored), resulting in eight different phases of burnout as evident in Table 2.1.

Table 2.1. The Golembiewski et al. (1983) phase model of burnout.

MBI subscales	Phases							
	I	II	III	IV	V	VI	VII	VIII
Depersonalization	Low	High	Low	High	Low	High	Low	High
Reduced personal accomplishment	Low	Low	High	High	Low	Low	High	High
Emotional exhaustion	Low	Low	Low	Low	High	High	High	High

Note: This table was reproduced with permission from Springer Nature Customer Service Centre GmbH: Richardsen, A. M., & Burke, R. J. (1995). Models of burnout: implications for interventions. *International Journal of Stress Management*, 2(1), 31-43.
<https://link.springer.com/article/10.1007/BF01701949>

Individuals in the later phases were more likely to experience correlates and consequences of burnout, such as more negative work experiences and poorer outcomes on mental and physical health (Burke et al., 1984a; Golembiewski et al., 1983). The authors of the model did not argue that a person must move through every phase to be considered burnt

out, but Golembiewski (Golembiewski, 1989; Golembiewski & Munzenrider, 1988) did suggest a sequential model of burnout that incorporated phases I, II, IV and VIII. This sequence positioned depersonalisation as the first phase of burnout, reduced personal accomplishment as the second phase and emotional exhaustion as the final phase, and was therefore at variance with the staging model of Leiter and Maslach (1988).

The Golembiewski et al. (1983) phase model has been deemed by some as superior to Leiter and Maslach (1988) sequential model, as the former “allows for considerable theoretical richness” (Richardson & Burke, 1995, p. 34) through characterisation of eight possible burnout profiles. However, in a longitudinal study of public welfare workers that directly compared the two models, Lee and Ashforth (1993) reported that Leiter and Maslach’s burnout sequence was better supported by participants’ MBI scores over the 8-month study than Golembiewski’s four-phase sequential model, albeit stating that this result should be interpreted with caution as neither model fitted the data adequately. Similar results were reported by Cordes et al. (1997) in human resource workers, but again poor data fit was reported for both models and thus results were not deemed to be definitive.

Another early staging model is the transactional model of burnout proposed by Cherniss (1980), which included three stages: stress, strain and defensive coping. Individuals were said to enter the stress stage when they experienced a mismatch between demands of their work and their own resources. Prolonged exposure to such stress would then lead to personal strain in the form of exhaustion, tension and anxiety. Defensive strategies to cope with such strain would then be employed, with some being able to advance problem solving and achieve professional self-efficacy, and thus protect themselves from burnout. In contrast, the individuals who utilise less effective coping strategies, including empathy loss, cynicism and detachment from one’s work, would be the ones to succumb to burnout. While this model has received empirical support across different occupations (Burke & Greenglass, 1989;

Burke et al., 1984b), it is reliant on the MBI's burnout definition, the limitations of which were detailed in Chapter 1.

2.2. Imbalance models.

Alternative burnout models have since been proposed that are less specific to the MBI's three-dimensional burnout definition and are underpinned by an *imbalance* framework. Much like the first stage of Cherniss' transactional model, imbalance models are based on the idea that burnout develops when there are discrepancies between an individual's job demands and their ability to meet such demands. For example, the conservation of resources model (COR model; Hobfoll & Freedy, 2018) posits that individuals will strive to maintain personal resources when those resources come under threat. People in well-resourced workplaces will be less prone to burnout as their access to work resources reduces the number of personal resources, such as energy, that are required to meet job demands. Like the COR model, the job demands-resources or JD-R model (Demerouti et al., 2001) asserts that workplace resources reduce the strain of job demands and stimulate personal and professional engagement and self-efficacy. When such resources are absent, high job demands deplete employees' personal resources and consequently reduce their energy and wellbeing. Support has been reported for both models in several studies (e.g., Hakanen et al., 2008; Korunka et al., 2009; Park et al., 2014).

2.2.1. Job demands.

The COR and JD-R models are not specific as to which job demands are particularly influential to the development of burnout. Another imbalance model, the areas of work-life or AW model (Leiter & Maslach, 2003) also supposes that burnout commences with an imbalance between the job demands and the worker's personal resources, but pinpoints six specific areas in which an imbalance can occur: workload, reward, control, community,

values and fairness. Situational work stressors occurring in these areas have been consistently linked to burnout and are now summarised.

Workload. Being overloaded with work tasks that an individual does not have the time or resources to complete has been consistently linked to burnout, and especially to high exhaustion scores on the MBI (e.g., Cordes & Dougherty, 1993; Greenglass et al., 2001; Kowalski et al., 2010). Consistent work overload is more influential on subsequent burnout development than occasional overload, as the former does not allow the worker to recuperate before commencing another demanding work task. In contrast, acute instances of overload, such as working towards a one-off deadline, allow for the worker to recover from the stress and exhaustion caused before investing energy in another task (Shinn et al., 1984).

Reward. Workers are often recognised for their efforts and/or output through tangible (e.g., a pay rise) or intangible (e.g., praise from a boss) rewards. Insufficient rewards at work increase individuals' vulnerabilities to burnout (e.g., Bennett et al., 1996; Euwema et al., 2004; Schulz et al., 2009). Both extrinsic rewards provided by a person's boss or organisation, as well as intrinsic rewards, such as feeling proud of one's work, enhance engagement and work satisfaction, and therefore aid in preventing burnout (Brissie et al., 1988; Finney et al., 2013; Leiter, 1992).

Control. Having control and autonomy at work, including being able to make decisions about one's own work, reduces vulnerability to burnout. Scenarios that reduce a worker's perceived control include experiences of role conflict and role ambiguity, both of which have been linked to burnout, and especially emotional exhaustion (Cordes & Dougherty, 1993; Tunc & Kutanis, 2009).

Fairness. People value fairness and justice in the workplace (Colquitt & Zipay, 2015). This is relevant to both decision-making processes, as well as to the amount of perceived

balance between people's inputs (e.g., hours, skills, efforts) and outputs (i.e., rewards) that occurs in their organisation, with perceptions of unfairness or inequity in these domains predictive of burnout (e.g., Lambert et al., 2010b; Riolli & Savicki, 2006).

Community. The quality of a person's social interaction at work can influence levels of burnout. Support from managers or supervisors, as well as informal support from co-workers and peers, have both been associated with lower levels of burnout (e.g., Etzion, 1984; Russell et al., 1987; Sundin et al., 2007). More broadly, a positive organisational culture and sense of community reduces the impact of inequity in the workplace (Truchot & Deregard, 2001), and may therefore be protective against burnout.

Values. People are motivated to act in ways that align with their personal values (Maslach & Leiter, 2017). Value incongruence is caused when the values of the organisation do not align with the values of the individual. Working against one's own values reduces job satisfaction and drive, and can therefore lead to burnout (Brom et al., 2015; Leiter et al., 2009).

2.2.2. Other demands.

The imbalance models generally implicate demands of the formal workplace as contributing to the development of burnout. However, as noted in Chapter 1, there is increasing recognition that factors associated with informal or unpaid work (e.g., parenting, volunteering, caring for an elderly family member) may lead to burnout. Support for this proposition has been reported in relation to several demands that may be encountered outside of the formal work environment.

For instance, there has been increased interest in parental stressors that may cause burnout. Early research into parental burnout focussed on parents who had been exposed to a chronically stressful parenting situation, such as caring for a child with a serious medical

illness (Miller et al., 2002). For example, Norberg (2007) reported that mothers of children who had survived a brain tumour had significantly higher scores on the Shirom–Melamed Burnout Questionnaire than mothers of children with no history of chronic or serious diseases. More recently, the concept of parental burnout has expanded to include all parents, regardless of any distinct medical history in their children. To measure such expressions of burnout, Roskam et al. (2017) adapted the MBI-HSS into a Parental Burnout Inventory (PBI). They reported support for a three-dimensional burnout syndrome in two samples of parents (who could participate regardless as to whether they had a child with a chronic illness or not) and which included exhaustion and reduced accomplishment similar to the MBI while replacing the depersonalisation factor with an emotional distancing one. A review of the available literature on parenting stress and burnout (Mikolajczak et al., 2018) identified three different groups of situational stressors for parents. Influential *particularities of the child* that might put a parent at risk of burnout included having a child with a physical or mental illness or learning disability, as well as having an adopted or fostered child (because of the stigma attached to such circumstances, the possibility of past trauma to the child, and possible relationship issues with biological parents). *Parenting factors* that may increase burnout risk included perceived loss of freedom as a parent, less leisure time and inconsistent discipline of the children (as such children are likely to be more poorly behaved and thus more demanding). *Family functioning* factors that may contribute to parental burnout included low marital satisfaction and poor co-parenting (as the absence of nurturing relationship and a supportive, cooperative co-parent with the same values and goals for the child increases parenting stress) as well as disorganisation of the family (e.g., a chaotic home life, absence of routine).

Other non-work factors that have been linked to the development of burnout include dealing with marital problems (Greenglass & Burke, 1988; Kebritchi & Mohammadkhani,

2016), caregiving (Gérain & Zech, 2019; Norberg, 2007) and other personal life events (Dyrbye et al., 2006), while several studies have reported evidence of burnout symptoms in high school (Salmela-Aro et al., 2018; Yildiz & Kiliç, 2020) and university (Cazan, 2015; Stoliker & Lafreniere, 2015) students. In addition, work-to-home conflict, or when one's work demands conflict with their family/home demands (Perrewe et al., 1999) has been reported to be associated with the development of burnout (e.g., Ádám et al., 2008; Montgomery et al., 2006). Such conflicts include not being able to fulfil family or home responsibilities (e.g., housework), either because an individual spends an excessive number of hours at work, or they come home too tired from work to invest energy into their home responsibilities. The reverse scenario may also occur, in which a person invests substantial amounts of their energy into home duties (e.g., child-rearing) such that they become emotionally exhausted and under-perform at work, thus inducing burnout.

It is therefore conceivable that an imbalance between stressors experienced *outside* of the workplace and the resources a person has at their disposal to cope with such stressors may lead to burnout. Indeed, one of the newest conceptualisations of burnout, which is captured by the BAT (Schaufeli et al., 2020), defines burnout as “a work-related state of exhaustion that occurs among employees” while stating that “work” refers to any structured, goal-directed activities that require energy exertion and specifying that burnout is not caused solely by the demands of paid employment.

2.3. Diathesis-stress model.

The imbalance models just described are rooted in the fields of occupational psychology and human resources research and are useful in explaining how exposure to environmental stressors in the workplace can lead to eventual burnout. Furthermore, based on evidence just described, it is conceivable that an imbalance between resources and demands

experienced outside of the workplace may result in the development of a burnout syndrome. However, imbalance models largely ignore the contribution of personal factors and idiosyncrasies of the individual that may make them vulnerable to burnout. A model that better takes into account any predispositional vulnerabilities is a *diathesis-stress model*. This model is used commonly in psychiatry to account for the development of mental health conditions and asserts that a person can have one or more diathesis factors (e.g., demographic, genetic, a personality style) that predispose them to developing a particular condition. Onset of the condition will then be triggered when a stressor caused by one or more external life events (e.g., trauma) interacts with the vulnerability factor to take the individual beyond the ‘threshold’ for the condition to emerge. As this model weights personal vulnerabilities, it is useful in explaining why one person will develop a particular condition while another does not, even when both are exposed to the same situational stressor (Monroe & Simons, 1991). Further, the model suggests there is an inverse relationship between the causal factors such that those with a greater degree of vulnerability require less exposure to situational stressors to develop the associated condition, and vice versa (Ingram & Luxton, 2005).

Not all individuals exposed to the same work stressors will go on to develop burnout, and thus it is likely that there are diathesis factors at play. A diathesis-stress model therefore seems appropriate in explaining the predisposition to and onset of burnout, with recent studies supporting this model (e.g., Bai et al., 2020; Bianchi et al., 2021a; Geuens et al., 2021; Nixdorf et al., 2020). While the situational stressors that may lead to burnout have already been described earlier in this chapter, potential diathesis factors that might be salient to burnout will now be considered.

2.3.1. Diathesis factors.

2.3.1.1. Demographic variables.

Gender. There is evidence from some studies that women are at greater risk of developing burnout than men (e.g., Beauregard et al., 2018; Norlund et al., 2010). This gender difference is not unexpected as women have historically carried a greater burden of household and child-rearing duties, regardless of whether they also hold formal employment. Thus, work-to-home conflicts that contribute to the development of burnout have been held to disproportionately affect women (Ádám et al., 2008; Langballe et al., 2011; Nadkarni & Biswas, 2022).

Reports of higher burnout prevalence rates in women could, however, simply reflect either a disproportionate focus of burnout research in the service professions, which are traditionally female-dominated industries (e.g., nurses, teachers), or a gender response bias whereby women are more likely to self-report psychological distress than men (Phillips & Segal, 1969). One meta-analysis exploring the latter explanation (Purvanova & Muros, 2010) quantified that men and women experience similar rates of burnout, but (for burnout as conceptualised by the MBI) women experience slightly more emotional exhaustion than men, while men experience more depersonalisation than women.

Ethnicity. Geographically, it has been argued that burnout is solely (or more distinctly) a Western phenomenon, because it results from capitalist ideals of individual attainment and achievement, as opposed to group ideals of more collectivist cultures (Schaufeli, 2017). However, there have been several studies (see Carod-Artal & Vázquez-Cabrera, 2013) undertaken in underdeveloped countries in Africa, South America and Asia that have reported high prevalence rates of burnout. Further, a ‘death from overwork’ phenomenon is well-recognised in Asia, known as “karoshi” in Japan, “gwarosa” in South Korea and “guolaosi” in China to label premature deaths from heart attacks and strokes

attributed to excessive work demands (Kusumasari & Wahyuningtyas, 2018). In addition to karoshi in Japan, a more specific “karojisatsu” or ‘suicide due to overwork’ syndrome is also recognised in that country (Inoue & Matsumoto, 2000), with those who have died by karojisatsu having been typically exposed (in the six to twelve months prior to their death) to factors such as excessive working hours, a toxic work environment, and/or a substantial workload (Kawanishi, 2008).

In the United States, workers from racial minority groups have been found to be less likely to experience burnout compared to non-minority workers (Dyrbye et al., 2007; Garcia et al., 2020), possibly reflecting those in minority groups having higher levels of resilience (Dyrbye et al., 2010). Other studies, however, have shown no differences in rates of burnout based on minority status (Dyrbye et al., 2006; Lackritz, 2004), with a recent review concluding that evidence of racial differences in burnout are inconclusive (Lawrence et al., 2021).

Age. Some evidence indicates that, in adults, there is a negative correlation between age and burnout (i.e., younger employees are more likely to be burnt out than older employees), with this age discrepancy possibly explained by the length of time an individual has been in a particular job, with older workers having more experience in coping with work stressors (Brewer & Shapard, 2004). However, the finding of a negative correlation between age and burnout is not supported in all studies (e.g., Ahola et al., 2006; Ahola et al., 2008), with higher rates of burnout in older adults possibly reflecting such adults usually having more home/family responsibilities (e.g., childrearing, caring for elderly relatives) and thus greater work-to-home conflict than their younger colleagues.

2.3.2.1. *Personality style.*

Several personality styles have been held to predispose to burnout, as now overviewed.

Type A personality. The Type A personality style (Friedman & Rosenman, 1959; Friedman & Rosenman, 1974), which is marked by ambitiousness, rigidity and competitiveness, has been associated with burnout (e.g., Alarcon et al., 2009; Sharma & Cooper, 2016). Individuals with this personality style are usually irritable and impatient, and therefore likely to have negative attitudes towards their work environment irrespective of the presence or absence of situational stressors (Kirmeyer, 1988). They are also commonly hostile and are therefore likely to evoke negative responses from colleagues (Spector & O'Connell, 1994), fostering a social work environment that may facilitate the development of burnout.

Hardiness and core self-evaluation. Personality traits negatively associated with burnout include hardiness and high core self-evaluation (CSE). Hardiness is characterised by the ability to endure stressful situations without experiencing negative effects, such as psychological ill health, and is considered to be an important component of psychological resilience (Bartone & Hystad, 2010). Hardy individuals are likely to perceive stressful events as challenges that will lead to personal growth once overcome (Maddi, 2006), and therefore they often possess effective problem-solving coping strategies (Benishek & Lopez, 1997). CSE captures a person's perception of themselves and is the amalgamation of one's self-esteem, self-efficacy, emotional stability and internal locus of control (Judge et al., 2003). Those with high CSE think positively of themselves and their abilities, and believe they have control over their external circumstances so, like hardy individuals, they are more likely to view stressors as positive challenges that present them with opportunities to succeed (Judge et al., 1998). Both personality styles foster positive attitudes towards one's overall work

environment as well as to work stressors and are associated with lower emotional exhaustion and depersonalisation scores as well as higher personal accomplishment scores on the MBI (Alarcon et al., 2009).

The Big Five. The Big Five framework of personality traits (Costa & McCrae, 1992) is a robust model of five dispositional traits. Of the five, *neuroticism* is the one most consistently linked to burnout (Bakker et al., 2006). Multiple studies have shown neuroticism scores to be positively correlated with emotional exhaustion and depersonalisation, while negatively correlated with personal accomplishment scores (Bakker et al., 2006; Bühler & Land, 2003; Francis et al., 2004; Swider & Zimmerman, 2010). Individuals with neurotic characteristics tend to exhibit emotional instability and sensitivity, as well as strong negative emotional reactions to stress and poor problem-solving skills (Heppner et al., 1995), all of which may risk the development of burnout. Neuroticism in those who are parents has also been reported to increase the risk of parental burnout (Mikolajczak et al., 2018). Conversely, both *extraversion* (characterised by gregariousness, enthusiasm and self-confidence) and *agreeableness* (denoted by altruism and compassion) are negatively associated with burnout (e.g., Alarcon et al., 2009; Bakker et al., 2006; Francis et al., 2004; Piedmont, 1993). It has been hypothesised that the self-confidence and optimism of extraverts may act to increase their perceptions of personal and professional efficacy, while their maintenance of strong interpersonal relationships may protect against depersonalisation (Bakker et al., 2006). Similarly, those who are agreeable are more likely to have positive relationships with their peers and therefore accrue better social support, thus protecting against burnout (Alarcon et al., 2009). *Openness* denotes the extent to which one values new experiences and change, and has been shown to have little or no association with burnout (Alarcon et al., 2009; Piedmont, 1993; Swider & Zimmerman, 2010).

The fifth of the Big Five traits, *conscientiousness*, which represents the extent to which a person is hard-working, responsible and organised, has a contentious relationship with burnout. In his early musings on burnout, Freudenberger (1974) identified those who are “dedicated and committed” as vulnerable to the syndrome. Conversely, Alarcon et al. (2009) hypothesised that conscientiousness would be negatively associated with burnout because those that are highly conscientious are proactive in solving problems and are able to actively plan and organise their work environment so to avoid high stress situations. In addition, highly conscientious workers are more likely to be productive and thus receive more praise from their employers and colleagues than those that are less dedicated, creating a positive work environment for themselves that may be protective of burnout. Alarcon et al. (2009) went on to support their hypothesis in a meta-analysis, quantifying that conscientiousness was negatively correlated with both emotional exhaustion ($r = -0.21$) and depersonalisation ($r = -0.26$), while positively correlated with personal accomplishment ($r = 0.22$). Their findings were supported in a meta-analysis by Swider and Zimmerman (2010), who reported small to moderate correlations between conscientiousness and the three MBI subscales ($r = -0.19$, -0.24 , and 0.28 for emotional exhaustion, depersonalisation and personal accomplishment, respectively). A positive correlation between conscientious and the personal accomplishment dimension was also identified by Piedmont (1993) and Deary et al. (1996), while both of these studies reported no link between conscientiousness and the other two burnout dimensions. Others, like Bakker et al. (2006), have reported no association between conscientiousness and any of the three MBI burnout dimensions.

Perfectionism. The contribution of conscientiousness and neuroticism to burnout is of further interest when considering their link to perfectionism. A person with a perfectionistic personality style is someone who strives for flawlessness and thus sets extremely high standards for their own performance and achievements. While the Big Five personality traits

are considered as broad core personality characteristics, perfectionism is considered a multidimensional lower-level construct, with both conscientiousness and neuroticism identified as contributing dimensions (Rice et al., 2007; Smith et al., 2019). Some argue that perfectionism can be either (i) adaptive or “normal”, whereby an individual is highly motivated to achieve their goals and experience pleasure when they do so, but whose self-esteem remains intact if such high standards are not achieved; or (ii) maladaptive or “neurotic”, whereby an individual will experience self-criticism and a drop in self-esteem when their unattainable or unrealistic performance standards cannot be reached (Hamachek, 1978). Others suggest that “adaptive” perfectionism is simply conscientiousness, and that true perfectionism is always maladaptive (see Bieling et al., 2004).

The maladaptive nature of perfectionism is evident when considering its link to mental health disorders including anxiety disorders, eating disorders and depression (Egan et al., 2011; Shafran & Mansell, 2001). As for burnout, Hill and Curran (2016) highlighted that, although there have been many reviews and meta-analyses examining personality contributions to burnout (e.g., Alarcon et al., 2009; Swider & Zimmerman, 2010) the majority have omitted consideration of the influence of perfectionism. This is surprising considering the association between perfectionism and burnout reported in several individual studies. For instance, Craiovan (2014) reported a positive correlation between perfectionism scores and scores on the MBI in medical personnel. Similarly, Eklund and DeFreese (2015) reported an association between perfectionism and burnout in professional athletes. More recently, Richardson et al. (2020) reported that perfectionism in clinical/counselling psychology doctoral students was associated with higher levels of reported burnout. Collectively, such findings indicate that “unsustainable perfectionism” (Chabot, 2019, p. 4) may be a key personality dimension that increases vulnerability to burnout.

2.4. Conclusion.

While the development of the MBI and its definition of burnout were not grounded in existing theory (Schaufeli, 2003), several models have since been proposed to explain burnout and its development trajectory. While it is likely that “a grand unifying theory of burnout will always remain a dream, simply because the phenomenon is too complex and multi-faceted” (Schaufeli, 2003, p. 12), the many models described in this chapter indicate that precipitating factors, including both formal work stressors and stressors outside of the formal work environment, as well as predisposing factors, such as personality traits, may all play a role in the development of a burnout syndrome.

3. The overlap of burnout with other psychological conditions

This chapter extends concerns about validly defining burnout by considering how its differentiation from other psychological conditions remains imprecise. After outlining several exemplar psychological conditions that share similarities with burnout, the most contentious ongoing debate concerning burnout's overlap with depression is considered in detail.

3.1. Overlapping conditions.

The questions detailed in Chapter 1 surrounding how burnout should be best defined are exacerbated by its overlap with several formally recognised somatic and psychiatric conditions. While differences between burnout and many of these conditions suggest they are not completely synonymous, distinction in many cases nonetheless remains imprecise. Such ambiguity means that a high score on any existing burnout measure (considered indicative of burnout) could in fact be due to the respondent having some other primary diagnosis. Indeed, in a review considering diagnostic practices relating to burnout, Kaschka et al. (2011) concluded that “There are no differential diagnostic screening instruments integrated into any of the current burnout measuring instruments” (p. 785). This should be considered a key limitation of existing burnout measures if they are to be used to assign cases of burnout as against non-cases, a caveat which is not often conceded by the authors of such measures.

3.1.1. *Chronic fatigue syndrome and neurasthenia.*

Chronic fatigue syndrome (CFS) is a condition sharing some features with burnout. CFS is a somewhat ambiguous somatic illness characterised by extreme fatigue and other non-specific physical symptoms. Both burnout and CFS share exhaustion as their cardinal feature, and both are linked to compromised work performance problems and absenteeism (Leone et al., 2011). Despite their similarities, studies directly comparing those with burnout

and those with CFS are sparse. One review (Leone et al., 2011) concluded that the main difference between burnout and CFS appears to be related to the aetiology of the two conditions, with the former more commonly attributed to psychological stress, and the latter often a consequence of a psychical or physiological issue, such as a viral infection. Based on their review, Leone et al. (2011) judged that conclusive differences between burnout and CFS remain to be delineated and that “proposed differences between burnout and CFS may be more assumed than real” (p. 460). Against this argument, one Dutch study (Huibers et al., 2003) indicated that, in a sample of fatigued employees (from multiple occupations), only half (51.5%) of those subjects that met the research CFS criteria also exhibited burnout, with their study using MBI cut-off scores from an earlier study (Kant et al., 2003) indicating potential burnout case status. In addition, Maslach and Leiter (2017) emphasised the importance of the multi-dimensionality of the MBI burnout construct as delineating it from CFS. They argued that people with burnout are not just fatigued due to their workload, but also feel disconnected from their work and ineffective at their jobs, with the latter two components not being necessary criteria for a diagnosis of CFS.

CFS has its historical antecedents in *neurasthenia*, an ambiguous and often over-arching diagnosis formerly listed as a diagnostic category in the World Health Organisation’s (WHO) *International Statistical Classification of Diseases and Related Health Problems* (ICD) and has also been suggested as analogous to burnout. Historically, neurasthenia was a common generic diagnosis encompassing multiple psychiatric and psychological states, with its specific features being fatigue or weakness (in the absence of exertion) in conjunction with at least two of seven listed bodily symptoms such as dizziness and muscular aches and pains. Schaufeli et al. (2001) argued that a “work-related” type of neurasthenia as detailed in the tenth edition of the ICD (ICD-10; World Health Organization, 1993) may be considered a diagnosable burnout condition, as its listed symptoms account for the majority of burnout’s

features. However, neurasthenia has been described as a “vague disease” (Schuster, 2003) and has always been a contentious diagnosis, and consequently is not included as a diagnosable condition (i.e., it has been marked as “deprecated”) in the current ICD-11 manual (World Health Organization, 2019). The utility of neurasthenia as a diagnostic category is evidently declining. In contrast, burnout was introduced into the ICD-10 and remains listed in the ICD-11 manual (with this listing considered in the more detail in Chapter 4), evidencing a shift in recognition of burnout as a legitimate syndrome.

3.1.2. Trauma- and stressor-related disorders.

A more clearly defined illness category that shows some overlap with burnout is the ‘adjustment disorders’ category listed in the Trauma- and Stressor-Related Disorders section of the American Psychiatric Association’s (APA) *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013). DSM-5 states that an adjustment disorder is characterised by emotional or behavioural symptoms in response to a stressor that causes marked distress or significant impairment in social, occupational or other functioning, while also outlining several specifiers of the condition that may differ from person to person. Burnout has been considered by some as a type of adjustment disorder that results from a work-related stressor (Chirico, 2016, 2017), and specifically a DSM adjustment disorder with the “depressed mood” specifier, in which low mood, tearfulness and/or hopelessness are present (Van Liew, 1993, in Felton, 1998).

In practice guidelines published to guide the diagnosis and management of adjustment disorders in the Netherlands, burnout was listed as one of three specific types of adjustment disorder that manifests in emotional exhaustion in conjunction with detachment or feelings of reduced effectiveness (Van Der Klink & Van Dijk, 2003). Those guidelines distinguished burnout from other subcategories of adjustment disorders, namely distress and ‘nervous breakdown’, by emphasising that the duration between the onset of the stressor and the

development of the disorder is particularly long in burnout and is usually more than a year. This perspective is difficult to reconcile with DSM-5 criteria for adjustment disorders, however, as its Criterion A specifies that the onset of emotional or behavioural symptoms must occur “within 3 months” of the occurrence of the stressor(s). It therefore seems more plausible that, while burnout and adjustment disorders share some features (and therefore those with an adjustment disorder might score highly on a measure of burnout), burnout is not necessarily an adjustment disorder subtype. Indeed, the ICD-11 explicitly lists adjustment disorders as an exclusion criterion when considering whether a patient has burnout, albeit without points of difference being clearly specified.

Also listed in the DSM-5’s Trauma-Related disorders category is posttraumatic stress disorder (PTSD). Criterion A for PTSD requires that a person has been exposed to trauma, whether that be direct exposure or vicarious exposure through witnessing trauma occurring to someone else or learning about traumatic experiences that have happened to others. Vicarious trauma exposure may result in secondary traumatic stress (STS) response, or ‘compassion fatigue’, with these terms often used interchangeably in some literature (Figley, 2013; Orrù et al., 2021; Sorenson et al., 2016). Compassion fatigue denotes a reduction in compassion or emotional response towards other people’s suffering and is often conflated with burnout (as is STS). While research shows that burnout and compassion fatigue are positively correlated ($r = 0.80$) and share some cardinal symptoms, such as exhaustion (Sorenson et al., 2016), it has been argued that the two psychological states can be distinguished. Specifically, compassion fatigue is said to occur more abruptly than burnout and has acute symptoms such as hyperarousal and traumatic memories (Sinclair et al., 2017; Sorenson et al., 2016), and occurs only in those who repeatedly interact with individuals who have experienced trauma, such as nurses (Boyle, 2011). Conversely, burnout is positioned as a chronic psychological syndrome of exhaustion and detachment that develops after sustained work-related experiences of

powerless and low job satisfaction (Sorenson et al., 2016), and theoretically can occur in those in any occupation. Thus, while a detached, burned-out health care professional is likely to exhibit compassion fatigue towards patients, burnout and detachment would manifest differently in an individual working outside of the human services industry. Indeed, Doris Chase, to which the first use of the phrase ‘compassion fatigue’ was been attributed, specifically stated “...elements of burnout can occur in any setting, a unique form of it, compassion fatigue, affects people in caregiving professions” (Joinson, 1992, p. 116).

3.1.3. Stress and anxiety disorders.

Acute stress – manifested by psychological and/or physiological arousal in response to a stressor – is common for individuals to experience across the lifespan and can be adaptive in initiating protective responses to threats. While burnout is generally accepted as a reaction to stressors encountered in the workplace (and therefore could be perceived as a specific, work-related state of stress), it has been distinguished from acute stress based on several variables. For instance, Nuallaong (2013) argued that, while burnout is associated with symptoms such as disengagement, blunting of emotion and feelings of helplessness, stress manifests in over-engagement, over-reactive emotion and feelings of urgency and hyperactivity. Pines and Keinan (2005) similarly identified symptom differences between stress and burnout (measured using the BM) in a path analysis of data from 1,182 Israeli police officers. They also reported differences in the consequences of the two states, with burnout being more highly correlated with indicators of job dissatisfaction and the desire to quit the job than stress.

Regarding anxiety, DSM-5 and ICD-11 define several chronic anxiety disorders. These disorders (e.g., panic disorder, generalised anxiety disorder) generally occur in those who experience repeated, chronic, or excessive anxiety that is psychologically distressing and impairs their everyday functioning. In a nation-wide survey in Germany, Maske et al. (2016,

in Koutsimani et al., 2019) reported that 59% of respondents diagnosed with burnout by a mental health professional were also diagnosed with an anxiety disorder. In relation to the MBI specifically, both Turnipseed (1998) and Ding et al. (2014) reported scores on the measure to be positively correlated with anxiety symptoms. The degree of symptom overlap indicates the likelihood that an individual with a primary anxiety disorder will score highly on a burnout measure and vice versa. While this lack of specificity must be conceded, it does not of necessity position burnout and anxiety as synonymous. Indeed, in a comprehensive meta-analysis, Koutsimani et al. (2019) reported only a small-to-moderate association ($r = 0.46$) between the two conditions, arguing that “this association is not so strong that it indicates an overlap between the two variables” and that should therefore be considered as separate psychological states.

3.2. Burnout and depression.

Depression is believed to be the condition that shares the greatest overlap with burnout. When Freudenberger (1974) introduced the term ‘burnout’ into the psychology discourse, he described a person suffering from burnout as one that “looks, acts and seems depressed”. Since then, many studies have examined the degree of overlap between burnout and depression, with these studies returning mixed findings.

3.2.1. Symptomatology studies.

Both DSM-5 and ICD-11 list major depressive disorder (MDD) as characterised by a depressed/low mood or loss of pleasure (anhedonia) in conjunction with several physical, cognitive, emotional and/or psychomotor difficulties that are severe enough to impair an individual’s functioning. While early studies reported that those with high MBI scores exhibit few depressive symptoms (e.g., Iacovides et al., 1999), more recent studies indicate that

depressive symptoms are commonly experienced alongside symptoms of burnout (e.g., Dyrbye et al., 2008; Takai et al., 2009).

Some argue that, while burnout will often include a depressed mood, it does not necessarily include other symptoms of major depressive disorder, and should therefore be distinguished from the latter (Nuallaong, 2013; Schaufeli et al., 2020). By contrast, others suggest true burnout encompasses most, if not all, of the symptoms of DSM-defined major depression, and therefore burnout should not be considered a distinct syndrome. For instance, Bianchi et al. (2013) compared symptomatology in teachers with high MBI scores and individuals experiencing a major depressive episode (MDE) as diagnosed via a psychiatric interview. Scores on the Beck Depression Inventory were not significantly different between the two groups, with those in the burnout group exhibiting eight of the nine DSM diagnostic criteria for MDE. Longitudinal data also suggest symptom overlap, with Ahola et al. (2014) reporting that burnout and depressive symptoms clustered together and developed in tandem in dentists across a seven-year study. Such symptom overlap led Bianchi et al. (2017) to argue that the MBI's emotional exhaustion, depersonalisation and reduced personal accomplishment are simply "nonmedical" labels for the clinical and DSM-defined signs and symptoms of depression.

3.2.2. Correlational data.

Several studies have shown burnout scores to be positively correlated with scores on depression measures (e.g., Bianchi et al., 2013; Glass & McKnight, 1996; Schaufeli & Enzmann, 1998; Schonfeld & Bianchi, 2016; Schonfeld et al., 2019b). While this correlation is evident when comparing global MBI scores with scores on several depression measures, when the MBI subscales are examined individually, emotional exhaustion subscale scores usually exhibit a moderate to high association with depression scores, while the depersonalisation and reduced personal accomplishment subscale scores show only low to

moderate correlations with depression scores. Studies have in fact shown scores on the emotional exhaustion subscale to be more strongly correlated with depression scores than with the other two MBI subscales of depersonalisation and reduced personal accomplishment, leading Bianchi et al. (2015a) to question why symptoms of depression are not considered defining features of burnout when depersonalisation and reduced personal accomplishment are so defining. On the other hand, a recent longitudinal study assessing burnout and depression symptoms in participants from the Finnish general population at four time points across eight years reported that while symptoms of both states were positively correlated at each assessment point (correlations ranging from $r = 0.47$ to $r = 0.64$), the correlations were not large enough to suggest conceptual redundancies (Tóth-Király et al., 2021). Similar results have been found in hospital inpatients (Schwarzkopf et al., 2019). Likewise, an extensive systematic review and meta-analysis by Koutsimani et al. (2019) reported a moderate overall association between burnout and depression ($r = 0.52$) and with the authors concluding that such an effect size was not strong enough to indicate that the conditions are synonymous.

3.2.3. Factor analyses.

Studies factor analysing burnout and depression scores have often positioned the two psychological states as distinct. For instance, a confirmatory factor analysis (CFA) of scores on the MBI and two depression measures from 307 healthcare workers suggested discriminant validity between burnout and depression (Leiter & Durup, 1994), as did a series of CFAs conducted by Bakker et al. (2000), which the authors stated was “strong evidence for the discriminant validity of burnout and depression” (p. 261). However, Bianchi and Schonfeld (2018) argued such findings were the result of study limitations including (i) discrepancies in the time frames captured across measures (i.e., the MBI asks respondents to rate the frequency of symptoms across one year, as opposed to one or two weeks captured by

most depression measures) as well as (ii) the exclusion of multiple questionnaire items from primary analyses. Those authors subsequently demonstrated that items from the MBI-GS and from a validated depression measure, the Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002), loaded onto a single factor in both principal component and principal axis factor analyses when the time frame of questioning was standardised across measures. Other recent factor analytic studies by Bianchi and colleagues similarly indicate that depression symptoms load onto the same factor as exhaustion items from the MBI (Bianchi, 2020; Bianchi et al., 2021b; Schonfeld et al., 2019a; Verkuilen et al., 2021). In contrast, another recent study reported that burnout and depression items loaded on separate factors in both an exploratory factor analysis (EFA) and a CFA (Mikolajczak et al., 2020). Furthermore, Schaufeli et al. (2020) reported that a factor made up of scores on the depression subscale of the 4-DSQ could be distinguished from a factor made up of scores on items assessing the core symptoms of burnout in their BAT measure. They concluded that such findings do not support the positioning of burnout and depression as synonymous. Similarly, in the eight-year longitudinal study by Tóth-Király et al. (2021) described previously, forcing depression and burnout models to load onto a single factor resulted in poorer model fit across each time point examined than when depression and burnout were represented by separate factors.

3.2.4. Biological studies.

The studies that have compared the biological correlates of burnout and depression have again returned mixed findings. Orosz et al. (2017) showed overlap in changes to three biological stress indicators (decreased parasympathetic function, hippocampal volume and brain-derived neurotrophic factor) between burnout and depression, whilst noting that their findings were somewhat inconclusive. In contrast, Toker et al. (2005) reported that microinflammation was correlated with burnout but not depression in women, while correlated with depression but not burnout in men. Furthermore, it has been suggested that

the two conditions are distinguished by opposing adrenal processes, with depression characterised by hypercortisolism and burnout associated with hypocortisolism (Chida & Steptoe, 2009; Toker et al., 2012). Other studies have reported differences in DNA methylation mechanisms underlying depression and burnout (Bakusic et al., 2017), and genetic heritability appears to be much higher in those with a major depressive disorder (Sullivan et al., 2000) than in those with burnout (Middeldorp et al., 2005). Importantly, however, in a recent review of studies examining the biological underpinnings of burnout, it was concluded that the low specificity of existing burnout measures makes any comparison of biological markers between burnout and depression difficult to interpret (Bayes et al., 2021).

3.2.5. Context-specificity and causal attributions.

Maslach and her colleagues emphasise the context specificity of burnout, which they believe to be specific to formal employment, as opposed to depression, which they argue is more pervasive and context free (Maslach et al., 2001). This argument was reiterated more recently by Schaufeli et al. (2009), who maintained that although an individual can feel exhausted in any context, feelings of cynicism and reduced professional efficacy must be directed towards a particular situation - that is, work. Indeed, several items from both the MBI-HSS and the MBI-GS include explicit statements such as “since I took this job” and “at my work” to specify that the symptom or feature of interest must have been experienced in a work context (Maslach et al., 2016).

However, distinguishing burnout from depression based on the context specificity of the former becomes contentious when considering the evidence that depression itself can be work-related (e.g., Clays et al., 2007; Rugulies et al., 2006). For instance, a review by Bonde (2008) reported that adverse psychosocial events in the workplace was associated with higher risk of subsequent major depressive episodes across studies. Bianchi and Schonfeld have

suggested that “occupational depression”, that is, depression that is attributed specifically to job stress, may be a more useful construct to researchers and practitioners than burnout (Bianchi & Schonfeld, 2020, 2021; Schonfeld & Bianchi, 2021). Those authors have created the Occupational Depression Inventory (ODI; Bianchi & Schonfeld, 2020), with items designed to specifically measure depressive symptoms caused by work stressors (e.g., “My experience at work made me feel like a failure”). The ODI is said to allow researchers to assess for distress resulting from work, which was the original intention of burnout research, but resolves the issues relating to defining and measuring burnout by instead assessing for distress symptoms under the well-established framework of depression.

However, Nadon et al. (2022) have argued that discarding burnout and replacing it with an occupational depression syndrome would be “premature” while the debate regarding the burnout-depression overlap remains ongoing. Furthermore, the ODI does not account for the evidence (detailed in Chapter 1 and Chapter 2) of burnout occurring outside of formal employment contexts, such as in parenting (Roskam et al., 2017) and caregiving (Gérain & Zech, 2019) as well as in high school students (Salmela-Aro et al., 2018). In addition, evidence suggests that almost half of those with burnout symptoms attribute their symptoms to factors not related to their jobs (Bianchi & Brisson, 2019). This broader conceptualisation of burnout has led to the recent development of burnout measures that are not restricted for use in formal employment contexts, including the BAT (Schaufeli et al., 2020).

The argument that work-specificity is what distinguishes burnout from depression is evidently too simplistic. Instead, context may play a more nuanced role in differentiating the two states. Namely, events that trigger depressive episodes often involve loss (e.g., separation from a spouse or partner) or the diminishing of the individual’s self-esteem (e.g., being rejected in a relationship) (Kendler et al., 2003; Parker et al., 2020). Thus, while events in the workplace might trigger both burnout and depression, the specifics of the workplace event

that an individual encounters (e.g., whether or not it impacted on the individual's self-esteem) may influence which of the two states they subsequently go on to experience. Further research is needed to examine such nuances.

3.2.6. Evaluating the overlap of burnout with each of the depressive subtypes.

Findings regarding the degree of burnout's overlap with depression (and other psychological states) are clearly mixed. Overall, however, it is generally accepted that burnout will frequently be accompanied by a depressed mood, along with other symptoms of psychological perturbation (e.g., anxiety). In relation to depression specifically, it is the extent of burnout's overlap with depression that remains up for debate. That is, if burnout is accompanied by depression, do the accompanying symptoms comprise only depressed mood nuances, or are most if not all other symptoms of clinical depression inherent to the syndrome? If the latter, should such symptoms be considered definitional to the syndrome? The reverse scenario must also be considered and conceded, namely, that defining features of burnout (even if not including prototypical depression symptoms), such as exhaustion and empathy loss, may all be component features of clinical depression. This scenario would lead to those with a clinically diagnosable depression scoring highly on a burnout measure, thus risking a 'false positive' burnout diagnosis. Such realities argue for both the potential redefinition of burnout, as well as for substantial examination into the discriminant validity of measures developed for the syndrome.

Any research attempting to redefine burnout and clarify its degree of overlap with depression should consider the influence of the depressive subtypes on findings. This is because there is a large body of evidence (see Parker & Manicavasagar, 2005) indicating that depression should not be considered as a single, homogeneous disorder, but rather as a set of heterogeneous depressive conditions with differing aetiologies, symptoms and responsiveness to varying treatment modalities. The melancholic depressive subtype is characterised by a

distinctly low and non-reactive mood, anhedonia, cognitive and psychomotor disturbances, mood being diurnally impacted and worse in the morning, reduced appetite and weight loss. Non-melancholic depression, by contrast, is characterised principally by the categorical or relative absence of melancholic features, with mood reactivity argued by some to be its main distinguishing feature. Melancholic depression is considered more ‘quintessentially biological’ as opposed to psychosocial (Parker et al., 2013) in terms of its causes, and is therefore more responsive to biological interventions such as antidepressant drugs and electroconvulsive therapy (ECT) than to non-biological interventions like psychotherapy. In contrast, the non-melancholic subtype has been described as a ‘reactive’ depression that usually occurs in response to antecedent stressors impacting on the individual’s self-esteem and self-worth and may also be predisposed to by certain personality characteristics including neuroticism and interpersonal rejection sensitivity (Boyce et al., 1993).

The key diagnostic manuals mostly ignore the depressive subtypes when classifying depression, with differentiation of depressive type between patients instead usually based on differences in severity. Specifically, ICD-11 primarily favours diagnosing depressive conditions as “mild”, “moderate” and “severe”, albeit noting that depressive episodes may have melancholic features (described shortly), while making no mention of non-melancholia. Similarly, the DSM-5 depression categories Major Depressive Disorder and Persistent Depressive Disorder are largely distinguished by differences in severity, with the former considered as capturing more severe depression than the latter. DSM-5 does, however, suggest that those with a major depressive disorder can have a second-order ‘specifier’ diagnosis such as having melancholic features. That specifier requires symptoms similar to those listed for melancholia in the ICD-11, and includes pervasive anhedonia, a lack of mood reactivity, a despondent, despairing or morose depressed mood, depression that is worse in the morning, early-morning wakening, psychomotor symptoms, weight loss and excessive

guilt. Alternatively, a patient may meet DSM specifier criteria for “atypical” depression, which requires mood reactivity and the absence of melancholic features or catatonia as well as two or more of the following: weight gain/increased appetite, hypersomnia, temperamental sensitivity to interpersonal rejection or a heavy, leaden feeling in the limbs (i.e., leaden paralysis), with these symptoms therefore suggesting a non-melancholic depressive subtype.

Most published studies assessing the burnout versus depression distinction fail to specify whether participants have melancholic or non-melancholic depressive features. This is despite the recent resurgence of interest in the differences between the melancholic and non-melancholic depressive subtypes (e.g., Shan et al., 2021; Tondo et al., 2020; Valerio et al., 2021). This oversight may be responsible for the inconsistent findings concerning burnout’s overlap with depression. As proof of this concept, Bianchi et al. (2015a) emphasised that the existing evidence of the distinctiveness of burnout and depression based on their respective association with hypocortisolism and hypercortisolism (as discussed previously) is erroneous, because other research (Lamers et al., 2013) has shown that cortisol impacts vary depending on depressive subtype: namely, melancholic depression has been found to be associated with hypercortisolism, while atypical (i.e., a non-melancholic) depression, like burnout, has been linked to hypocortisolism.

Future research therefore needs to assess the influence of depressive subtypes on the burnout-depression overlap. Shared symptoms of burnout and melancholia, namely exhaustion and decreased empathy/detachment in burnout and fatigue/anergia and anhedonia characteristics of melancholic depression suggest syndrome overlap. Conversely, Bianchi et al. (2015a) argued that characteristic features of atypical depression, such as the centrality of exhaustion and the chronicity of the syndrome, are cardinal features of burnout. Bianchi et al. (2014) reported that in a nonclinical sample of schoolteachers, 63% of the participants that with high MBI scores indicating burnout and high PHQ-9 scores indicating major depression,

exhibited symptoms of atypical depression. Based on their results, they argued that atypical depression is a major contributor to the overlap between burnout and depression, while stating that future research involving clinical samples is required to confirm this hypothesis. Thus, further clarification of the impact of depressive subtype (i.e., melancholic versus atypical depression or a wider group of non-melancholic depression) on the burnout-depression overlap in clinical samples is needed.

4. The legitimacy of a burnout diagnosis

This chapter describes how the lack of consensus surrounding how to best define, model and measure burnout, its ‘fuzzy’ boundaries with other psychological conditions, as well as other cultural and biopsychosocial factors, have led to ambiguity surrounding the syndrome’s diagnostic status. The impacts that this diagnostic ambiguity has had on the lay community is then considered.

4.1. The absence of diagnostic guidelines for burnout.

Diagnostic criteria for burnout cannot be formulated until consensus is reached regarding its key symptoms. Furthermore, differentially diagnosing burnout will remain difficult until criteria for its distinction from other psychological states, especially depression, are better established. Burnout’s nosological status is consequently enigmatic, and as such it is not listed in DSM-5. In contrast, the two most recent revisions of the ICD (i.e., the ICD-10 and ICD-11) list burnout and define it as a “state of vital exhaustion” and as a “syndrome resulting from chronic workplace stress that has not been successfully managed”, respectively. Importantly, however, both ICD iterations list burnout as a factor that may influence an individual’s health status but “is not in itself a current illness or injury”. The status of burnout according to the WHO has therefore been judged as ambivalent (Schaufeli et al., 2020), with confusion arising from the WHO including it in their list of diseases while also explicitly stating it should not be considered as one. Furthermore, ICD-11 goes on to define burnout as comprising the three symptom constructs promulgated in the MBI – exhaustion, cynicism and a sense of reduced professional accomplishment. Schaufeli et al. (2020) warn that this derivation could be interpreted as suggesting that the MBI be used to

assist in diagnosing burnout, despite the MBI authors' instructions to avoid using the measure to assign burnout caseness (Maslach et al., 2016; Maslach & Leiter, 2021).

Both Bianchi (2020) and Oquendo et al. (2019) have warned that diagnosing burnout while it remains ambiguously defined could have negative consequences, especially as burnout is commonly perceived as a less serious health issue than a major depressive disorder. Those with an undiagnosed clinical depression who instead self-identify as having burnout may therefore underestimate the severity of their condition and not seek necessary treatment (Bianchi, 2020). If consultation from a medical professional is sought, the mislabelling of depression as burnout could lead to a true diagnosis of depression being misdiagnosed, which in some cases could be life-threatening, particularly if the patient deemed to have burnout is not screened for suicidal ideation and behaviours. Oquendo et al. therefore argued that "it is critical that burnout not become the catchall term for emotional distress". Hemmeter (2013) and Kaschka et al. (2011) have advised that clinicians pursue diagnoses of those formally classifiable disorders purported to have symptom overlap with burnout (especially depression), so that they can then implement disorder-specific treatment.

Such views lend support to the argument that the burnout diagnosis should be abandoned to prevent the misdiagnosis of other alternative primary diagnoses that require specific treatment. Such a position, however, does not explain the ready take up of the burnout label by medical practitioners in some European countries, as well as by the lay population across the Western world. Such factors, as well as insight into the subjective experience of individuals purporting to be suffering from burnout, should not be ignored when considering the legitimacy of a diagnosis category, as will now be described.

4.2. Other factors to be considered when contemplating a burnout diagnosis.

There are several factors that contribute to the uptake of certain diagnoses that go beyond the beliefs of scientists and clinicians, including cultural nuances that effect the acceptance of a diagnosis (Leone et al., 2011; Wessely et al., 1998). In countries where DSM is heavily relied on to guide psychiatric diagnoses, like the United States and Australia, burnout is less likely to be perceived by clinicians as a legitimate diagnosis, and other diagnostic labels (e.g., depression) are more likely to be used to label the same set of symptoms (Leone et al., 2011). This contrasts with countries in Northern Europe, where their greater reliance on the ICD has allowed for burnout to become formally diagnosable. Sweden, for instance, legitimised the diagnosis of burnout in 1997, when ICD-10 was translated into Swedish (Friberg, 2009). The diagnosis soon rose to become one of the top five most commonly diagnosed conditions in that country (Maslach & Leiter, 2016), with individuals assigned this diagnosis considered eligible for financially-compensated sick leave or disability benefits (Friberg, 2009). The Netherlands followed suit shortly afterwards (Maslach & Leiter, 2016), and as of 2019, twelve additional European countries (Bosnia and Herzegovina, Cyprus, Denmark, Estonia, France, Hungary, Iceland, Latvia, Malta, Portugal, Slovakia and Turkey) have reportedly acknowledged burnout as an occupational disease, albeit with diagnosis methods and conditions allowing for compensation being highly variable across these countries (Canu et al., 2019; Lastovkova et al., 2018). Cultural nuances evidently play a role when considering the legitimacy of a burnout diagnosis. The question remains as to whether culture-bound diagnoses are nosologically distinct entities, or whether they are better represented by conditions more universally accepted and already listed in DSM or ICD (Alarcón, 2009).

Beliefs and lived experiences of patients and the broader community also play an important role in the legitimisation of diagnostic categories (Leone et al., 2011; Wessely et

al., 1998). The lay population readily accepts burnout as a common and relatable psychological experience, and as a consequence, individuals frequently self-diagnose as suffering from burnout and experience the syndrome as a “real and serious” problem (Heinemann & Heinemann, 2017). In fact, research indicates that those who identify as being burnt out feel stigmatised by medical professionals who do not recognise burnout as a legitimate illness. Experiences of stigmatisation result from the mismatch between the individual’s subjective experience of severe symptoms, and the lack of recognition from their doctor that they are indeed medically ill (Engebretsen, 2018).

One of the primary benefits of receiving a formal diagnosis is that it provides recognition of illness for patients experiencing subjective distress (Leone et al., 2011). This is particularly true in psychiatry, where specific biomarkers confirming illness status are generally lacking. For those who self-identify as experiencing burnout, not being able to receive a formal diagnosis can lead to shame and frustration as individuals “struggle to be recognised as ill and not just lazy” (Engebretsen, 2018; Engebretsen & Bjorbækmo, 2019). Furthermore, such individuals have reported a worsening of their symptoms if they perceived that their complaints of burnout were not taken seriously by their doctor (Engebretsen & Bjorbækmo, 2019). In one study, such interactions triggered existential anxiety in participants, as well as withdrawal from health services and social support, and also induced shame-spiralling that led to an increase in participants’ chronic exhaustion (Engebretsen, 2018). Thus, while members of the general public commonly identify with experiencing burnout as a relatable, negative psychological experience, the lack of such recognition by medical professionals can have serious consequences for patients.

Clinicians therefore face a diagnostic conundrum when an individual presents seeking to be assessed and managed for burnout. This conundrum was emphasised in a recent review evaluating whether burnout should be considered a mental disorder (Nadon et al., 2022).

Based on current evidence, the authors concluded that although it may be premature to consider burnout as a distinct diagnosable disorder, “it would be equally premature to discard burnout as a psychologically relevant phenomenon” (p. 1). Furthermore, while recommendations that clinicians pursue diagnoses of those formally classifiable disorders (e.g., Hemmeter, 2013; Kaschka et al., 2011) to initiate disorder-specific treatment have been noted previously, such recommendations are tenuous as they may induce an over-prescription of psychotropic medication, such as antidepressants, in those not so needing such medication (Kaschka et al., 2011). Furthermore, for some who have self-identified as burnt out but whose doctors provided a depression diagnosis in order to initiate medical treatment (e.g., an antidepressant drug), participants have reported worsening of burnout symptoms due to such treatment, including feeling “lobotomised” and experiencing an increase in fatigue (Engelbrechtsen, 2018). Administering treatments for depression to patients who may have burnout is therefore not without consequence. Indeed, Bianchi et al. (2014) advised that “depending on whether burnout is primarily characterised as fatigue or a depressive syndrome, different [treatment] measures should be taken” (p. 310). It is therefore necessary to clarify the diagnostic status of burnout so to determine accurate treatment targets (Schonfeld & Bianchi, 2016).

Nowadays, a biopsychosocial model of medicine is increasingly favoured by researchers and clinicians, in which social and psychological dimensions of illness are given credence along with biological indicators. Such a model “take(s) into account the patient, the social context in which he lives, and the complementary system devised by society to deal with the disruptive effects of illness” (Engel, 1977, p. 132). While the social acceptance of the burnout label in no way validates the syndrome as a nosological entity, when viewed from a biopsychosocial perspective the fact that it resonates with many highlights the importance of clarifying how it should be defined and suggests there is value in examining perceptions of

burnout in the lay community, especially of those who self-identify as experiencing the syndrome. In a paper discussing the clinical insights that can be gained from patient self-diagnosis, Frankel (2001) argued that “patient’s perspectives on their symptoms are an important source of clinical information for physicians and a key to understanding the physical, emotional, spiritual and symbolic meanings symptoms have for them” (p. 96). Inquiry into the experiences of those who self-identity as experiencing burnout has considerable potential to assist in determining how burnout should be defined, what its key features are, and how it can be distinguished from other psychological states, including depression.

5. Thesis rationale

This chapter concludes Part I by describing the rationale for the current thesis.

5.1. Thesis objectives.

Currently, the debate amongst scientists and practitioners surrounding whether burnout is simply analogous with exhaustion, whether it is made up of other constructs (and if so, what specifically those constructs are), and whether it is distinct from depression illustrates both a lack of consensus regarding how burnout should be defined and a lack of clarity as to whether it is of *sui generis* status or a synonym for other psychological or psychiatric states. Despite definitional ambiguity, many individuals appear to readily identify with ‘burnout’ as a descriptor and explanation of their psychological state, and therefore view it as distinct and differing from other conditions. While such identification by the general public does not validate burnout as a diagnostic category in and of itself, it is evident from the literature reviewed that much of the diagnostic lack of clarity may have emerged from dominant definitions having few constructs (with one-factor, two-factor and three-factor models having been reviewed earlier), and therefore overlooking other potentially pertinent symptoms.

The objectives of this thesis were therefore two-fold. First, to determine the prominent symptoms of burnout by examining a large set of candidate symptoms (to determine if more syndrome constructs are necessary), and in doing so clarify how such symptoms might be clustered and develop a provisional measure of burnout based on such symptom clusters. Second, to examine whether the new syndromal definition of burnout and other syndromal features argue for burnout and depression to be considered as nosologically distinct states. A ‘top down’ approach — in which existing definitions and/or measures of burnout would be used to determine eligible participants for inclusion — was judged as being inappropriate for

several reasons. Firstly, the use of existing burnout definitions/measures to redefine burnout would create a circularity issue, with Heinemann and Heinemann (2017) having recently emphasised that “to date, most burnout research has been circular, because it relies on questionnaires that measure symptoms that have not (yet) been clearly defined or unanimously agreed upon in medicine and psychology” and that that any newer research attempting to overcome such issues is “equally problematic, because it uses the same debatable and contested constructs and inventories to identify participants who purportedly suffer from burnout, and then examines this mental condition in these individuals”. Secondly, even if existing burnout measures were to be used, there are no clinically validated cut-offs of such measures to determine burnout cases versus non-cases (Turnbull & Rhodes, 2021). Thirdly, there is no accepted burnout definition or diagnostic criteria among practitioners, thus burnout diagnosis cannot be standardised and with it currently up to “the discretion of the doctor to assess a burnout diagnosis” (Korczak et al., 2010). A ‘bottom up’ approach was therefore employed in the current thesis in which those who self-identified as having burnout were studied so assess what members of the lay community perceive to be the most prominent features of burnout. Burnout self-diagnosis has been used in previous studies to examine burnout symptoms and correlates (Brady et al., 2022; Kavalieratos et al., 2017; Olson et al., 2019; Pick & Leiter, 1991; Rohland et al., 2004; Sinsky et al., 2021; Turnbull & Rhodes, 2021), with such studies finding that self-diagnosed burnout corresponds with scores indicative of burnout on the emotional exhaustion subscale of the MBI. Thus, broad inclusion criteria allowing anyone who self-diagnosed as experiencing burnout to participate were used here. Attempting to redefine the syndrome without reliance on existing burnout measures or clinical diagnosis means that this research project is, of necessity, exploratory in nature, and utilised an inductive approach to achieve its objectives.

5.2. Overview of studies.

The first objective was examined in Part II (Studies 1, 2 and 3) of the thesis. In Study 1, quantitative and qualitative data were analysed to assess what self-identified sufferers of burnout perceived to be its key symptoms. The findings from this study indicated that their conceptualisation of burnout goes beyond the definition of burnout captured by the MBI, therefore suggesting redefinition of the syndrome may indeed be necessary. Study 2 was therefore designed to further examine burnout's key symptoms as they are experienced by sufferers. The quantitative study allowed for the development of a new heuristic symptom model and a symptom-based measure (the Sydney Burnout Measure or SBM) of the syndrome, in which a broader set of symptoms than those captured in the MBI were identified as potentially integral to the definition of burnout. Study 3 was then conducted to assess whether the symptom model derived in Study 2 was best modelled dimensionally (indicating that participants' burnout differed only by degree of severity) or categorically (suggesting that different 'types' or 'stages' of burnout that may have been experienced by sample members).

The second objective, to examine whether the new syndromal definition of burnout developed in Part II argued for burnout and depression to be independent, interdependent or completely synonymous syndromes, was evaluated in Part III (Studies 4 and 5). In Study 4, qualitative data were analysed to assess if and how the lay community delineates burnout from depression. Participants who self-reported having experienced both burnout and depression identified multiple subjective differences between the two states, while also noting ways in which they overlapped, suggesting a complex relationship between the two states and arguing for closer examination in clinical samples of such nuances. Thus, in Study 5, participants self-identifying as burnt out were compared against a sample of participants with clinically-diagnosed depression to assess whether the new syndromal definition of burnout

developed in Part II was specific to burnout, or whether the symptoms identified were also prevalent in those with clinical depression. Study 5 also examined whether other symptoms or causal attribution nuances could distinguish participants who self-diagnosed as having burnout from participants with a clinically-diagnosed depression. Part IV contains a General Discussion of the findings of all five studies and elucidates how such findings enhance the current understanding of the burnout phenomenon.

PART II: RE-DEFINING BURNOUT

6. Study 1

This chapter details exploratory qualitative and quantitative analyses of data from 1,019 individuals who self-identified as experiencing burnout. The study utilised data that had been collected previously as part of a large study conducted by the primary supervisor's research team, with the analyses reported here conducted by the PhD candidate for this research project. The content of this chapter has been adapted from two published papers, both of which the PhD candidate is the first author (Tavella et al., 2020; Tavella & Parker, 2020b)¹, and with additional methodological and analytic details provided here.

6.1. Introduction.

As overviewed in Part I, there is little consensus across scientists and practitioners as to what comprises burnout's key features and how it should be accurately defined and measured. Specifically, as detailed in Chapter 1, questions have been raised as to whether the MBI's three factor definition of burnout (i.e., emotional exhaustion, depersonalization and reduced professional accomplishment), and as also captured in the ICD-11 definition, adequately defines a burnout syndrome. As the original 47-item MBI measure examined only a limited set of "arbitrary" items (Schaufeli, 2003) for inclusion in the measure, it follows that, if a more comprehensive set of items had been included in the original factor analyses, the definition of burnout might have been much broader and therefore different to the currently dominant three-factor model (Bianchi et al., 2015c).

¹Tavella et al., 2020: Correspondence with the publisher confirmed that permission to adapt material from this article into a thesis chapter was not required.

Tavella & Parker, 2020b: Some material from this publication has been adapted with permission from Wolters Kluwer Health, Inc.: [Tavella, G. & Parker, G. (2020). A qualitative reexamination of the key features of burnout. *Journal of Nervous and Mental Disease*, 208, 6, 452-458, https://journals.lww.com/jonmd/Abstract/2020/06000/A_Qualitative_Reexamination_of_the_Key_Features_of_4.aspx].

The current study was therefore designed to assess whether a broader set of symptoms characterised individuals' experiences of burnout. Analysis 1A (see Tavella & Parker, 2020b) examined what those individuals self-identifying as burnt out perceived to be its key features through a qualitative analysis. Exploratory qualitative research is valuable in uncovering and extrapolating on nuances of human experiences that cannot be revealed through quantitative analysis alone. This is especially true in psychiatry, where it has been recognised that quantitative research methods may not be sufficient to address the complexities of mental illness (Crowe et al., 2015). Qualitative research is especially important in preliminary studies attempting to develop diagnostic criteria for psychological phenomena as they allow researchers to develop “a comprehensive list that encompasses both inclusive and exclusive criteria” (Razafsha et al., 2012). Analysis 1A was therefore undertaken to generate primary symptom categories that may constitute a burnout syndrome.

The purpose of Analysis 1B (see Tavella et al., 2020) was to examine which items from a large item set of possible burnout features were most prominent in participants self-identifying as experiencing burnout, with findings then compared to the qualitative findings of Analysis 1A. Ultimately, the quantitative and qualitative analyses sought to determine whether burnout should be defined more broadly than it is currently through the MBI measure and by ICD-11 criteria.

6.2. Methods.

6.2.1 Ethical Considerations.

Ethical approval for the study was given by the University of New South Wales Human Research Ethics Committee (UNSW HREC #HC17678), and the Black Dog Institute (a not-for-profit mental health organisation located in Sydney, Australia) provided approval to recruit participants via their website. Participation involved completing an online

confidential questionnaire, and the questionnaire could only be accessed after each participant read an online participant information statement and consent form (PISCF) and provided online consent. The questionnaire was anonymous, and the names or any other identifying details of participants were not collected.

6.2.2. *Participants.*

Individuals could participate if they were fluent in written and spoken English, between the ages of 18 and 65, and self-identified as currently experiencing ‘burnout’. Inclusion criteria were intentionally broad, as the study sought to gain insight about experiences of burnout from individuals self-identifying with the syndrome from a range of formal/paid and informal/unpaid occupations. Participants were recruited through advertisements in a newspaper and on the Black Dog Institute website. The invitation to participate was presented as follows: “Are you currently experiencing BURNOUT? Whether you are working, retired, studying or responsible for home/care duties, you may be currently feeling burnt out. If so, you are invited to participate in research aiming to clarify the nature of burnout, as well as to develop a tool to accurately measure the condition.” The newspaper advertisement directed any readers interested to contact the research team for more details, or to visit the Black Dog Institute webpage detailing the study. At the bottom of the webpage there was a link to the online questionnaire. Those who contacted the research team were provided with more information about the study and then provided with the online questionnaire link.

6.2.3. *Procedure.*

Participation involved anonymously completing an online questionnaire administered via the Qualtrics website. This approach is supported by studies that have shown internet questionnaires to have the same reliability and validity as traditional handwritten

questionnaires (Gosling et al., 2004; Jones et al., 2008). Furthermore, qualitative data collected through online questionnaires are useful because participants are able to type responses in their own words. Online qualitative surveys are therefore able to produce rich accounts of participants' subjective experiences and narratives (Braun et al., 2021).

The questionnaire first sought socio-economic data. Participants then answered open-ended questions asking them to (i) record symptoms and features suggesting to them that they were experiencing burnout, (ii) nominate the judged principal cause, (iii) suggest how they judged burnout as distinguishable from a pure state of depression and (iv) anxiety, and (v) detail if it had been helped by any strategies and, if so, to nominate which ones. Participants were then asked to indicate whether they had stopped working due to their burnout or were still working, and whether they had ever been diagnosed with or treated for a mental health disorder (and, if so, to specify which disorder), as well as to complete a 106-item self-report list of putative burnout symptoms and correlates. Items included in the list were derived from previous burnout measures, a review of the burnout literature, and from the clinical experience of the PhD candidate's primary supervisor. Several items were included to capture features of the MBI-HSS and MBI-GS subscale (but were reworded to avoid plagiarism). For instance, "I don't really care what happens to some recipients" from the depersonalization subscale of the MBI-HSS (Maslach et al., 2016) was framed as "I do not care what happens to people at my work", and "I feel I am making an effective contribution to what this organisation does" from the professional efficacy subscale of the MBI-GS (Maslach et al., 2016) was framed as "I feel like I am an essential part of my workplace" in the current questionnaire. Other items were included to capture item from other measures of burnout, such as "I constantly feel tired or fatigued" to cover item "I feel tired" from the SMBM (Shirom & Melamed, 2006), and "I feel emotionally drained and exhausted" to cover item

“During my work, I often feel emotionally drained” from the OLBI (Demerouti et al., 2003; Halbesleben & Demerouti, 2005).

Other putative burnout features or correlates such as those indicating cognitive dysfunction, depressed mood and excessive worrying were also included based on a review of the burnout literature (e.g., Beck et al., 2013; Sandström et al., 2005; Schaufeli & Enzmann, 1998; Schaufeli & Taris, 2005). As DSM-5 does not include burnout as a diagnostic category, no formal DSM diagnostic criteria for burnout could be included in the list, while items covering the three descriptors of burnout listed in the ICD-11 were included. In addition, as clinical observation suggested that those with a dutiful, conscientious or perfectionistic personality style were at greater risk of developing burnout the questionnaire included several items capturing such traits. For each item, respondents could score 3, 2, 1 or 0 if the feature was judged to be distinctive, moderate, slight or not present respectively.

6.2.5. Statistical considerations.

Sample size.

The study advertisement quickly generated a large response such that 1042 participants were recruited. It is recommended that at least 500 participants are required for factor analyses of categorical data when using the weighted least squares mean and variance (WLSMV) estimator (Moshagen & Musch, 2014), and thus the sample size recruited was deemed as adequate.

Analysis 1A: Qualitative analyses.

The qualitative data were analysed using the NVivo 12 software program (QSR International Pty Ltd, 2018), as computer programs designed to assist in the analysis of qualitative data increase the accuracy and efficiency of qualitative research (Welsh, 2002). Qualitative content analysis was used to descriptively analyse the data, as this technique

allows for the systematic coding and categorising of textual data (Stemler, 2000). The coding can then be quantified such that the prominence of a particular category or subcategory can be calculated (Franzosi, 2008). While a qualitative method, it is primarily objective in nature as it involves summarising text at a descriptive level to produce a condensed description of data (Franzosi, 2008) rather than other qualitative methods such as interpretative phenomenological analysis which require more nuanced interpretation by the researcher (Eatough & Smith, 2017; Smith & Osborn, 2003).

Content analysis can be undertaken via (i) a deductive examination of the data guided by established theory or previous research findings (i.e., a ‘top-down’ approach), or (ii) an inductive examination (i.e., a ‘bottom-up’ approach) in which the data are coded and interpreted independently before relevant categories are identified and classified (Elo & Kyngäs, 2008; Krippendorff, 2018). As the study was exploratory and it sought to identify a broad range of burnout symptoms not based on previous definitional models of burnout, the analysis was undertaken using an inductive approach.

As reported by Tavella and Parker (2020b), in initiating Analysis 1A all responses to the question “Could you now please record and describe the symptoms and features that suggest you are experiencing ‘burnout’?” were read through twice by the candidate to provide a general picture of the type and scope of information provided. Because of the many responses (i.e., more than 1,000), an NVivo *word frequency query* was conducted for ease of initial analysis to identify words and their stems most frequently reported. The results of the word frequency query were examined, and words referenced often but judged as being of little contextual meaning (e.g., “also”, “getting”) were removed. Word groups remaining that were referenced at least 50 times across the dataset were reviewed and the references they captured were transformed into initial codes encompassing “the most basic segment, or

element of the raw data or information that can be assessed in a meaningful way regarding the phenomenon” (Boyatzis, 1998), with these codes grouped into meaningful NVivo *nodes* of similar information. For instance, the word “exhaustion” (and its variants “exhausted” and “exhausting”) was expressed 224 times across the dataset, and thus these 224 references were coded under an “exhaustion” node. After coding the word groups returned by the word frequency query, participants’ answers to the question were manually examined to ensure comprehensive coverage of the data, and any meaningful phrases found but not already coded were allocated to new or existing nodes. NVivo *text search queries* were then conducted to search for particular phrases and their variations that appeared commonly throughout the manual data examination (e.g., “difficult to relax”), with the output from these queries again coded into new or existing nodes. The data were then manually examined again to ensure all meaningful information had been coded.

The qualitative analysis resulted in over 6,000 coded statements, which were combined or separated into groups of nodes of similar coded content. These groups were then examined and grouped into parent nodes or categories (and their subcategories) of similar information. The analysis was undertaken using an iterative process of reflection and collaborative discussion between the PhD candidate and the primary supervisor, including initial interpretations, multiple revisions and final refinement of the categories. Participant IDs coded at each category were identified to determine the number of participants who referenced each category.

Analysis 1B: Quantitative analyses.

Factor analyses were carried out in Mplus (Muthén & Muthén, 1998-2017), with data treated as categorical and using the WLSMV estimator.

6.3. Results.

6.3.1. Demographics

1042 individuals participated in the study, with 1019 completed questionnaires deemed acceptable for analysis after excluding those that were incomplete. Most sample members were female (74.6%) with a mean age of 41.4 years. Most identified as Australian (54.5%), and the five occupations most often reported were managerial positions (14.3%), or being a student (12.0%), a teacher (11.3%), primarily responsible for home/care duties (10.2%), or a nurse/midwife (6.0%).

6.3.2. Analysis 1A: Qualitative analysis.

As reported by Tavella and Parker (2020b), the resulting 12 categories and their subcategories of the qualitative analysis are displayed in descending order of frequency in Table 6.1, with each category subsequently described in more detail in the following pages.

Table 6.1. Categories and subcategories capturing participants' reported features of burnout.

Category	Subcategories
Exhaustion ($n = 700$)	Exhaustion Fatigue Tiredness Feeling drained Lethargy
Anxiety/stress ($n = 516$)	Feeling anxious Feeling stressed/overwhelmed Unable to relax/switch off Ruminating over/worrying about work when not there Sense of dread Excessive worry Being fidgety or restless
Indifference ($n = 475$)	Lack of empathy Cynicism Lack of interest or pleasure in work Lack of interest or pleasure in activities outside of work Apathy Disengagement "Going through the motions" Anticipatory anhedonia
Depression ($n = 392$)	Low mood/depression/sadness Hopelessness Helplessness Feelings of worthlessness Drop in confidence or self-esteem Self-doubt Guilt Suicidal thoughts

Irritability and anger (<i>n</i> = 361)	Irritability Easily agitated Impatient Frustrated Anger or resentment
Sleep disturbances (<i>n</i> = 351)	Insomnia Hypersomnia Having nightmares
Lack of motivation or passion (<i>n</i> = 341)	Drop in motivation or drive Drop in life/work satisfaction Feel as though not making a difference at work Reduced passion for one's job Feeling as though one's work has no purpose
Executive functioning issues (<i>n</i> = 332)	Concentration or attention issues Memory problems Brain fog/cloudy thinking Confusion Racing or disorganised thoughts Difficulty planning or making decisions
Reduced performance (<i>n</i> = 265)	Reduced performance or quality of output Accomplishing less at work Lower productivity Procrastinating Avoiding responsibilities Making more mistakes "Failing" at work
Withdrawal from others (<i>n</i> = 258)	Family Friends Colleagues Clients

Physical symptoms (<i>n</i> = 251)	Aches and pains
	Eating or appetite changes
	Headaches
	Nausea
	Low libido
	Issues with vision
	Other
Emotional lability (<i>n</i> = 168)	Fragile emotions
	Increased sensitivity
	Emotional outbursts
	Crying more/tearfulness

Exhaustion

Exhaustion was the most prevalent feature, with 68.9% of participants describing feeling exhausted or a variant descriptor (i.e., fatigued, tired, lethargic or drained). Many explicitly stated that exhaustion was the defining feature of their burnout, and many noted that it was “constant”, “chronic” or “endless”. Its significance in burnout was captured succinctly by one participant: “I describe my burnout as being tired of being tired.” Another participant echoed this view, describing their burnout simply as “Fatigue, fatigue, fatigue!”

Anxiety/stress

Anxiety and stress symptoms were reported by 50.6%. Some simply listed feelings of anxiety, stress and dread, but many others specified that their anxiety was exclusively associated with their work and not experienced in other contexts. For instance: “I experience anxiety, at times to the point of nausea and headaches, around the idea of how far behind I am, the backlog from a day off... I am not generally an anxious person.” A key subcategory comprised reporting worrying excessively about work when not there, with participants being

unable to “switch off”, experiencing intrusive thoughts about work when in bed or being woken by a work-related nightmare.

Indifference

Almost half of the sample (46.6%) reported having lost interest or the ability to care about events or people in their lives. This anhedonia/apathy was experienced both in and outside of the workplace. A prevalent subcategory was empathy loss, with participants reporting being too emotionally “numb” to care about others. Many noted they had become detached and disengaged from activities they had previously enjoyed and now were simply “going through the motions.” Others noted experiencing complete apathy and loss of emotions, noting that they were now “zombie-like”. Anticipatory anhedonia was common, with some participants reporting no longer looking forward to upcoming exciting or pleasurable events.

Depression

Depressive symptoms were reported by over a third of the sample (38.4%). Most commonly, participants here nominated low mood or feeling sad, while others reported feeling hopeless and/or helpless. Increased self-doubt and feelings of worthlessness as well as decreased self-esteem were also reported. A small subset of participants stated they had experienced suicidal thoughts, with one participant describing the relationship between their suicidal thoughts and their burnout: “I tend to feel suicidal when the burnout becomes too much as I begin to doubt my worth because of my inability to motivate myself and complete tasks.”

Irritability and anger

35.4% reported irritability, including feeling agitated, frustrated or easily annoyed. While some specified that their irritability was mostly directed at work colleagues, others

detailed how they were now more irritable outside of work and that their irritability was impacting on their overall temperament, for instance: “My temper is far shorter than it used to be and I feel as though I’m not just drifting away from the nice person I used to be - I’ve been kidnapped and am travelling on the freeway far, far away.” A prevalent subcategory symptom domain was anger, being noted by some as irrational or unwarranted, while others detailed how their anger had the potential to lead to inappropriate behaviour or violence, such as: “...feeling quite close to behaving inappropriately, (such as) swearing or slapping someone!”

Sleep disturbance

Problems with sleep were reported by 34.4% of participants. Insomnia was the most nominated issue, but some reported experiencing hypersomnia or being unable to get out of bed in the mornings. A small percentage reported that they had started to experience work-related nightmares since becoming burnt out.

Lack of motivation or passion

One-third (33.5%) reported a reduction in motivation or passion. Most of these participants detailed that their loss of motivation was work-related, but there were some others who noted that they felt a lack of motivation outside of work as well, such as: “Lack of general motivation, even at home towards housework.” Other descriptions included experiencing a lack of purpose or a loss of work or life satisfaction, while some expressed feeling a combination of these factors, such as: “I am struggling with motivation and to find a sense of purpose.”

Executive functioning issues

Cognitive and executive functioning problems were nominated by 32.5% of participants. Specific symptoms reported were concentration difficulties, memory problems,

indecisiveness, confusion and cloudy thinking. The impact of these cognitive issues on daily functioning was noted by some, such as: “Forgetting where I was, I kept getting lost. I had to stop and read or go through the process of working it out, so I still had my brain processes. I began to keep extra notes to help me” and “It feels like I have a mental block. In terms of the work, nothing is going in, nothing sticks. My thinking slows down and I feel dumb.”

Reduced performance

Reduced work performance was specified by 26.0% of the sample. Procrastination and avoiding responsibilities were frequently reported, with some stating they started to “do the bare minimum” or had “put things off” since developing burnout. Also reported was constantly failing at work tasks or making “uncharacteristic” mistakes. Such performance and productivity issues left some participants feeling “nowhere near being on top of my game.”

Withdrawal from others

Social withdrawal was reported by one quarter (25.3%) of the sample. Some specified that this occurred only in relation to work settings (e.g., “Pulling away emotionally from staff and wanting to engage less with clients”). However, most indicated that their social withdrawal was more general and widespread (e.g., “Coping with people and social situations is also becoming unbearable”).

Physical symptoms

Almost one quarter (24.6%) of the sample reported physical symptoms of burnout. General aches and pains, nausea and headaches were listed by many, and changes in appetite and weight (increases and decreases) were also reported. Some detailed other features such as a loss of libido, while others reported a broader drop in physical ‘immunity’ since developing burnout, with “ongoing illnesses” and being unable to overcome general colds and infections

being a problem for these participants, with one participant stating: “When I get sick, I get really sick and often completely collapse.”

Emotional lability

Finally, 16.5% of respondents reported emotional lability, including emotional outbursts, mood swings and uncharacteristic crying or tearfulness. Some described themselves as being emotionally “fragile” and over-sensitive, and acknowledged that their emotional reactions were often excessive, for instance: “You get giddy, dizzy and laugh or cry at trivial things.”

6.3.3. Analysis 1B: Quantitative analysis.

As reported by Tavella et al. (2020), a further 16 questionnaires were excluded from the quantitative analysis due to missing data, leaving a total sample of 1003 for Analysis 1B. An EFA of the 106 items identified 21 factors with an eigenvalue of more than 1.0, however a parallel analysis estimated that 11 to 12 factors would be adequate. The first factor (unrotated) in these solutions accounted for some 30% of variance, suggesting a *general factor* accounting for a high proportion of the variance in the dataset. To explore further, a bifactor analysis was undertaken, a strategy which loads all items onto a general factor while also specifying additional factors uncorrelated with the general factor. The general factor generated by this type of analysis is viewed as reflecting individual differences on some ‘primary’ dimension while the uncorrelated or ‘specific’ factors account for item response variance not explained by the general factor. The imposed solutions that generated one general factor plus three to five additional factors were interpreted as best capturing ‘specific’ constructs in addition to the general factor. The analytic approach was repeated after removing duplicate items (e.g., “I feel I am stagnating” and “I feel I’m stagnating and life is passing me by”) and items making a minimal contribution to the solutions (i.e., loading <

0.35 on any factor). When the imposed solution with five specific factors was examined, only two items (i.e., nightmares and flashbacks) loaded highly on a suggested 'post-traumatic' factor, and therefore the post-traumatic factor was ignored. There also appeared to be a conceptual overlap between a 'pleasure in work' and a 'work compulsion' factor, which argued for consolidating the two factors, and which was achieved by imposing a three-specific factor solution. Item loadings for the final solution with one general factor and three specific factors are listed in Table 6.2 and model fit statistics are provided in Table 6.3. Model fit statistics calculated were comparative fit (CFI), standardised root mean square residual (SRMR) and root mean square error approximation (RMSEA) indices, with CFI larger than 0.90 and SRMR less than 0.10 indicative of adequate model fit (Cangur & Ercan, 2015; Garson, 2015; Hu & Bentler, 1999), while a RMSEA index between 0.08 and 0.05 suggests adequate fit (Hu & Bentler, 1999; Wan, 2002) and a RMSEA below 0.05 is indicative of an excellent fit (Garson, 2015). Model fit for the whole sample was adequate according to these indices.

As measures of burnout have primarily been developed in samples of working participants, it was sought to determine if the same factor structure was identified in subsets of those who had not ceased working (53.1% of sample) and those who had ceased working due to their burnout syndrome. Table 6.2 reports the imposed factor solution generated by the two sub-groups and with factor loadings identifying similar factor loading patterns in both groups, while the model fit statistics calculated for each subset as reported in Table 6.3 were comparable to those calculated for the whole sample.

Table 6.2. Item loadings for imposed bifactor solution.

Items	Factor loadings		
	Whole sample	Those working	Those not working
<u>General factor</u>			
I find it difficult to concentrate when I am interacting with people at work (e.g., in meetings)	0.83	0.86	0.80
I can't relax generally	0.74	0.75	0.74
I feel emotionally drained and exhausted	0.74	0.69	0.79
I constantly feel tired or fatigued	0.74	0.76	0.72
I feel agitated constantly	0.71	0.72	0.69
I feel less satisfied with life	0.71	0.75	0.65
The world seems grey	0.71	0.71	0.70
I can't calm myself	0.69	0.67	0.70
Basic job demands and home chores frustrate me	0.69	0.69	0.69
I feel quite depressed	0.69	0.72	0.63
My self-esteem and self-worth are distinctly less	0.68	0.73	0.61
I lack energy across the day	0.67	0.66	0.66
I find it hard to concentrate on the task at hand	0.67	0.67	0.66
My attention is less	0.66	0.67	0.64
I have withdrawn from my family and friends	0.65	0.63	0.65
I have to re-read things because I wasn't concentrating the first time	0.64	0.63	0.63
I have been forgetting things	0.61	0.64	0.58
I have withdrawn from colleagues and/or customers/consumers at work	0.58	0.61	0.53
My capacity to remember things is not so good as it was	0.55	0.60	0.51
I can't get any distance from my responsibilities	0.55	0.61	0.49
I get distracted easily	0.55	0.57	0.52
I find most of the things people at my work do to be irritating	0.54	0.56	0.52
I tend to scan when I read, rather than focus	0.54	0.51	0.57
I'm more cynical about things and people in general	0.52	0.52	0.52
I am less productive at work than I used to be	0.50	0.56	0.45
I struggle to understand the feelings of my family and friends	0.50	0.50	0.48

It takes me longer to finish tasks at work than it used to	0.46	0.52	0.40
I feel less empathy and sympathy to people in general	0.45	0.47	0.44
I worry about work when I am not there	0.43	0.51	0.36
My work performance is not as good as it used to be	0.43	0.49	0.35
I struggle to understand the feelings of colleagues and/or customers at work	0.40	0.45	0.35
I do not care what happens to people at my work (e.g., colleagues, customers)	0.34	0.35	0.32
I feel like I am working harder than necessary at my job	0.33	0.38	0.28
I feel like I am making a difference at my work	-0.26	-0.34	-0.16
I am or was a workaholic	0.26	0.31	0.20
My word is my bond and I'm somewhat perfectionistic	0.23	0.27	0.21
I look forward to going to work each day	-0.23	-0.29	-0.13
I feel like the work I do is important	-0.17	-0.24	-0.09
I feel like I am an essential part of my workplace	-0.17	-0.22	-0.08
I feel very driven to keep on meeting my responsibilities	-0.07	-0.04	-0.06
I am viewed as a highly responsible person	0.04	0.04	0.08
<u>Specific factor I</u>			
I feel like I am making a difference at my work	0.80	0.76	0.83
I feel like the work I do is important	0.75	0.79	0.71
I feel like I am an essential part of my workplace	0.70	0.68	0.72
I feel very driven to keep on meeting my responsibilities	0.67	0.66	0.67
I am viewed as a highly responsible person	0.46	0.43	0.47
I worry about work when I am not there	0.45	0.47	0.44
I look forward to going to work each day	0.43	0.40	0.43
I can't get any distance from my responsibilities	0.40	0.41	0.39
I am or was a workaholic	0.36	0.42	0.32
I feel like I am working harder than necessary at my job	0.36	0.29	0.43
My word is my bond and I'm somewhat perfectionistic	0.35	0.39	0.33

Specific factor II

I do not care what happens to people at my work (e.g., colleagues, customers)	0.74	0.77	0.72
I struggle to understand the feelings of colleagues and/or customers at work	0.52	0.46	0.58
I feel less empathy and sympathy to people in general	0.52	0.49	0.51
I have withdrawn from colleagues and/or customers/consumers at work	0.46	0.44	0.48
I find most of the things people at my work do to be irritating	0.46	0.50	0.43
I struggle to understand the feelings of my family and friends	0.43	0.43	0.44
I'm more cynical about things and people in general	0.42	0.46	0.38

Specific factor III

I am less productive at work than I used to be	0.70	0.69	0.71
It takes me longer to finish tasks at work than it used to	0.67	0.64	0.70
I find it hard to concentrate on the task at hand	0.58	0.59	0.58
I have to re-read things because I wasn't concentrating the first time	0.57	0.55	0.60
My work performance is not as good as it used to be	0.56	0.55	0.58
My attention is less	0.55	0.56	0.55
I have been forgetting things	0.53	0.48	0.56
My capacity to remember things is not so good as it was	0.50	0.44	0.54
I get distracted easily	0.50	0.52	0.49
I tend to scan when I read, rather than focus	0.42	0.42	0.40

Table 6.3. Model fit statistics for imposed bifactor solution.

	Sample		
	Whole sample	Those who had not ceased working	Those had ceased working
<i>n</i>	1003	533	470
RMSEA			
- Estimate	0.07	0.07	0.06
- 90% confidence interval	0.07-0.07	0.07-0.07	0.06-0.07
CFI	0.89	0.89	0.91
SRMR	0.06	0.07	0.06

Note. RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; SRMR = Standardised Root Mean Square Residual

The general factor was dominated by items capturing exhaustion as well as several other features including worrying, an inability to relax, anergia and fatigue, insularity, depression and impaired concentration. The first specific factor encompassed a ‘work-focused’ construct, with high scores weighting the individual viewing work as important or essential, being driven to meet responsibilities, enjoying work and being dutiful and responsible. The second specific ‘inability to feel’ factor was dominated by items comprising a loss of empathy for and understanding of others, but also included items depicting feelings of irritation towards work colleagues and covering the individual's general loss of feeling towards others and life in general. The third specific ‘compromised work performance’ factor was marked by items capturing decreased work performance, together with cognitive items such as impaired concentration and forgetfulness.

Factor scores were calculated for the whole sample solution and any effect of age on each factor was examined. This analysis sought to determine if the ‘compromised work performance’ factor might reflect the greater likelihood of cognitive impairment as a consequence of aging rather than a burnout symptom contributing to syndrome definition. A significant difference was found only for the general factor, with those aged 55 and over scoring lower on this factor than both those aged 18 to 34 ($p < 0.001$), and those aged 35-54

($p = 0.04$). Thus, there was no association between age and scores on the ‘comprised work performance’ factor.

6.4. Discussion.

The purpose of Study 1 was to examine which features self-identified sufferers perceive to denote burnout, by employing a “bottom-up” approach and assessing the symptoms and correlates that were most commonly experienced by participants through both qualitative (Analysis 1A) and quantitative (Analysis 1B) analyses.

Several limitations must be considered before interpreting the results. The study was limited by the use of a convenience sample selected based on participants self-identifying as suffering from burnout, so to better understand ‘burnout’ as experienced by the lay population. Such a recruitment method does, however, risk a percentage of participants having alternate primary psychiatric conditions, such as chronic fatigue syndrome, which may have influenced symptom reporting. Further, while prevalence data of symptoms are reported in Analysis 1A, such data are not necessarily truly representative for the syndrome as such reporting reflected what respondents simply judged as worthy of noting. Another limitation was that the sample was predominantly female. While this gender composition mirrors other studies suggesting women are more vulnerable to burnout than men (Beauregard et al., 2018; Norlund et al., 2010), it could also reflect women being more likely than men to both participate in health research (Glass et al., 2015) as well as be willing to self-report psychological distress (Phillips & Segal, 1969). Thus, the generalisability of the results should be interpreted with caution.

A study strength was that the open-ended qualitative questions were presented to participants before the 106-item list of putative burnout symptoms, averting the risk of

recency bias (in which participants' responses to the open-ended questions might have been influenced by already having seen the 106-item list of potential burnout symptoms).

6.4.1. Analysis 1A: Qualitative analysis.

Turning to the qualitative analysis, as reported by Tavella and Parker (2020b), exhaustion was identified as the central burnout feature in Analysis 1A, with this centrality mirrored in both the existing unitary and tridimensional models of burnout discussed in Chapter 1. However, unlike the unitary model that equates burnout completely with exhaustion, most of the participants nominated many other manifestations of their burnout. For instance, feelings of disconnection from and cynicism towards other people were also frequently nominated, with these features captured by the indifference theme. This category also captured a disconnection from and disinterest in work (aligning somewhat with the MBI-GS's "cynicism" scale; Maslach et al., 2016), while also encompassing general anhedonia, with individuals expressing reduced pleasure and interest in life or activities outside of work, as well as an inability to look forward to things. Thus, the indifference category seemed to encompass a far broader construct than the 'loss of empathy' captured by the original MBI-HSS's "depersonalization" scale. Items from the MBI's accomplishment subscale (Maslach et al., 2016) were evident in the reduced performance category, while a separate category captured feelings of reduced motivation to achieve at work.

Analysis 1A also revealed several other symptom constructs (e.g., cognitive issues, anxiety/stress, depression, irritability/anger, insularity, physical symptoms and emotional lability) that may contribute to the definition of a burnout syndrome. The finding that some described worrying excessively about work productivity and output does not align with items in the MBI, which mostly denote feelings of severe detachment from and lack of care about one's job (Maslach et al., 2016). As reviewed in Chapter 3, other researchers have shown

burnout symptoms to be positively correlated with anxiety symptoms (Ding et al., 2014; Turnipseed, 1998). It is not surprising that those identifying as experiencing burnout—which for most will have presumably resulted from exposure to chronic work stress—reported feelings of anxiety in the current study, as past studies show that stressors encountered in the work environment commonly result in anxiety symptoms (Melchior et al., 2007; Wieclaw et al., 2008). Despite anxiety’s association with burnout however, only a small-to-moderate association ($r = 0.46$) between the two states was identified in a recent meta-analysis, with the authors of that study concluding that burnout and anxiety remain separate constructs (Koutsimani et al., 2019). That anxiety is not synonymous with burnout but is a concomitant symptom of the syndrome is being increasingly acknowledged, with the new BAT burnout measure (detailed in Chapter 1) positioning worrying, feeling tense and anxious, and experiencing panic attacks as secondary, but not core, symptoms of burnout (Schaufeli et al., 2020).

A significant number of respondents reported depressive symptoms, including low mood and anhedonia. Regardless of whether such symptoms are inherent to burnout or rather due to a co-occurring depressive condition in those participants, the fact that the participants attributed such symptoms to the former indicates that depression symptoms are a key feature of the burnout experience for many individuals. This finding provides further justification for pursuing the overlap of burnout and depression in Part III of this thesis.

Another set of features identified as common across the qualitative dataset were executive dysfunction and cognitive symptoms. Previous studies have similarly suggested that cognitive issues (e.g., concentration and memory problems) may be “cardinal features” of burnout (Bianchi et al., 2015a; Gavelin et al., 2022; Lemonaki et al., 2021; Schaufeli & Taris, 2005), with newer measures of burnout, including the BAT (Schaufeli et al., 2020),

positioning cognitive disturbances as a core component of burnout. Thus, mounting evidence suggests cognitive dysfunction to be a prominent feature of burnout, despite being absent from the MBI's model.

Two additional categories — physical symptoms and emotional lability — were identified in Analysis 1A, however the utility of such symptoms in defining burnout is questionable due to their non-specific nature. Indeed, physical symptoms such as headaches, nausea and muscle pain are common psychosomatic symptoms of stress and other psychological disturbances (Haug et al., 2004; Henningsen et al., 2003). The prevalence of such symptoms in the current sample is therefore unsurprising and aligns with other studies linking psychosomatic symptoms with burnout (Bauer et al., 2006; Piko, 2006), however their non-specific nature would be unlikely to render them useful as formal diagnostic criteria for the condition. A similar explanation is likely to hold for emotional lability, which, as a common symptom of stress, is to be expected in those who are burnt out.

Overall, Analysis 1A identified numerous categories and subcategories capturing a broad set of putative burnout features. While some categories encompassed the emotional exhaustion, cynicism and reduced professional efficacy constructs central to Maslach and colleagues' definition of burnout (Maslach & Jackson, 1981; Maslach et al., 2016), additional features not included in the traditional conceptualisation of burnout were identified.

6.4.2. Analysis 1B: Quantitative analysis.

Turning to the findings of Analysis 1B, as reported by Tavella et al. (2020), the extent to which the analysis generated a profile of 'burnout' corresponding or not to the MBI measures developed by Maslach and colleagues is first considered. While the MBI's first factor is labelled 'emotional exhaustion' and its descriptors cover exhaustion, work stress and

work frustration, the general factor in the final solution of Analysis 1B not only encompassed exhaustion and fatigue but also included items describing worrying and an inability to relax, the world being grey, social withdrawal, depression, as well as concentration problems.

The differences between these first factors may be partly explained by the differing types of factor analyses employed. Maslach et al. (2016) stated that, in developing the MBI-HSS, they employed a principal factor analysis with orthogonal (varimax) rotation, and so identified three principal factors representing ‘emotional exhaustion’, ‘depersonalization’ and ‘personal accomplishment,’ and which, on inspection of the items, suggest rather homogeneous constructs. In contrast, the factor analytic technique that was employed in Analysis 1B (i.e., bifactor modelling), distinguished a general factor that effectively encompassed the common variance across all study items, as well as additional specific factors that covered the remaining variance in ‘clusters’ of items with similar content (Reise, 2012). The general factor in bifactor modelling is therefore said to represent the “conceptually broad” target domain represented across a set of items, while the specific factors account for more “conceptually narrow” sub-domains contributing to a multidimensional construct (Reise, 2012, p. 668).

The utility of bifactor modelling is becoming increasingly recognised in psychiatric research (e.g., St Clair et al., 2017; Thomas, 2012), where the objective of such research is generally to determine whether complex psychological phenomena reflect uni- or multi-dimensional constructs (Reise et al., 2007). This complexity is apparent in the burnout literature, as made evident in the ongoing debate as to whether the three-factor MBI burnout model is superior to other models that essentially position burnout as unidimensional and analogous with exhaustion (e.g., Pines & Aronson, 1981; Shirom & Melamed, 2006), as detailed in Chapter 1. The final bifactor model of Analysis 1B may offer the “best of both

worlds” (Chen et al., 2012), as it maintains that there is a single “target” domain of burnout – albeit clearly expanded beyond exhaustion *per se* (here reflecting common domains of compromised psychological functioning) – while also identifying several other constructs that appeared salient (and may be integral) to the definition of burnout.

The specific ‘inability to feel’ factor identified in the current study corresponds with the ‘depersonalization’ scale on the MBI-HSS, in that both capture a reduced ability to feel for other people (rather than depersonalization as usually defined psychologically where the individual more feels ‘unreal’ or disconnected from self). In addition, another factor was identified that in part corresponded with the MBI-HSS ‘personal accomplishment’ factor in that it contained items capturing reduced work performance, but which also had items encompassing concentration and attention problems. Cognitive dysfunction was also identified as a prominent burnout feature in Analysis 1A. If integral to ‘burnout’, key questions are whether cognitive impairment is a primary feature that consequently compromises work performance, or if the ‘compromised work performance’ factor might reflect the likelihood of cognitive impairment inherent in those of an older age rather than a burnout symptom. However, Analysis 1B failed to find any link between age and scores on this factor. It therefore seems reasonable to conclude that the cognitive impairment is likely due to burnout (and potentially because of biological brain changes integral to burnout), which in turn contributes to compromised work performance. This notion has been supported in a recent study (Lemonaki et al., 2021), which found that poor performance on cognitive functioning tasks mediated the negative relationship between burnout scores on the OLBI and work performance.

The ‘work-focused’ factor is unlikely to represent symptoms integral to the definition of burnout. Rather, several items capturing a personality style of dutifulness,

conscientiousness and perfectionism were included in the questionnaire, and thus it was predictable that such a personality-based factor was generated. It captured items loading poorly on the general factor, suggesting such items are not inherent to the primary dimension represented by the general factor, and thus should not be included in a definitional model of the syndrome.

The question as to whether ‘burnout’ is simply depression – in effect an “old wine in new bottles” scenario – remains to be clarified. Items loading highly on the general factor would be expected to be affirmed by those with depression, while depressed individuals may also report a loss of empathy, impaired work performance and cognitive limitations. Evidently, nuances of the “complex relationship” (Maslach et al., 2008) between burnout and depression remain to be clarified, justifying the pursuit of the independence or interdependence of burnout and depression (and the impact of depressive sub-type on the burnout/depression overlap) in Part III of this thesis.

6.4.3. Conclusion.

Overall, the results of Study 1 suggest that there are several key symptoms experienced by those who self-identify as experiencing burnout which are not included in the traditional conceptualisation of burnout as captured by the MBI. Such indicative data argue for a more refined study pursuing clarification and further definition of a burnout syndrome, as will be pursued in the remainder of Part II of this thesis. The findings of Study 1 also highlight the complex relationship between burnout and depression, suggesting there is merit in further pursuing the burnout-depression overlap, which will be undertaken in Part III of this thesis.

7. Study 2

This chapter details a quantitative study undertaken to further pursue identification of burnout's key symptoms and to develop both a new symptom model and a symptom-based measure of the syndrome. The material in this chapter has been adapted from a published paper first-authored by the PhD candidate (Tavella et al., 2021)², with some additional methodological and analytic details provided here.

7.1. Introduction.

As reviewed in Chapter 1, multiple researchers have criticised the MBI's burnout definition, questioning whether the three dimensions accurately represent the syndrome. Study 1 was therefore conducted to explore whether burnout might benefit from redefinition. Analysis of the qualitative data indicated that those who self-diagnosed as experiencing burnout experienced a broader set of symptoms than those promulgated by the MBI as defining the syndrome. Analysis of the quantitative data led to a bifactor solution with a general factor (representing variance in the data accounted for by the 'primary' or 'target' dimension being measured) and three additional 'specific' factors (which account for item response variance not captured by the general factor) being judged as the solution most adequately capturing the data. The general factor had items weighting exhaustion, cognitive problems, social withdrawal, as well as worry and depressive symptoms. The first specific factor comprised empathy loss in conjunction with social withdrawal, which was interpreted as a general "inability to feel" factor. The second factor encompassed cognitive dysfunction coupled with reduced work efficacy, while the third "work-focussed" factor reflected the

²Correspondence with the publisher confirmed that permission to adapt material from this article into a thesis chapter was not required.

study design of including a potential at-risk personality style of dutifulness/perfectionism and thus likely not reflecting a symptom set of burnout *per se*. Thus, the analysis showed some overlap with the MBI, but also several differences, most notably in identifying a compromised cognition component, modifying some of the MBI constructs and showing that burnout would appear to be commonly associated with a set of psychological symptoms (including anxiety and depression) and which might be integral to the syndrome and/or consequences of it.

Several questions arose from that study. Firstly, would the symptom clusters identified in the bifactor solution for Study 1 be evident in a new sample of participants self-identifying as burnt out? Secondly, is there further statistical evidence that burnout is best defined by the general factor of such a bifactor solution and therefore potentially capable of being measured by a single scale, or do the specific factors argue for additional subscales to be included in any measure? In addition, it was sought to clarify the long-standing debate as to whether burnout is independent of depression or is a synonym for depression by assessing the pertinence of depression symptoms to participants' experiences of burnout. Study 2 was therefore designed to answer such questions.

7.2. Methods.

7.2.1. Ethical considerations.

Ethical approval for the research was given by the UNSW Human Research Ethics Committee (UNSW HREC #HC190213). Individuals were required to provide consent via an online PISCF before they could participate.

7.2.2 Participants.

Individuals could participate if they were fluent in written and spoken English, between the ages of 18 and 65, and self-identified as currently experiencing ‘burnout’. Participants were recruited through advertisements posted on the Black Dog Institute website. The invitation to participate was presented as follows: “Are you currently experiencing BURNOUT? Whether you are working, retired, studying or responsible for home/care duties, you may be currently feeling burnt out. If so, you are invited to participate in research aiming to clarify the nature of burnout, as well as to determine its distinction from depression”, with a link to the online questionnaire presented at the end of the invitation. Inclusion criteria were intentionally broad because, like in Study 1, the current study sought to gain insight about experiences of burnout from individuals with a range of formal/paid and informal/unpaid occupations.

7.2.3. Procedure.

Participation involved anonymously completing online questionnaires administered via the Qualtrics website. The questionnaire took approximately 40 minutes to complete. It first contained questions about demographic variables including age, gender, ethnicity, marital status, as well as employment status and occupation type. The remainder of the questionnaire was split into three sections with the first two sections of relevance to the current thesis.

Section 1. The first section contained a list of 137 potential symptoms of burnout, and participants were asked to “tick the degree to which the following features are present during your burnout state”. Answers were rated on a 4-point scale to indicate whether they experienced each feature distinctively, moderately, slightly or not at all (coded 3, 2, 1, and 0 respectively). Participants were instructed that, while many of the items were related to “work”, they should consider such work as their current paid employment if applicable, their

most recent paid employment position if they had recently retired or had ceased working due to their burnout, or as their unpaid home/care duties that they were responsible for if not in paid employment.

Items included in the list were derived from previous burnout measures, a detailed review of the burnout literature, the results of Study 1 and the clinical experience of the PhD candidate's primary supervisor. Specifically, as was the case in Study 1, several items were included to capture features of each MBI-HSS and MBI-GS subscale (reworded to avoid plagiarism). For instance, "I feel frustrated by my job" from the exhaustion subscale of the MBI-HSS (Maslach et al., 2016) was framed as "I get more frustrated by basic job demands" in the current questionnaire. Items representing those from the personal accomplishment/professional efficacy subscales of the MBI-HSS and MBI-GS were included but negatively worded, to ensure consistency in direction with other items. For instance, "I can easily understand how my recipients feel about things" from the MBI-HSS (Maslach et al., 2016) was replaced with "I struggle to understand the feelings of colleagues, customers and/or recipients of my care" in the current questionnaire. Such consistency was sought due to concerns of measurement error resulting from the inclusion of positively worded professional efficacy items whose scores then need to be reversed to indicate a *lack* of professional efficacy in the MBI (Schaufeli et al., 2020). Previous research has indicated that the relationship between items assessing *inefficacy* and other burnout symptoms is stronger than items assessing efficacy that are then reversed scored (Schaufeli & Salanova, 2007).

Other items were included to capture those in other measures of burnout, such as "I experience a loss of energy making it hard to get going in the morning" to cover the item "I have no energy for going to work in the morning" from the SMBM (Shirom & Melamed, 2006), "I feel emotionally drained and exhausted" to cover item "During my work, I often feel emotionally drained" from the OLBI (Halbesleben & Demerouti, 2005), and "I feel worn

out” to cover item “Do you feel worn out at the end of the working day?” from the CBI (Kristensen et al., 2005).

As in Study 1, other putative burnout symptoms such as those indicating cognitive dysfunction, irritability and physical complaints were also included based on a review of the burnout literature (Beck et al., 2013; Sandström et al., 2005; Schaufeli & Enzmann, 1998; Schaufeli & Taris, 2005) and the results from the earlier study.

In addition, items from four validated depression measures—the Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002); the 17-item Hamilton Depression Rating Scale (HDRS; Hamilton, 1960); the Montgomery Åsberg Depression Rating Scale-Self-assessment (MADRS-S; Svanborg & Åsberg, 1994); and the Beck Depression Inventory (BDI; Beck et al., 1961)—were collated and reviewed for inclusion in the list of symptoms. Several items from these scales covered very similar symptoms, such as “A gloomy attitude/feelings of sadness” (HDRS) and “Feeling down, depressed, or hopeless” (PHQ-9), an issue addressed by replacing such items with a single item in the questionnaire (e.g., “I feel sad, empty and hopeless”). Items from the Sydney Melancholic Prototypic Index (SMPI; Parker et al., 2013) that capture melancholic and non-melancholic depressive symptoms were also included, as well as additional criteria not covered by the referenced depression measures, such as feelings of “leaden paralysis” which is included in the DSM-5 as a specifier for atypical (non-melancholic) depression. A total of 37 depression items were included in the final list.

Section 2. The second section of the questionnaire included several questions asking participants about non-symptom aspects of their burnout syndrome. The first asked which ones of the listed scenarios provided were perceived by respondents to have triggered their burnout. Items were included to represent the areas of work judged to cause burnout in the Leiter and Maslach (2003) AW model, as well as other work factors that have been shown to

contribute to burnout (see Sharma & Cooper, 2016). As described previously, the scope of burnout has recently been expanded to include burnout experienced outside of the formal/paid work environment. The listed options therefore included formal work factors and ‘informal’ or non-work factors so to examine the influence of stressors from both contexts on subsequent burnout. Specifically, where appropriate, some items representing formal work scenarios were repeated but couched to represent the same stressor in the home environment. For example, “My contribution to the workplace was not recognised or appreciated” corresponded with “My contribution at home was not recognised or appreciated”, and “I was overloaded at work” corresponded with “I was overloaded in my home-care duties”. Other items were included to cover depressogenic causal factors such as the breakdown of a personal relationship, as well as factors that may impact on self-esteem, such as being bullied at work, to assess for causal overlap in burnout and depression stressors. Participants were also allowed to indicate that their burnout had no identifiable cause (“There was no trigger”) or that they experienced some other causal event not included in the list, which they could then specify.

Additional questions in this section asked participants whether they had ever stopped working due to their burnout, whether they had sought help for their burnout (including what strategies they used and whether they judged these strategies to have been helpful), and whether they had ever been diagnosed with depression or another mental illness from a mental health professional.

Section 3. This section contained questions relating to personality traits and other variables, however such data were not included in the analyses for any studies in the current thesis. Study 2, as reported here, comprises the analyses of data from Section 1 of the questionnaire only, with some of this data also analysed in Study 3 (Chapter 8), while the analyses of data from Section 2 is reported in Study 5 (Chapter 10).

7.2.4. Statistical considerations.

Sample size.

The sample size was extrapolated from evidence suggesting that a sample size greater than 500 results in proper convergence and negligible bias in estimated loadings when examining categorical data using the weighted least squares mean and variance (WLSMV) estimator (Moshagen & Musch, 2014), however the recruitment aim was set conservatively at 600 participants.

Statistical analyses.

As detailed in Tavella et al. (2021), bifactor and non-bifactor factor analyses were carried out in Mplus (Muthén & Muthén, 1998-2017), with data treated as categorical and using the WLSMV estimator. Exploratory bifactor modelling was judged as most accurately capturing the data in Study 1 (Analysis 1B; Tavella et al., 2020) and was also prioritised in this study, as several studies report moderate to high correlations between the three dimensions of the MBI's burnout construct (see Worley et al., 2008) and which suggests that an overarching/core domain of burnout (i.e., a general factor) may be at play, therefore arguing for a bifactor model (Mészáros et al., 2014). As noted, bifactor analyses load all items onto a single general factor capturing the primary domain being measured ('overall' burnout in this instance), while also specifying one or more secondary specific factors that are uncorrelated with the general factor (and in the models examined here, uncorrelated with each other – the standard definition) and accounting for any additional variance in the data set not captured by the general factor.

The item set number was repeatedly reduced across sequential EFAs. Initial candidates for deletion were obvious duplicate or similar items and ones making a minimal contribution to the solution (i.e., loading less than approximately 0.35 on any factor). For the

progressively refined 61-item and 43-item solutions (described shortly) the following were calculated for each item: (i) item characteristic curves (ICCs), which show the probability of someone responding to each of the response categories (from “not at all” to “distinctive”) as a function of their level on the underlying factor (Asparouhov & Muthén, 2020), and (ii) a degree of severity (D) value, which corresponds to the point on the latent dimension where a response of “moderate” becomes more likely than a response of “slight”, with a broad range of D-values across items increasing the likelihood that a scale based on those items can discriminate between different levels of the latent construct. Pairs of items with similar content, loadings and D-values were judged as indicating overlap and redundancy, and thus the item of the pair with the inferior ICC was deleted. Item redundancy was also indicated in pairs of items with similar content, loadings and ICCs, and so the item from such pairs whose deletion would result in evening up the distribution of D-values across the solution was selected for deletion.

As noted by Reise et al. (2016), model fit statistics cannot be used to choose between a bifactor model and a correlated factor model. However, some may find such statistics informative when considering the fit of specific models, and comparative fit (CFI), Tucker–Lewis (TLI), and root mean square error approximation (RMSEA) indices were therefore calculated for the final model. CFI and TLI indices larger than 0.90 have been reported as indicative of adequate model fit (Garson, 2015; Hu & Bentler, 1999), while a RMSEA index between 0.08 and 0.05 suggests adequate fit (Hu & Bentler, 1999; Wan, 2002) and a RMSEA below 0.05 is indicative of an excellent fit (Garson, 2015).

Reliability estimates for each factor in the final model were also derived by calculating coefficient ω and hierarchical coefficient ω (ω_H) indices for each factor (Rodriguez et al., 2016). These statistics are estimates of how precise scale scores from each

factor are in measuring the relevant construct (Mészáros et al., 2014). Coefficient ω represents the proportion of variance in scale scores from each factor that is accounted for by a blend of both the general and specific factors. Coefficient ω_H is an estimate of the variance in scale scores accounted for by the relevant factor only (i.e., after “partitioning out” the variance for the general factor; Rodriguez et al., 2016). As there is no generally accepted calculation of these indices when items are categorical and the WLSMV estimator is used (Muthén & Muthén, n.d.), reliability statistics were based on treating the items as continuous.

Because of the broad inclusion criteria utilised, characteristic differences across members of the sample may have influenced the results. One potential characteristic that likely varied between participants was the severity of their self-identified burnout. As noted, participants were asked whether they had ceased working due to their burnout, and this variable was used as an indicator of burnout severity (assuming those who had ceased working had more severe burnout). While the influence of working status due to burnout is considered in more detail in Study 3, one aspect of this was examined here by first calculating fit statistics for subsets of participants who reported that they had or had not ceased working due to burnout, as well as by testing for measurement invariance across those participants who reported that they had or had not ceased working due to burnout. A multiple-group analysis using these subsets tested for scalar versus configural invariance³. Under the scalar invariance model all factor means were set to zero for the subset who had ceased working and set free in the other subset. Once partial scalar invariance was established (detailed in Section 7.3.3 below), this allowed an examination as to whether the factor means in the latter subset differed from zero.

³The usual test of scalar versus metric invariance (and metric versus configural) is not possible with categorical indicators when the indicators have cross-loadings (Muthén & Muthén, 1998-2017).

Another risk of relying on self-identification of burnout by participants is that a percentage may have had a primary psychological condition other than burnout, particularly depression, which may have influenced symptom reporting. Again, while the influence of potential depression in the sample is considered in more detail in Study 3, fit statistics for subsets of participants who reported that they had or had not been previously diagnosed with depression were calculated and compared to examine for measurement invariance in the current study. A scalar invariance model was then applied such that all factor means were set to zero for the subset previously diagnosed with depression and set free in the other subset, and, once partial scalar invariance was established (see Section 7.3.4), whether the factor means in the latter subset differed from zero was then examined.

7.3. Results.

7.3.1. Demographics.

Data from 622 completed questionnaires were analysed. Sample members were predominantly female (78.4%) with a mean age of 41.5 years. Most identified as non-Indigenous Australians (71.9%), had undergraduate (36.3%) or postgraduate (41.2%) degrees and were employed full-time (69.0%) or part-time (17.0%). The five most commonly nominated occupations were education professionals (e.g., teacher, lecturer; 10.6%), specialty managers (e.g., advertising manager, sales manager; 10.0%), public servants (8.0%), community/welfare workers (e.g., social workers; 7.2%), and midwives/nurses (5.6%).

7.3.2. Factor analyses.

Exploratory bifactor analyses of the 137-item set were undertaken, with bifactor (orthogonal Geomin) rotations with a general factor plus one to nine specific factors generated (as solutions with more than nine specific factors had multiple factors with few

items having loadings > 0.35). The solution with one general factor plus six specific factors (hereafter referred to as the 137-item GF + 6SF solution) was judged as the most informative, with its general factor including a broad range of highly loading items (including depression and anxiety items), while its six specific factors captured (i) empathy loss, (ii) reduced work performance, (iii) energy depletion, (iv) sleep disturbance, (v) cognitive dysfunction, and (vi) social withdrawal/disconnection, with the first three in accord with MBI constructs (Maslach et al., 2016), and the latter three capturing constructs suggested in Study 1 (Tavella et al., 2020).

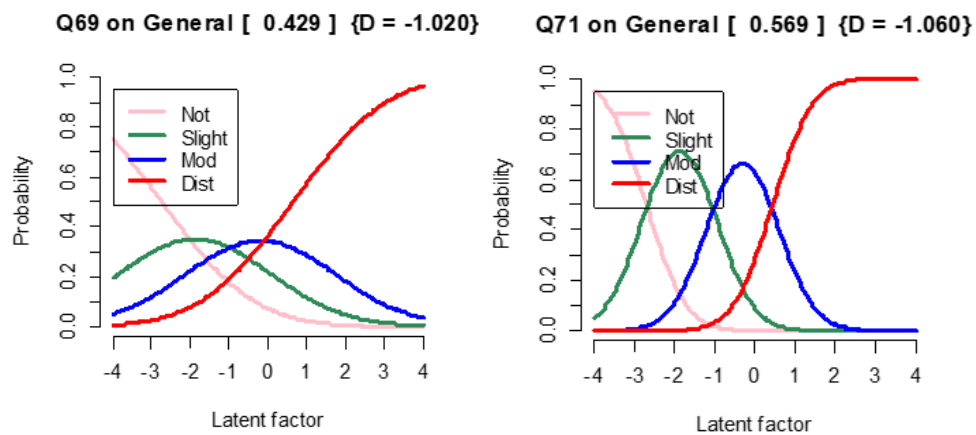
The bifactor analysis was compared against a factor analysis with correlated factors (i.e., non-bifactor, oblique Geomin rotation) of the 137 item-set. The non-bifactor solutions with five or less factors appeared to be adequate in capturing the data, as once six or more factors were generated only a few items (three or less) were loading highly on some factors. Of the solutions with five or less factors, approximately one-third of the items loaded onto the first factor in each solution, suggesting that a single (i.e., ‘general’) factor accounted for the majority of variance. It was therefore judged that the bifactor analysis was appropriate for further refined analyses.

One item in pairs of items with similar descriptors (e.g., “I cannot look forward to things that would normally give me pleasure” and “I look forward to pleasurable things less”) were removed. In addition, those making a minimal contribution to the solution were removed, with items retained being all those with loadings greater than 0.35 on specific factors, as well as all additional items loading highly on the general factor (i.e., loadings > 0.7) but not loading on any of the specific factors. Sixty-one items remained, with their loadings on the general factor ranging from 0.19 to 0.77.

A bifactor analysis of the 61 items was then undertaken. The solution with four specific factors (hereafter referred to as the 61-item GF + 4SF solution) was interpreted as best capturing the data as its general factor weighted a broad range of highly loading exhaustion, cognitive and depressive items, and its specific factors covered all those domains captured in the 137-item GF + 6SF solution (albeit combining the energy depletion and sleep disturbance factors into a single exhaustion factor), except for social withdrawal - with items for that construct instead loading distinctly on the general factor.

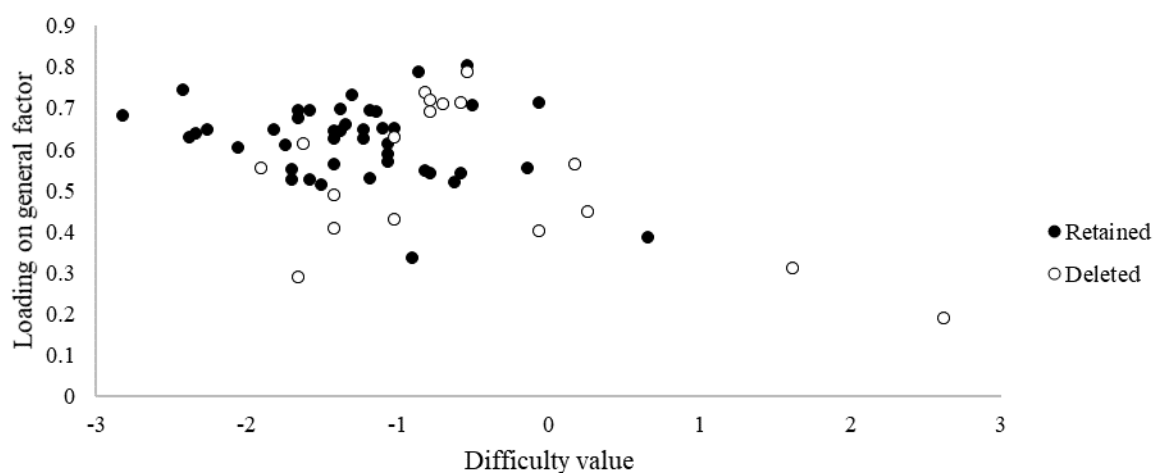
Items remained that captured similar content (e.g., “I socialise less” and “I withdraw from family and friends”), indicating item redundancy and arguing for some item deletions. As described previously, pairs of items with similar content, loadings, and D-values were judged as indicating the redundancy of items, and thus the item of the pair with the worse ICC curve was deleted. For example, ICC curves for item 69 and item 71 are presented in Figure 7.1 for comparison. Both items have similar D-values, but the ICC curves indicate that item 71 is a better performing item as all categories from “not at all” to “distinctive”) are used equally and show the expected change in probabilities as levels on the latent factor increase. The ICC curve for item 69, on the other hand, suggests that the middle two categories are less likely to be used and poorly differentiated, and thus the item is less sensitive in discriminating levels of the latent factor, arguing for its deletion.

Figure 7.1. Item characteristic curves for item 69 and item 71 in the 61-item GF + 4SF solution



Second, there were some items with similar content, loadings, and ICC curves, but with different D-values. Items selected for deletion from such pairs were those whose deletion resulted in evening up the distribution of D-values across the solution. By comparing item content, loadings, ICCs, and D-values (as described previously), 18 items were deleted, and with the remaining 43 items maintaining a reasonable balance across D-values, as shown in Figure 7.2.

Figure 7.2. Scatter plot of items retained and deleted from the 61-item GF + 4SF solution



The analyses were re-run with the refined 43 items, generating solutions with two to five specific factors (as previously, any additional specific factors contained fewer than four items with loadings > 0.35 were judged to be of low utility). The imposed solution that generated one general factor plus five additional factors (hereafter referred to as the 43-item GF +5SF solution) was interpreted as capturing clear specific constructs in addition to the general factor. This solution included a general factor with most of the highest loading items capturing cognitive dysfunction, but also including some exhaustion and reduced work performance items. Other items on the general factor encompassed reduced motivation, low mood, feelings of reduced self-worth, social withdrawal/disconnection as well as empathy loss. Based on item loadings, the five specific factors were interpreted as capturing (i) cognitive dysfunction, (ii) empathy loss, (iii) exhaustion, (iv) reduced work performance, and (v) social withdrawal. Thus, the solution included all constructs from the MBI but also included compromised cognition, social withdrawal and low mood constructs.

An additional analysis was run to check that the use of bifactor as opposed to a non-bifactor analysis adequately captured the data. A non-bifactor analysis with six factors (with orthogonal rotation) of the 43 items was computed and was almost identical to the 43-item GF + 5SF solution (see Table 7.1), as most items loaded moderately to highly on the first factor, suggesting a single (i.e., general) factor accounting for most of the variance in items. Further, the factor structure of the remaining factors was similar to the five specific factors in the bifactor analysis in terms of item loadings. It was therefore judged that the bifactor solution appropriately represented the data while providing what was viewed to be a more parsimonious and clinically useful representation.

Table 7.1. 43-item bifactor and non-bifactor solutions.

43-item bifactor solution							43-item non-bifactor solution with orthogonal rotation						
Item	GF	SF1	SF2	SF3	SF4	SF5	Item	I	II	III	IV	V	VI
I cannot concentrate or register new information because of foggy thinking	0.66	0.54	-0.01	0.07	0.09	0.03	I cannot concentrate or register new information because of foggy thinking	0.66	0.54	0.00	0.07	0.08	0.03
I feel slowed down mentally (e.g., hard to find words, slowed thoughts)	0.66	0.50	-0.04	0.09	0.09	0.00	I feel slowed down mentally (e.g., hard to find words, slowed thoughts)	0.66	0.50	-0.03	0.09	0.09	0.00
I have to re-read things because I was not concentrating the first time	0.66	0.46	-0.01	-0.08	0.03	-0.09	I have to re-read things because I was not concentrating the first time	0.67	0.45	0.00	-0.08	0.03	-0.09
My capacity to remember things is not as good as usual	0.75	0.40	-0.05	-0.01	-0.01	-0.01	My capacity to remember things is not as good as usual	0.75	0.39	-0.05	-0.01	-0.01	0.00
I forget things	0.65	0.35	-0.08	0.00	0.05	-0.06	I forget things	0.66	0.35	-0.08	0.00	0.05	-0.05
I stop feeling like the work I do is important	0.68	-0.39	0.09	-0.27	-0.02	0.01	I stop feeling like the work I do is important	0.68	-0.40	0.09	-0.26	-0.02	0.03
I do not look forward to starting work each day	0.68	-0.38	0.01	0.13	0.16	-0.09	I do not look forward to starting work each day	0.68	-0.39	0.02	0.14	0.16	-0.08
I am less empathetic	0.23	-0.01	0.79	0.00	-0.03	0.01	I stop feeling like I am an essential part of my workplace	0.60	-0.35	-0.01	-0.31	-0.06	-0.03
I feel less empathy and sympathy towards people in general	0.45	-0.08	0.75	0.04	-0.05	0.06	I cannot get pleasure out of my work	0.65	-0.35	0.13	0.02	0.13	-0.02
I struggle to understand the feelings of colleagues, customers and/or recipients of my care	0.30	0.05	0.62	-0.07	-0.05	0.04	I feel like I am making less of a difference at work	0.71	-0.35	0.01	-0.28	0.03	-0.05

I care less about what happens to people that I work with (e.g., colleagues, customers, recipient of my care)	0.47	-0.15	0.57	-0.02	0.04	0.11	I am less empathetic	0.22	-0.01	0.80	0.00	-0.03	0.01
I constantly feel tired or fatigued	0.65	0.00	0.02	0.62	-0.04	0.05	I feel less empathy and sympathy towards people in general	0.44	-0.08	0.76	0.05	-0.05	0.07
I wake up feeling tired	0.69	0.01	-0.01	0.56	-0.17	0.01	I struggle to understand the feelings of colleagues, customers and/or recipients of my care	0.29	0.05	0.63	-0.07	-0.05	0.04
I am not refreshed by sleep	0.64	0.06	-0.02	0.54	-0.19	0.03	I care less about what happens to people that I work with (e.g., colleagues, customers, recipient of my care)	0.46	-0.15	0.57	-0.01	0.04	0.11
I feel worn out	0.68	0.01	-0.01	0.52	-0.01	0.16	I constantly feel tired or fatigued	0.64	0.01	0.03	0.62	-0.04	0.05
I experience a loss of energy (making it hard to get going in the morning)	0.69	0.00	-0.03	0.48	0.02	0.01	I wake up feeling tired	0.69	0.01	0.00	0.57	-0.16	0.01
I lack energy across the day	0.67	0.02	0.04	0.47	-0.01	0.04	I am not refreshed by sleep	0.63	0.06	-0.02	0.55	-0.19	0.04
I am less productive at work	0.72	0.03	-0.06	-0.06	0.58	-0.10	I feel worn out	0.68	0.02	-0.01	0.52	0.00	0.16
My work performance worsens	0.61	0.01	-0.02	-0.11	0.54	-0.02	I experience a loss of energy (making it hard to get going in the morning)	0.68	0.00	-0.03	0.49	0.03	0.02
The quality of my work output is lower	0.69	0.06	-0.02	-0.16	0.53	-0.12	I lack energy across the day	0.67	0.02	0.04	0.47	-0.01	0.04
I take longer to finish tasks at work	0.66	0.24	-0.10	-0.04	0.44	-0.03	I am less productive at work	0.72	0.03	-0.05	-0.06	0.58	-0.09

I withdraw from family and friends	0.49	0.07	0.10	0.11	-0.01	0.69	My work performance worsens	0.61	0.01	-0.02	-0.11	0.54	-0.02
I stop looking forward to spending time with friends and family	0.48	-0.04	0.21	0.06	-0.01	0.68	The quality of my work output is lower	0.70	0.06	-0.01	-0.16	0.53	-0.11
I keep to myself	0.50	0.05	0.10	0.06	-0.02	0.54	I take longer to finish tasks at work	0.66	0.24	-0.09	-0.04	0.44	-0.02
I cannot look forward to things that would normally give me pleasure	0.60	-0.12	0.17	0.08	-0.06	0.48	I withdraw from family and friends	0.47	0.07	0.10	0.12	-0.01	0.69
I feel sad, empty and hopeless	0.67	-0.07	-0.09	0.01	-0.15	0.39	I stop looking forward to spending time with friends and family	0.47	-0.04	0.22	0.07	0.00	0.69
My attention is less focussed	0.81	0.28	0.02	0.04	0.19	-0.03	I keep to myself	0.49	0.05	0.10	0.07	-0.02	0.55
I find it hard to concentrate on the task at hand	0.81	0.29	-0.04	0.06	0.24	-0.08	I cannot look forward to things that would normally give me pleasure	0.59	-0.12	0.17	0.10	-0.06	0.49
I start feeling like I am not accomplishing anything at work	0.78	-0.23	-0.07	-0.17	0.16	0.01	I feel sad, empty and hopeless	0.66	-0.07	-0.08	0.03	-0.15	0.40
I become distracted easily	0.76	0.30	0.03	-0.03	0.03	-0.05	I start feeling more self-critical and hard on myself	0.68	0.04	-0.15	-0.11	-0.16	0.27
I feel emotionally drained and exhausted	0.73	-0.05	0.04	0.32	-0.08	0.21	I find it more difficult to take life as it comes	0.65	0.00	0.01	0.00	-0.20	0.27
I feel like I am making less of a difference at work	0.70	-0.34	0.00	-0.29	0.03	-0.07	I spend much of my days worrying	0.60	-0.01	-0.12	-0.01	-0.16	0.26
I stop feeling very driven to keep meeting my responsibilities	0.69	-0.20	0.01	-0.11	0.11	-0.12	I feel as though I am stagnating and life is passing me by	0.68	-0.20	-0.02	-0.07	-0.14	0.23

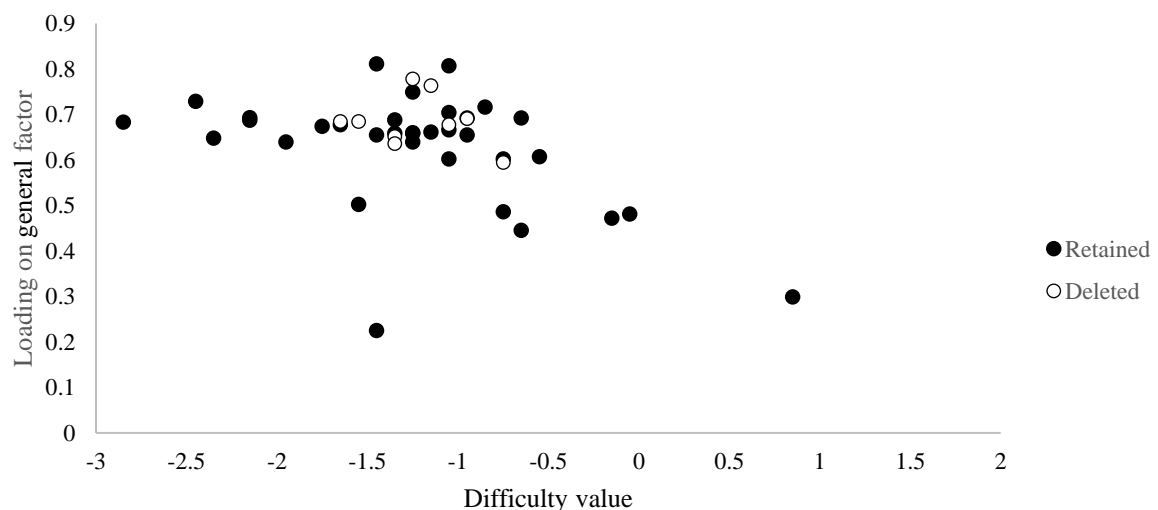
I find it difficult to concentrate when I am interacting with people that I work with (e.g., in meetings)	0.69	0.32	0.17	-0.05	0.03	-0.02	I feel emotionally drained and exhausted	0.72	-0.05	0.04	0.33	-0.08	0.22
I feel as though I am stagnating and life is passing me by	0.69	-0.19	-0.02	-0.08	-0.14	0.22	I find little things and chores frustrating	0.64	-0.03	0.14	0.07	-0.13	0.13
I lack motivation	0.68	-0.17	0.08	0.17	0.21	0.08	I lack motivation	0.68	-0.17	0.09	0.18	0.21	0.08
I start feeling more self-critical and hard on myself	0.68	0.04	-0.16	-0.12	-0.16	0.26	I start feeling like I am not accomplishing anything at work	0.78	-0.24	-0.06	-0.16	0.16	0.03
I find it more difficult to take life as it comes	0.66	0.01	0.01	-0.01	-0.21	0.26	I find it difficult to concentrate when I am interacting with people that I work with (e.g., in meetings)	0.69	0.32	0.18	-0.04	0.03	-0.01
I cannot get pleasure out of my work	0.66	-0.34	0.12	0.01	0.13	-0.03	My attention is less focussed	0.81	0.28	0.03	0.04	0.19	-0.02
I find little things and chores frustrating	0.64	-0.02	0.14	0.06	-0.13	0.12	I become distracted easily	0.77	0.30	0.04	-0.03	0.03	-0.04
I tend to scan when I read, rather than focus	0.64	0.28	0.12	-0.01	-0.04	-0.09	I find it hard to concentrate on the task at hand	0.81	0.28	-0.03	0.06	0.24	-0.07
I spend much of my days worrying	0.60	-0.01	-0.13	-0.02	-0.16	0.25	I tend to scan when I read, rather than focus	0.64	0.27	0.13	0.00	-0.04	-0.08
I stop feeling like I am an essential part of my workplace	0.59	-0.34	-0.02	-0.32	-0.06	-0.04	I stop feeling very driven to keep meeting my responsibilities	0.69	-0.20	0.02	-0.11	0.11	-0.11

Note: GF = general factor; SF = specific factor

A refined 34-item measure.

Measures with fewer items are preferable as assessment tools as they reduce the burden on questionnaire completers (Bowling, 2005). It was therefore sought to further reduce the item set while maintaining the basic structure of the 43-item GF + 5SF solution. All items in the solutions loaded at > 0.35 on at least one factor, and thus no items were removed due to low loadings. Candidate items for deletion were therefore identified using a similar process to that used to reduce the 61 item-set (i.e., using ICCs and D-values), resulting in a further nine items being deleted from the solution, and leaving a total of 34 items. Again, a scatter plot was created to ensure a reasonable balance across difficulty values in the items to be retained, as shown in Figure 7.3, and it was judged that this plot indicated that balance had been achieved.

Figure 7.3. Scatter plot of items retained and deleted from the 43-item GF + 5SF solution



A bifactor analysis was run with the 34 items to assess whether the factor structure of the 43-item GF + 5SF solution was maintained with these fewer items. The bifactor solution with a general factor and five specific factors (the 34-item GF +5SF solution) is reported in Table 7.2, and it was judged that this solution was the preferable final one as it essentially retained the factor structure and loadings of the 43-item solution, while reducing the item-set by 21%. The 34-item GF + 5SF solution was thus considered as the final definitional burnout model derived from the data, with its items collectively generating what is subsequently referred to as the Sydney Burnout Measure (SBM) for the remainder of this thesis.

Table 7.2. Item loadings for the Sydney Burnout Measure (SBM).

Item	GF	SF 1	SF 2	SF 3	SF 4	SF 5
I cannot concentrate or register new information because of foggy thinking	0.61	0.65	0.01	0.05	-0.06	0.03
I feel slowed down mentally (e.g., hard to find words, slowed thoughts)	0.60	0.61	-0.01	0.08	-0.02	-0.01
I have to re-read things because I was not concentrating the first time	0.57	0.49	-0.05	-0.01	0.08	-0.02
I find it hard to concentrate on the task at hand	0.73	0.45	-0.01	0.07	0.26	-0.11
I take longer to finish tasks at work	0.55	0.44	-0.07	0.01	0.34	0.00
My capacity to remember things is not as good as usual	0.69	0.43	-0.03	0.02	0.05	-0.01
My attention is less focussed	0.75	0.41	0.03	0.02	0.21	-0.08
I am less empathetic	0.25	-0.01	0.80	-0.04	-0.05	-0.01
I feel less empathy and sympathy towards people in general	0.47	-0.07	0.75	0.03	0.03	0.06
I struggle to understand the feelings of colleagues, customers and/or recipients of my care	0.31	0.06	0.62	-0.10	-0.04	0.03
I care less about what happens to people that I work with (e.g., colleagues, customers, recipient of my care)	0.46	-0.09	0.56	0.01	0.16	0.13
I constantly feel tired or fatigued	0.68	0.03	0.01	0.59	-0.03	0.02
I wake up feeling tired	0.73	0.01	-0.01	0.52	-0.10	-0.06
I am not refreshed by sleep	0.68	0.04	-0.04	0.51	-0.14	-0.02
I lack energy across the day	0.69	0.03	0.01	0.45	0.06	0.00
I feel worn out	0.74	0.03	-0.03	0.45	-0.01	0.07
I experience a loss of energy (making it hard to get going in the morning)	0.69	0.07	-0.04	0.45	0.05	-0.02
I am less productive at work	0.56	0.31	-0.03	0.06	0.68	0.00
The quality of my work output is lower	0.54	0.34	0.01	-0.07	0.63	-0.03
My work performance worsens	0.49	0.28	0.01	-0.08	0.58	0.02
I feel like I am making less of a difference at work	0.60	-0.12	0.06	-0.14	0.38	-0.09

I stop feeling very driven to keep meeting my responsibilities	0.59	0.00	0.04	-0.01	0.38	-0.10
I cannot get pleasure out of my work	0.60	-0.15	0.13	0.02	0.35	-0.02
I stop looking forward to spending time with friends and family	0.57	-0.12	0.13	0.01	-0.02	0.67
I withdraw from family and friends	0.60	0.01	0.02	-0.01	-0.13	0.60
I keep to myself	0.59	0.00	0.03	-0.04	-0.09	0.46
I cannot look forward to things that would normally give me pleasure	0.69	-0.15	0.12	0.00	0.00	0.37
I feel emotionally drained and exhausted	0.79	-0.05	0.01	0.24	-0.01	0.09
I feel sad, empty and hopeless	0.77	-0.11	-0.11	-0.15	-0.07	0.14
I feel as though I am stagnating and life is passing me by	0.74	-0.18	-0.02	-0.18	0.06	-0.01
I start feeling more self-critical and hard on myself	0.73	0.02	-0.17	-0.20	-0.03	0.03
I find it more difficult to take life as it comes	0.73	-0.04	-0.01	-0.12	-0.09	0.07
I find little things and chores frustrating	0.68	-0.04	0.14	-0.02	-0.04	-0.05
I spend much of my days worrying	0.67	-0.02	-0.13	-0.14	-0.11	0.02

Note: GF = general factor; SF = specific factor. Items retained for specific factors were those with loadings of approximately > 0.35 and are bolded.

As fit statistics can be informative, such statistics were calculated for the SBM after items with loadings less than approximately 0.35 were set to zero (as per Table 7.2). These statistics are displayed in Table 7.3 and show adequate fit according to all indices.

Table 7.3. Model fit indices for the SBM (when items not bolded in Table 7.2 were set to zero).

	Model Fit Indices					
	RMSEA	CFI	TLI	χ^2	<i>df</i>	<i>p</i>
Whole sample (<i>n</i> = 622)	0.06	0.94	0.93	1761.61	499.00	<0.0001

Note: RMSEA = root mean square error approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; *df* = degrees of freedom

Reliability estimates were calculated for each of the factors in the SBM solution (Table 7.4). All coefficient ω s were high, indicating that scale scores adequately captured the blend of general and relevant specific factors. The coefficient ω_H for SF1, SF3, SF4 and SF5 were all low, suggesting that most of the variance in specific factor scale scores for these factors could be attributed to the general factor as against being attributed to the specific factors alone. In contrast, a moderate amount of variance in SF2 scale scores was attributable to that specific factor alone, with the implications of this considered in the Discussion section.

Table 7.4. Reliability indices for the SBM (when items not bolded in Table 7.2 were set to zero).

Factor	ω	ω_H
GF	0.96	0.85
SF 1 (Cognitive dysfunction)	0.90	0.39
SF 2 (Empathy loss)	0.82	0.64
SF 3 (Exhaustion)	0.90	0.43
SF 4 (Reduced work performance)	0.88	0.39
SF 5 (Social withdrawal)	0.84	0.36

Note: GF = general factor; SF = specific factor

7.3.3. Examining for any influence of burnout severity.

Table 7.5 displays fit indices of the SBM solution for the subsets based on working status, that is, those who had ($n = 258$, 41.5%) and had not ($n = 364$, 58.5%) ceased working due to their burnout. Model fit was adequate for both subsets, albeit slightly better in those who had ceased working due to their burnout. Full scalar invariance across the subsets was not found, however changing the constraints to allow one additional indicator (i.e., item “I find it hard to concentrate on the task at hand”) in the subset of those who had not ceased working due to burnout to load on the reduced work performance factor confirmed partial scalar invariance, which still equates to a high level of invariance across these groups. The scalar invariance model (reported in Table 7.6) identified that those who were still working had a lower factor score mean on the general factor as well as the cognitive dysfunction specific factor, and a higher factor score mean on the exhaustion specific factor.

7.3.4. Examining for any influence of depression history.

An issue with the questionnaire platform led to 56 questionnaires having missing data for the second half of the questionnaire, and thus only 566 of the 622 participants answered the question asking if they had been previously diagnosed with depression by a doctor or mental health professional, with 333 (58.8%) responding “yes” and 233 (41.2%) responding “no”. Fit statistics for the two subsets are presented in Table 7.5 and indicate that model fit was satisfactory for both subsets, albeit slightly superior in those who had previously been diagnosed with depression. Again, full scalar invariance across the subsets was not found, however changing the constraints to allow one additional indicator (i.e., item “I find it hard to concentrate on the task at hand”) in the subset of those who had not previously been diagnosed with depression to load on the reduced work performance factor confirmed partial scalar

invariance, which still equates to a high level of invariance across these groups. Further analyses (i.e., the scalar invariance model) identified that those who had not been previously diagnosed with depression had a lower factor score mean on the general factor, as well as on the social withdrawal specific factor (reported in Table 7.6).

Table 7.5. Model fit indices for subsets of participants based on working status and depression diagnosis variables (when items not bolded in Table 7.2 were set to zero).

	Model Fit Indices					
	RMSEA	CFI	TLI	χ^2	<i>df</i>	<i>p</i>
Working status:						
Ceased working due to burnout (<i>n</i> = 258)	0.05	0.96	0.95	855.7	499.00	<0.0001
Still working despite burnout (<i>n</i> = 364)	0.07	0.93	0.92	1295.0	499.00	<0.0001
Depression diagnosis:						
Previously diagnosed with depression (<i>n</i> = 333)	0.06	0.94	0.93	1047.8	499.00	<0.0001
Not previously diagnosed with depression (<i>n</i> = 233)	0.07	0.94	0.94	1008.4	499.00	<0.0001
<i>Note:</i> RMSEA = root mean square error approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; <i>df</i> = degrees of freedom						

Table 7.6. Factor score means for **the subset still working despite burnout and the subset not previously diagnosed with depression** relative to their respective reference subset (i.e., the subset who had ceased working due to their burnout and the subset previously diagnosed with depression, respectively) with means fixed to zero (values taken from the standardised solution of the partial scalar invariance model).

				95% confidence interval	
	Mean	SE	p	Lower limit	Upper limit
Subset still working despite burnout:					
GF	-0.34	0.11	0.00*	-0.54	-0.13
SF 1 (Cognitive dysfunction)	-0.43	0.14	0.00*	-0.71	-0.15
SF 2 (Empathy loss)	0.02	0.11	0.89	-0.19	0.22
SF 3 (Exhaustion)	0.26	0.13	0.05*	0.00	0.51
SF 4 (Reduced work performance)	-0.16	0.12	0.19	-0.40	0.08
SF 5 (Social withdrawal)	-0.19	0.11	0.08	-0.41	0.02
Subset not previously diagnosed with depression:					
GF	-0.42	0.11	0.00*	-0.64	-0.21
SF 1 (Cognitive dysfunction)	-0.19	0.15	0.20	-0.49	0.10
SF 2 (Empathy loss)	0.16	0.10	0.13	-0.05	0.36
SF 3 (Exhaustion)	0.06	0.16	0.68	-0.24	0.37
SF 4 (Reduced work performance)	0.16	0.11	0.16	-0.06	0.38
SF 5 (Social withdrawal)	-0.28	0.10	0.00*	-0.47	-0.09

Note: GF = general factor; SF = specific factor. Means in reference subset are all fixed at zero, * indicates significance at $p < 0.05$ level.

7.4. Discussion.

This study sought to re-examine burnout's key symptoms and to develop a new model of the syndrome – and which then lead to a new preliminary measure (the SBM). Before discussing findings, study limitations are first acknowledged. As in Study 1, the inclusion criteria were broad, only requiring self-identification of burnout for individuals to participate.

This recruitment method was chosen as it was sought to construct a symptom-based definition of burnout based on what sufferers perceived to be its key symptoms, thus using an inductive or “bottom-up” approach. The recruitment method does, however, risk some participants having alternate conditions (e.g., chronic fatigue syndrome) that could have impacted on symptom reporting. Furthermore, while participants were asked whether they had ever been previously diagnosed with depression, the reliability of self-report diagnoses can be hindered by several factors, such as the individual’s health literacy (Smith et al., 2008). Further, participants who reported having been previously diagnosed with depression were not asked which depressive subtypes (e.g., melancholic or non-melancholic depression) they had experienced, a limitation as burnout may overlap with one subtype more than others, as detailed in Chapter 3.

Furthermore, the recruitment of a convenience sample led to a sample that was predominantly female, Caucasian and tertiary-educated, and clearly not representative of the general population. As convenience sampling is useful in exploratory research and has been used by other burnout researchers (e.g., De Beer & Bianchi, 2017), the method is defensible, but the generalisability of results should be interpreted with caution.

Turning to findings, the iterative analyses resulted in a bifactor solution comprising a 34-item general factor and five uncorrelated specific factors. As described, the general factor accounts for the shared variance of all items and captures the target or overarching domain being measured. Thus, the general factor was considered here as defining the core symptom set of a burnout syndrome. The high ω_H of the general factor and low ω_H for most of the specific factors suggest that the general factor accounted for the majority of variance in the sample. Rodriguez et al. (2016) stated that “when ω_H (for the general factor) is high (> 0.80), total scores can be considered essentially unidimensional, in the sense that the vast majority

of reliable variance is attributable to a single common source” (pp. 224-225). A single scale score based on the general factor is therefore preferable for measures derived from such solutions, with subscales of specific factors unnecessary as they explain minimal unique variance (Rodriguez et al., 2016). In this case, a ω^2 of 0.85 for the general factor indicated that 85% of the variance of general factor scores was attributed to individual differences on the general factor. Thus, burnout as defined by the 34-item set may potentially be best measured by a single factor, and not require additional subscales based on specific factors. This finding provides conceptual parsimony and shows the potential for subsequent research to validate the use of a single factor with the scale score ideally calculated as the simple sum of all 34 items. The utility of single-scale measures derived from bifactor models has been noted by Reise (2012), who stated that “bifactor modelling is one solution to the interpretative mess that often is created when researchers force multidimensional item response data into a unidimensional measurement model.”

This unidimensional conceptualisation of burnout contrasts with existing multi-dimensional models of burnout, including the MBI. As detailed in Chapter 1, unidimensional models of burnout have been proposed (e.g., Pines & Aronson, 1981; Shirom & Melamed, 2006), but such models essentially equate burnout simply with exhaustion, thus risking making the term ‘burnout’ redundant (Schaufeli & Taris, 2005). Items covering exhaustion were dominant in the general factor identified here, aligning with most existing uni- and multi-dimensional burnout models that position exhaustion as the cardinal feature of burnout. However, the core burnout construct in this study expanded beyond exhaustion, with some items capturing cognitive dysfunction having moderate to high loadings on the general factor. Cognitive symptoms are not included in the MBI, but their prominence in the current study supports the previous quantitative and qualitative burnout analyses conducted in Study 1 (Tavella et al., 2020; Tavella & Parker, 2020b) and other studies (Beck et al., 2013; Gavelin

et al., 2022; Lemonaki et al., 2021; Sandström et al., 2005; Schaufeli et al., 2020; Schaufeli & Taris, 2005) suggesting impaired cognition is one of burnout's "cardinal symptoms" (Bianchi et al., 2015a).

In the quantitative analyses described in Study 1 (Tavella et al., 2020), the cognitive dysfunction items clustered on a specific factor capturing reduced work efficacy, potentially indicating that compromised work performance in burnout may be a consequence of cognitive dysfunction, rather than being a key "symptom" of burnout in and of itself. A similar interpretation has been put forward in relation to the MBI, with some arguing that the reduced professional accomplishment subscale measures a consequence of burnout rather than being an intrinsic symptom (Bianchi et al., 2018; Kristensen et al., 2005; Schaufeli & Van Dierendonck, 1993). In the current analyses, however, cognitive issues and reduced work accomplishment were captured on separate specific factors, leaving the question as to whether reduced professional achievement is intrinsic to burnout, a consequence of cognitive dysfunction, and/or a consequence of burnout unresolved. Future longitudinal studies examining the developmental trajectory of cognitive and work performance issues in burnout are needed to resolve this central issue.

Items representing empathy loss were captured in a specific factor, while loading poorly on the general factor. The ω_H index signalled that a moderate amount of variance ($\omega_H = 0.64$) in the loss of empathy factor scores was attributable to this factor's specific underlying construct, unlike observed scores on the remaining specific factors, with variance in these scores largely attributable to the general (i.e., "total" burnout) factor. This finding suggests that, while the four other specific factors may make up the core aspects of the burnout experience, loss of empathy may be a more independent construct. This independence may reflect loss of empathy and detachment being a strategy employed by

workers to cope with burnout, rather than a symptom of burnout itself, as suggested by Bianchi et al. (2018). Maslach and colleagues also somewhat considered that empathy loss may not be inherent to burnout as experienced by the general population, as when they adapted the MBI-HSS to derive the MBI-GS they replaced the depersonalisation scale with a “cynicism” scale, capturing feelings of detachment from the work environment rather than loss of empathy towards service recipients (Maslach et al., 2016).

An asocial or insular domain was captured here by a set of social withdrawal items, such as “I withdraw from family and friends” and “I keep to myself”, which denoted disconnection from personal relationships and reduced enjoyment in socialising. Intriguingly, this specific factor was the least stable across the set of bifactor analyses, evident in the 137-item GF + 6SF solution but not in the 61-item + 4SF solution, before reappearing as a specific factor in both the 43-item and 34-item solutions. Regardless of whether they were captured in a specific factor in each solution, the items making up the final social withdrawal specific factor loaded moderately on the general factor in each solution, and in the final 34-item solution they loaded higher on the general factor than did the items representing empathy loss, indicating the former to be greater contributors to the core burnout syndrome than the latter. While seemingly core to the experience of burnout for participants, it is difficult to ascertain from the current study whether social withdrawal is an intrinsic symptom of burnout or whether it develops as a secondary feature as one’s burnout becomes more severe. Further, it is possible that social withdrawal acts to maintain burnout for some individuals. Social withdrawal is considered a maintaining factor in depression, as it prevents opportunities to participate in pleasant events and receive positive feedback (Moorey, 2010). Interventions encouraging social participation are therefore common in treating depression (Egan et al., 2015). Future research examining whether social withdrawal develops in tandem

with or secondary to other burnout symptoms would therefore be informative, as would studies examining whether social interventions assist in alleviating burnout symptoms.

Of central importance was the presence of depressive symptoms in the final solution. As mentioned previously, no depression items were apparently included in the item set used in developing the MBI, disallowing their emergence in the final MBI measure whether integral or not to burnout. As there has been a longstanding debate as to whether depression and burnout are synonymous, it was judged that depression items needed to be included in this study and examined for their contribution to participants' experiences of burnout. Specifically, 37 items taken from established measures of depression were included in the 137-item list of symptoms presented to participants, and seven of the 37 were quantified as contributing to the final solution. One captured low mood, another covered reduced self-worth, one captured anhedonia, another captured social withdrawal, one represented low energy and two captured compromised cognition. It was anticipated that, if burnout is synonymous with depression, depressive symptoms would have loaded highly on the general factor. The seven depression items had moderate to high loadings on the general factor. However, while these items cover some of the nine specific symptoms (depressed mood, anhedonia, weight/appetite changes, sleep disturbances, psychomotor disturbance, energy loss, feelings of worthlessness, concentration issues, suicidal thoughts and behaviours) listed for a major depressive episode in the DSM-5 (APA, 2013), in quality they more suggest depressed mood symptoms rather than clinical depression per se (where items capturing psychomotor disturbance and suicide are more likely to be prominent). Thus, at this stage, it seems reasonable to conclude that a burnout syndrome is commonly accompanied by depressed mood symptoms, but that key indicators of a clinical depressive condition are not core components of burnout. Recent factor analytic studies by Bianchi and colleagues similarly indicate that depression symptoms load onto the same factor as exhaustion items

from the MBI (Bianchi, 2020; Bianchi et al., 2021b; Schonfeld et al., 2019a; Verkuilen et al., 2021), and thus there is “no such thing” as a burnout syndrome that does not include classical depressive symptoms (Verkuilen et al., 2021). The findings of the current study support such a position.

While the results indicate overall that key indicators of a clinical depressive condition are not core components of burnout, it is possible that some of those self-identifying as burnt out in the current study may have had underlying depressive conditions that impacted on symptom reporting. If this occurred, it is likely that those participants with self-identified burnout would score similarly on the 34-item measure to those with clinically diagnosed depression. Comparison of scores on the measure between those self-reporting burnout and those with clinically-diagnosed depression is explored in Part III of this thesis, to better understand the interrelationship between burnout and depression. In the current sample, however, the analysis of measurement invariance did indicate that those who reported having been previously diagnosed with depression did have higher “total” burnout (i.e., general factor) scale scores, and higher scores on the social withdrawal specific factor. Such a finding may indicate that this sub-set of participants were more vulnerable to experiencing social withdrawal as a component of their burnout and/or that they conflated their experiences of depression and burnout such that they scored higher on the social withdrawal specific factor (which, as reported, contained items indicative of anhedonia) as well as the overall general factor (because of the anhedonia items and other depression items also being included in general factor scores). It also needs to be conceded that those with clinical depression are likely not immune to developing burnout, while, and as noted, those with burnout (especially if induced by a toxic work environment) may develop clinical depressive states. While issues of comorbidity and sample ‘purity’ risk merging depression and burnout, it is emphasised again that the current finding of only a partial contribution of depressive items to the final

factorial solution (when so many items were evaluated), and no depression specific factor emerging, argues against the view that depression and burnout are completely synonymous.

In addition to questioning the influence of depression on results, the influence of an indicator of burnout severity - whether participants had or had not ceased working due to burnout – was also examined. Fit statistics indicated that model fit was satisfactory for both subsets, suggesting that burnout as captured by the measure was similar across levels of burnout severity. There was, however, indication that model fit was slightly better in the subset who had ceased working (i.e., those assumed to have a more severe burnout). This subset had higher mean scores on the general factor and the cognitive dysfunction factor, but lower scores on the exhaustion factor. Logically, a higher mean score on the general factor (and thus higher “total” burnout) is not surprising as it is indicative that who had ceased working did indeed have a more severe burnout. The difference in cognitive dysfunction scores could indicate that as the cognitive issues of someone with burnout worsen (and perhaps effect their work output as a consequence), the more likely it is that they will need to cease working. The exhaustion differences between the two subsets may exist because those that are still working despite their burnout have received no respite from the stressors causing their condition, and thus they remain exhausted. Future research is needed to examine whether these explanations are valid.

Overall, the results provide a new heuristic model that defines burnout as having more constituent symptom domains (particularly in including depressed mood symptoms and an impaired cognition component) than captured by the MBI triadic model. Furthermore, for the purpose of future evaluation of the SBM, the reliability indices here suggest that the symptoms identified may be appropriately measured using a single scale derived from the

general factor. Total scores on this single SBM scale are therefore considered in more detail in Study 3.

8. Study 3

This chapter details a study undertaken to examine the distribution of scores on the Sydney Burnout Measure (SBM) derived in Study 2 so to determine whether it quantifies burnout dimensionally (and with varying scores presumably reflecting a severity dimension) or whether scores indicate one or more sub-groups, with the latter result potentially explained by differing constituent states (e.g., burning out vs burnt out states) or other factors, with some explored in this chapter. The contents of this chapter have been adapted from a published paper first-authored by the PhD candidate (Tavella et al., 2022)⁴.

8.1. Introduction.

Findings from Study 1 suggested those who self-identified as experiencing burnout perceived the syndrome to be comprised of a broad set of candidate symptoms, while Study 2 allowed for the derivation of a symptom-based burnout model and measure (the SBM). However, due to the broad inclusion criteria used in both exploratory studies, it is likely that certain characteristics of participants would have varied and influenced symptom reporting.

For example, it is to be expected that some participants would experience more severe symptoms than others and thus total SBM scores would vary. The question explored here is whether such variation reflects burnout being a singular dimensional construct simply varying by severity, or whether a categorical model is operative and therefore reflecting a contrasting ‘sub-type’ model. If the latter, possible sub-categories might comprise sub-groups

⁴Some material from this publication has been adapted with permission from Cambridge University Press: Tavella, G., Spoelma, M., Hadzi-Pavlovic, D., Bayes, A., Jebejian, A., Manicavasagar, V., Walker, P., & Parker, G. (2022). Modelling self-diagnosed burnout as a categorical syndrome. *Acta Neuropsychiatrica*, 1-9, doi:10.1017/neu.2022.25, reproduced with permission.

or ‘burning out’ versus ‘burnt out’ phases (and therefore potentially ‘sub-clinical/sub-syndromal’ versus ‘clinical’ sub-groups, respectively). As discussed in Chapter 1, the MBI positions burnout as a dimensional rather than a categorical construct, with the degree of one’s burnout lying on a continuum and there being “no definitive score (on the MBI) that ‘proves’ a person is ‘burned out’” (Maslach et al., 2016). By contrast, Schonfeld and Bianchi (2016) have argued that burnout should only be considered as the “end stage” of the aforementioned continuum, because at this stage “the sufferer, drained, experiences an adaptive breakdown” (p. 31). The same authors further suggest that, when considered only as an “end stage” state, burnout cannot be differentiated from depression (Bianchi et al., 2014).

Dimensionally-underpinned syndromes and their associated measures allow the degree of illness to be *quantified* (along a dimension and generally from less to more severe), while a categorical model suggests allows for the *qualification* of a condition or disorder as either present or absent (Bianchi et al., 2015a). In psychiatry, a categorical approach to diagnosis is generally favoured, as it allows for the assignment of “caseness” (i.e., whether a disorder is present or absent), and is the DSM-5 classificatory model, such that a person must meet a certain number of diagnostic criteria in order to be assigned a particular diagnosis. As discussed in Part I of this thesis, no formal diagnostic criteria currently exist for burnout, and thus determining whether a categorical distinction exists between those who are burning out and those who are burnt out may assist in ascertaining which symptoms or how many symptoms should be present in order to assign a burnout diagnosis. Furthermore, if a categorical distinction exists between those who are burning out versus being burnt out, other differences (e.g., physiological ones) are likely to exist between individuals going through the two different stages and may well have management implications.

Another factor to consider when evaluating the SBM, as discussed in relation to Study 2, is the possibility that a subset of participants had an alternative psychological condition that they were mislabelling as burnout. In particular, after considering the evidence of burnout's symptom overlap with depression detailed in Chapter 3, it is reasonable that some participants may have had a depressive condition rather than a burnout syndrome, which would have influenced symptom reporting. If so, SBM scores might be expected to generate differing sub-groups reflecting those two differing conditions. It was therefore deemed important to examine whether a categorical model underpinned the SBM data and whether such a model could reflect differences in depression symptomatology between participants.

The first objective of Study 3 was therefore to examine whether scores on the SBM were best modelled dimensionally or categorically. If the latter model was supported, the second objective was to pursue potential factors influencing the categorical distinction(s). One method that can be used to assess whether a dimensional or a categorical model best fits data is mixture modelling (Kendell, 1989; McLachlan & Peel, 2000), which examines whether scores measuring or quantifying the condition generate a single (normal) distribution (i.e., a single dimension of data therefore indicating a dimensional model) or evidence one or more points of rarity in their distribution (i.e., a distribution with multiple components therefore indicating a categorical model). Study 3 utilised this method of analysis.

8.2. Methods.

8.2.1. Ethical considerations.

Ethical approval for the research was given by the UNSW Human Research Ethics Committee (UNSW HREC #HC190213). Individuals were required to provide consent via an online PISCF before they could participate

8.2.2. Participants.

Burnout group

The burnout group was the same group of participants used in Study 2. To reiterate, 622 participants were recruited via an advertisement on the Black Dog Institute website. Individuals could participate if they were fluent in written and spoken English, between the ages of 18 and 65, and self-identified as currently experiencing ‘burnout’.

Depression group

A second group of participants with a clinician-diagnosed mood disorder was recruited and with study components described in more detail in Study 5. Briefly, such participants were patients of psychiatrists or clinical psychologists from four private practices in Sydney, Australia. All had been diagnosed with a mood disorder and had experienced major depressive episodes with clinicians’ diagnoses largely respected in recruiting depressed patients for this study. Clinician-based diagnoses, when compared to DSM-criteria based diagnoses, are advantageous as clinicians assess a wider set of candidate symptoms, and consider other variables (e.g., aetiological factors, family history, level of distress or impairment) when deciding whether a diagnosis is warranted and in assigning any diagnosis (Brockington & Meltzer, 1982). However, a disadvantage of clinician-based diagnoses is their subjective nature, which may be affected by biases and individual differences of the diagnosing clinician. Thus, clinicians’ diagnoses were compared against participants’ responses in Section 1 of a questionnaire (described shortly) in which participants were asked about symptoms of their depressive episodes, with items corresponding to DSM-5 Criterion A symptoms of a major depressive episode (MDE) shown in Table 8.1. Responses to the items in Table 8.1. were dichotomised such that scores of 0 (“not present”) or 1 (“slightly”) were recoded as 0 (“absent”) and scores of 2 (“moderately”) or 3 (“distinctly”) were recoded as 1 (“present”). New variables were created for each of the nine DSM-5 Criterion A major

depressive episode (MDE) symptoms and if at least one item corresponding to each symptom (see Table 8.1) was affirmed by a participant, then that MDE symptom was marked as present.

DSM-5 Criterion A for MDE requires individuals to experience five or more of the symptoms listed (including at least one being depressed mood or diminished interest or pleasure in activities) over a two-week period. As the questionnaire did not require participants to be currently depressed, the DSM duration criterion for an MDE was not assessed. However, any participant in the depression group who reported experiencing less than five of the necessary symptoms during their depressive episodes was excluded from further analyses.

Table 8.1. DSM-5 Criterion A symptoms for a major depressive episode (MDE) and the corresponding item(s) for each symptom included in the questionnaire completed by the depression group participants.

DSM-5 MDE Criterion A symptoms	Corresponding item(s) in the depression questionnaire
1. Depressed mood most of the day, nearly every day (e.g., feels sad, empty, or hopeless)	“I feel sad, empty and hopeless” “I feel quite depressed”
2. Markedly diminished interest or pleasure in all, or almost all, activities	“I have little interest or pleasure in most activities”
3. Significant weight loss when not dieting or weight gain, or decrease or increase in appetite	“My appetite is decreased” “My appetite is increased and/ I have food cravings” “I lose weight (even though I am not dieting)” “I gain weight”
4. Insomnia or hypersomnia nearly every day	“I have trouble getting off to sleep” “I wake in the middle of the night for a distinct period” “I oversleep” “I wake very early in the morning and cannot get back to sleep” “I sleep for much longer”
5. Psychomotor agitation or retardation nearly every day	“I feel slowed down physically (e.g., feeling like I am walking through sand)” “I feel physically agitated (i.e., unable to settle and sit still)”
6. Fatigue or loss of energy nearly every day	“I constantly feel tired or fatigued” “I lack energy across the day” “I experience a loss of energy (making it hard to get going in the morning)”
7. Feelings of worthlessness or excessive or inappropriate guilt	“I feel quite worthless and like a failure” “My self-esteem and self-worth are distinctly less” “I feel distinctly guilty”
8. Diminished ability to think or concentrate, or indecisiveness	“I find it hard to concentrate on the task at hand” “I cannot concentrate or register new information because of “foggy” thinking” “I become quite indecisive”
9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.	“I have recurrent thoughts of death”

Any eligible patient with clinically diagnosed depression was ineligible to participate if they reported to their clinician that they were currently experiencing burnout or were judged by their clinician (based on clinical appraisal due to absence of diagnostic criteria for burnout) as potentially experiencing burnout.

8.2.3. Procedure.

Burnout group

As detailed, Study 2 burnout participants anonymously completed a 137-item questionnaire listing potential symptoms of burnout and were required to rate whether each symptom was ‘distinctly,’ ‘moderately,’ ‘slightly’ or ‘not at all’ present (coded 3, 2, 1 and 0 respectively). Bifactor and factor analyses were undertaken, allowing the item set to be reduced to 34 items after deleting low loading and duplicate items. The bifactor analysis of these items generated a general factor and five uncorrelated specific factors (i.e., cognitive dysfunction, empathy loss, exhaustion, reduced work performance and social withdrawal), with refined analyses suggesting that burnout was potentially best measured by a single factor comprising all 34 items. This led to the final 34-item measure or Sydney Burnout Measure (SBM), with items displayed in Table 8.2.

Table 8.2. Sydney Burnout Measure (SBM) items.

Sydney Burnout Measure items
I cannot concentrate or register new information because of foggy thinking ¹
I feel slowed down mentally (e.g., hard to find words, slowed thoughts) ¹
I have to re-read things because I was not concentrating the first time
I find it hard to concentrate on the task at hand
I take longer to finish tasks at work
My capacity to remember things is not as good as usual
My attention is less focussed
I am less empathetic
I feel less empathy and sympathy towards people in general
I struggle to understand the feelings of colleagues, customers and/or recipients of my care
I care less about what happens to people that I work with (e.g., colleagues, customers, recipient of my care)
I constantly feel tired or fatigued ²
I wake up feeling tired ²
I am not refreshed by sleep ²
I lack energy across the day ²
I feel worn out ²
I experience a loss of energy (making it hard to get going in the morning) ^{1, 2}
I am less productive at work
The quality of my work output is lower
My work performance worsens
I feel like I am making less of a difference at work
I stop feeling very driven to keep meeting my responsibilities
I cannot get pleasure out of my work

I stop looking forward to spending time with friends and family

I withdraw from family and friends

I keep to myself^{1, 2}

I cannot look forward to things that would normally give me pleasure¹

I feel emotionally drained and exhausted²

I feel sad, empty and hopeless^{1, 2}

I feel as though I am stagnating and life is passing me by

I start feeling more self-critical and hard on myself^{1, 2}

I find it more difficult to take life as it comes

I find little things and chores frustrating

I spend much of my days worrying

Note: ¹Item adapted from validated depression measures; ²Item excluded from the 24-item version of the measure (as will be described in Section 8.3.3).

Depression group

The depression group completed an identical questionnaire to the burnout group, however the word “burnout” was replaced with the words “depression” or “depressive episodes” throughout the questionnaire. For example, the instruction “Please tick the degree to which the following features are present during your burnout state” in the questionnaire for the burnout group was replaced by “Please tick the degree to which the following features are present during your depressive episodes.” Responses to the questionnaire by the depression group were included in this study to evaluate which items were likely capturing symptoms of depression rather than burnout.

8.2.3. Statistical analyses.

To examine whether a dimensional or categorical model better fitted the SBM data provided by the burnout group, the distributions of total SBM scores from the burnout group (which could range from 0 to 102) were examined. This was achieved via mixture modelling

(McLachlan & Peel, 2000). Specifically, multiple normal mixture models were fitted using the expectation-maximisation (EM) algorithm, in which the number of component mixtures k was varied (where $k = 1, 2, 3$ etc; $k = 1$ was taken to represent a 1-class/unimodal dimensional sample, $k = 2$ represented bimodal categorical differentiation, $k = 3$ represented trimodal categorical differentiation and so on). Bootstrapped likelihood ratio tests (BLRTs, with number of bootstraps B set to 1000) were then used to test which mixture model (i.e., a model with $k = 1, 2, 3$ etc. components) provided the best fit to the data. Each test compared a model with k components to a model with $k+1$ components. The null hypothesis being tested in each BLRT was that the model fit of the $k+1$ -component model was not superior to the k -component model, with λ representing the test statistic for each BLRT. Mixture analyses were conducted in RStudio using the *mixtools* package (Benaglia et al., 2010), while all other analyses reported were conducted in SPSS Version 26 (IBM Corp., 2019).

8.3. Results.

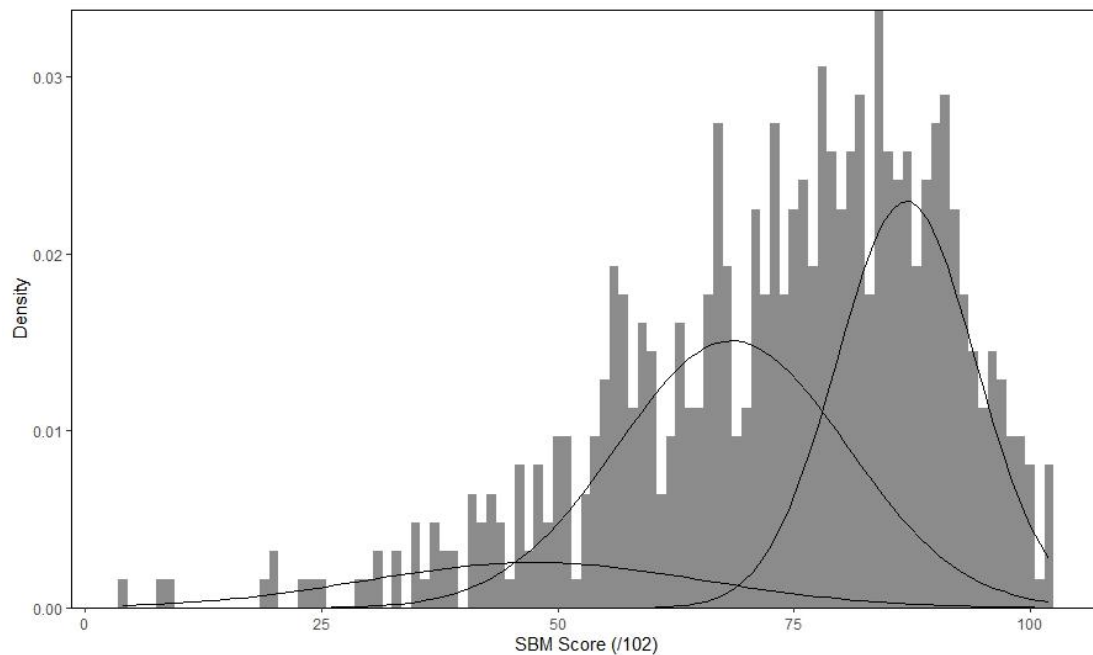
As stated in Study 2, 622 completed questionnaires were collected for the burnout group, while 92 patients with clinically diagnosed depression completed the depression questionnaire. Two participants in the depression group did not affirm five of the necessary DSM-5 Criterion A MDE symptoms and were therefore excluded.

8.3.1. Examining the distribution of SBM scores.

For the whole burnout group ($n = 622$) the initial mixture analysis identified a trimodal distribution (see Figure 8.1) of scores as best fitting the data ($\lambda = 15.6, p = 0.02$), with mean scores for each class being 47.6 ($SD = 18.0$), 68.4 ($SD = 12.2$) and 86.8 ($SD = 7.4$), and the percentages of the total sample belonging to each class were 11.6%, 46.0%, and 42.4%

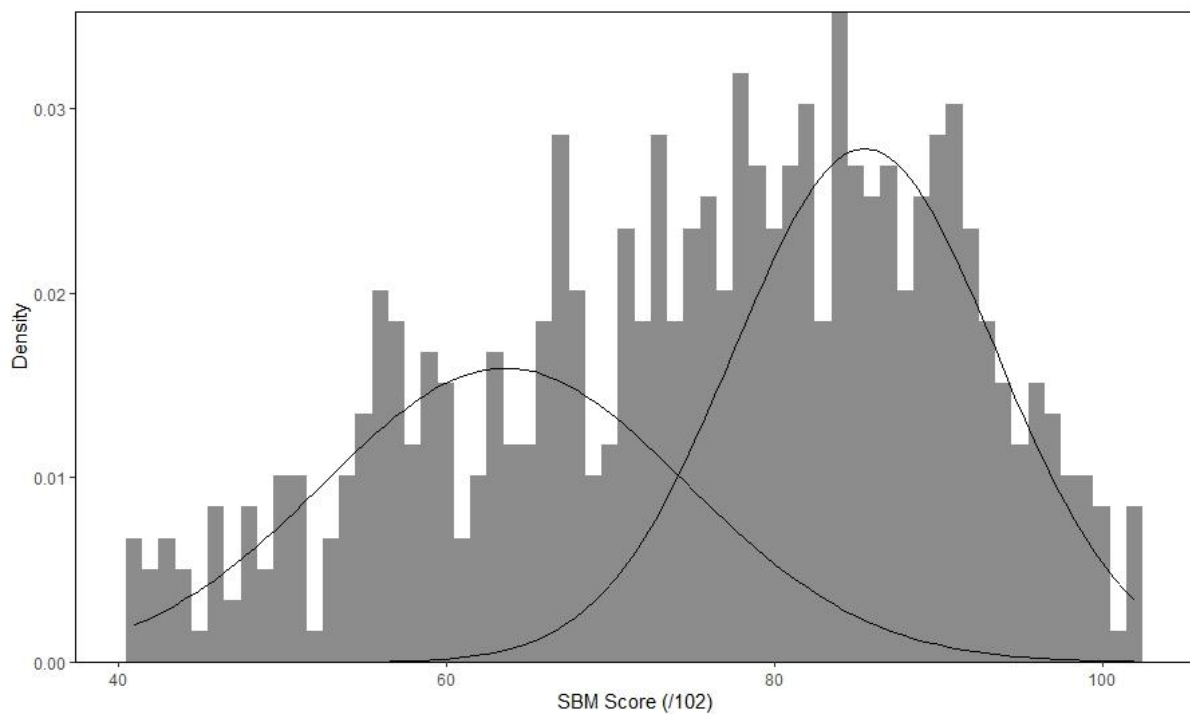
respectively.

Figure 8.1. Trimodal distribution of SBM scores for whole burnout cohort ($n = 622$).



The Figure 8.1 plot suggested that the first class was dominated by those who reported few symptoms and therefore potentially lacked syndromal status. To correct against a third class being so derived, all participants scoring less than 40 were excluded and the mixture analysis repeated on the remainder (hereafter referred to as the ‘reduced burnout cohort’; $n = 596$). As graphed in Figure 8.2, a bimodal distribution in scores was superior ($\lambda = 59.2$, $p < 0.001$), suggesting a categorical rather than a dimensional difference existing across scores. The mean SBM score for Class 1 was 63.6 ($SD = 11.1$), with 44.3% of the sample belonging to this class, while the mean SBM score for Class 2 was 85.5 ($SD = 8.0$), with 55.7% of the sample belonging to this class.

Figure 8.2. Bimodal distribution of SBM scores for reduced burnout cohort ($n = 596$).



8.3.2. Examining for differences between classes.

Participants in the reduced burnout cohort were allocated to Class 1 or Class 2 based on the posterior probabilities of class membership computed for each participant, and class differences on potentially salient study variables were examined. As reported in Table 8.3, there were no significant differences in demographic variables other than age, with those in Class 1 being older, and employment status, with more participants in Class 1 being employed (either full- or part-time). Those in Class 2 were more likely to report having stopped working due to their burnout and having been previously diagnosed with (i) depression or (ii) any other mental health disorder. Class 2 members also more frequently reported having consulted a general practitioner or mental health professional, taken an

antidepressant or other medication, and having presented at hospital because of burnout symptoms.

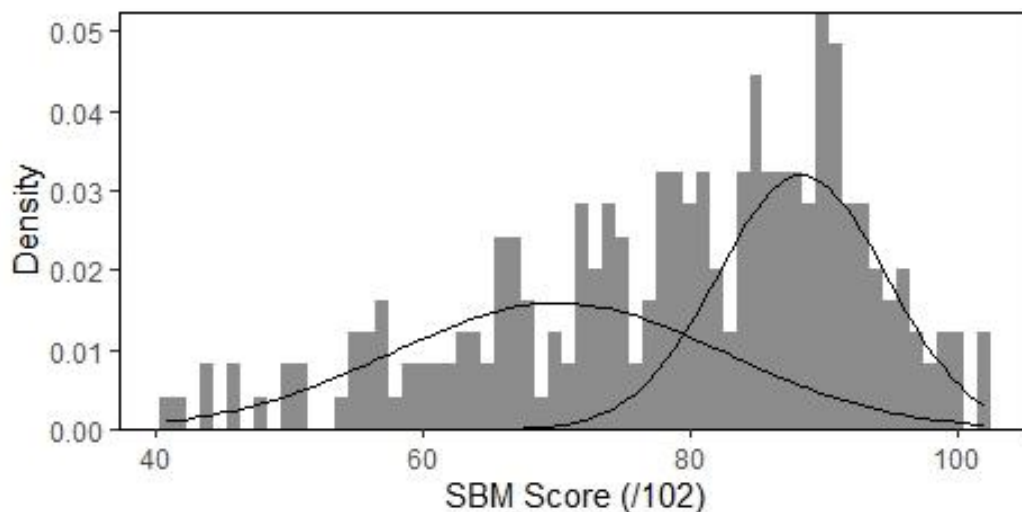
Table 8.3. Comparison of response rates to several variables between Class 1 and Class 2.

	Class 1 (<i>n</i> = 250)	Class 2 (<i>n</i> = 346)	Test statistic	<i>p</i>
Mean age	43.02 (<i>SD</i> = 11.23)	40.26 (<i>SD</i> = 11.20)	2.96	0.00
Gender	79.20% female	78.84% female	0.01	0.92
Ethnicity	72.80% Australian	74.28% Australian	0.00	0.97
Education level	81.60% university degree	74.86% university degree	3.43	0.06
Employment status	89.60% employed full- or part-time	82.95% employed full- or part-time	5.25	0.02
Most frequently nominated occupation	10.00% education professional (e.g., teacher, school principal)	10.40% education professional (e.g., teacher, school principal)	0.26	0.87
Stopped working due to burnout	32.00%	48.55%	16.37	< 0.001
Previously diagnosed with depression	53.45%	64.84%	7.17	0.01
Previously diagnosed with any other mental health condition	29.74%	44.52%	12.27	< 0.001
Consulted a general practitioner to manage burnout symptoms	43.20%	56.07%	9.62	0.00
Consulted a mental health professional to manage burnout symptoms	47.60%	60.40%	9.62	0.00
Took an antidepressant medication to manage burnout symptoms	24.80%	44.51%	24.40	< 0.001
Took some other medication to manage burnout symptoms	9.20%	19.08%	11.14	0.00
Went to hospital to manage burnout symptoms	2.80%	6.65%	4.50	0.03

Note: The test statistic for age was a Student's *t* value (*df* = 594), all other test statistics were χ^2 values (*df* = 1). Tests were deemed significant if *p* < 0.05.

The finding that those in the lower scoring class (Class 1) less frequently reported both having stopped work due to their burnout and having sought medical assistance (consulting a general practitioner or mental health professional, taking medication, going to hospital) for management of their burnout symptoms could suggest those participants were still ‘burning out’ as opposed to being ‘burnt out’, with the latter state reflected by being unable to maintain occupational functioning and requiring medical assistance, and potentially being captured by Class 2 membership. To examine this hypothesis, a mixture analysis was undertaken on only those participants from the reduced burnout cohort who reported having stopped working due to burnout ($n = 248$). A bimodal solution (Figure 8.3) remained superior ($\lambda = 40.2, p < 0.001$), with mean class scores being 70.2 ($SD = 12.4$) and 88.4 ($SD = 6.3$) and with 50.0% of the sample belonging to each class. This result argued against bimodality in scores for the reduced burnout cohort being solely due to ‘working’ and ‘not working’ subsets.

Figure 8.3. Bimodal distribution of SBM scores for those who had stopped working due to their burnout (from the reduced burnout cohort, $n = 248$).



8.3.3. The influence of depression.

As noted, a risk to the recruitment method (accepting those with self-diagnosed burnout) is that some participants in the burnout group (especially those in Class 2 who reported higher SBM scores) may have instead had a depressive condition that they interpreted as burnout. To explore this possibility, rates of reporting the 37 depression symptom items included in the initial 137-item questionnaire (Tavella et al., 2021) were compared between Class 1 and Class 2 members of the reduced burnout cohort ($n = 596$) by examining for each item whether the odds of responding “moderately” or “distinctly” versus “not at all” or “slightly” differed between classes. To test if the ratio of these odds differed from 1, a log-linear model (Hall & Bird, 1986) was estimated in SPSS GENLOG (see Table 8.4). The p values associated with the odds ratio for each depression item were adjusted by calculating corresponding Benjamini-Hochberg critical values so to reduce the false discovery rate (FDR; Benjamini & Hochberg, 1995). Class 2 more often rated all but two (“I feel fatigued” and “I lose weight even though I am not dieting”) of the items as “moderately” or “distinctly” compared to Class 1, indicating that those in the higher scoring class were more likely to rate symptoms of depression more commonly and/or more severely.

Table 8.4. Comparison of affirmation rates and odds ratios of depression items between Class 1 and Class 2.

Depression item	Proportion of class responding “moderately” or “distinctly”		<i>OR</i>	<i>p</i>	Confidence interval	
	Class 1 (<i>n</i> = 250)	Class 2 (<i>n</i> = 346)			Lower bound	Upper bound
I experience heavy or “leaden” feelings in my arms or legs	0.45	0.65	2.27	< 0.001	1.62	3.18
I have recurrent thoughts of death	0.27	0.50	3.00	< 0.001	2.05	4.38
I have little interest or pleasure in most activities	0.51	0.85	7.46	< 0.001	4.21	13.21
I wake in the middle of the night for a distinct period	0.64	0.75	1.65	0.01	1.13	2.39
I cannot concentrate or register new information because of “foggy” thinking	0.66	0.93	16.93	< 0.001	3.92	73.11
I feel slowed down mentally (e.g., hard to find words, slowed thoughts)	0.74	0.95	12.01	< 0.001	2.74	52.69
I feel slowed down physically (e.g., feeling like I am walking through sand)	0.60	0.88	5.17	< 0.001	3.05	8.76
I am distinctly more irritable	0.77	0.95	6.30	< 0.001	2.70	14.71
I feel quite worthless and like a failure	0.50	0.87	6.44	< 0.001	4.17	9.94
I lack motivation	0.78	0.97	9.56	< 0.001	3.15	29.07
I feel that I deserve to be punished	0.11	0.38	4.36	< 0.001	2.67	7.13
I experience a loss of energy (making it hard to get going in the morning)	0.86	0.99	12.22	< 0.001	3.37	44.34
I feel distinctly guilty	0.39	0.75	5.35	< 0.001	3.66	7.81
My self-esteem and self-worth are distinctly less	0.53	0.89	6.16	< 0.001	3.82	9.95
I become quite indecisive	0.58	0.86	5.75	< 0.001	3.42	9.67
My appetite is decreased	0.24	0.42	2.38	< 0.001	1.64	3.46

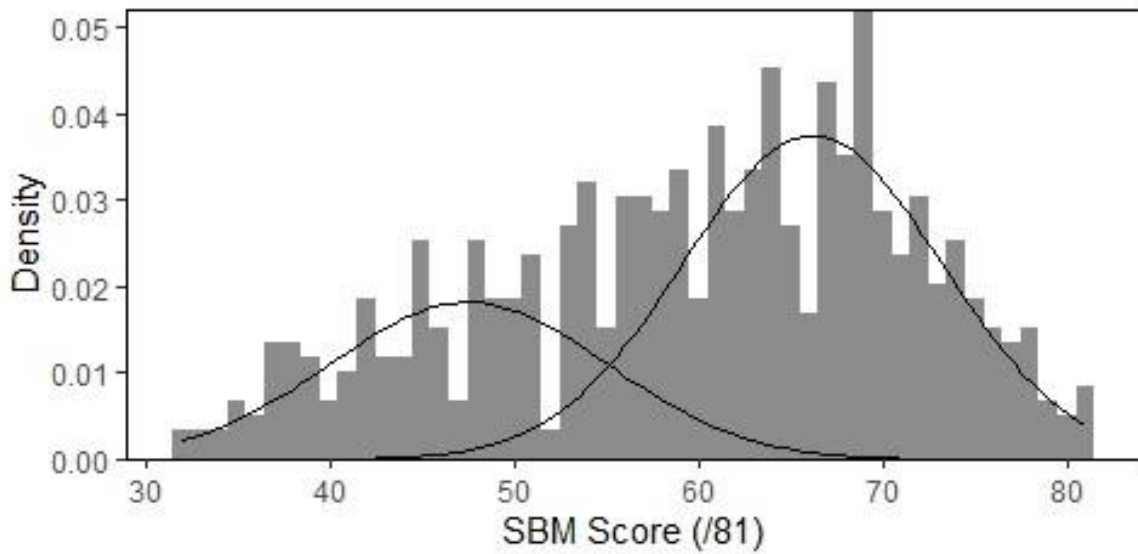
I gain weight	0.52	0.68	1.76	< 0.001	1.24	2.50
I cannot concentrate because of lots of worrying and racing thoughts	0.55	0.88	8.75	< 0.001	4.97	15.38
I cry more	0.48	0.71	2.72	< 0.001	1.89	3.90
I have trouble and/or a distinct delay in getting to sleep	0.47	0.73	3.01	< 0.001	2.09	4.32
I feel fatigued	0.94	0.99	2.72	0.26	0.47	15.82
I wake very early in the morning and cannot get back to sleep	0.49	0.62	1.60	0.01	1.14	2.23
I feel quite depressed	0.56	0.91	7.78	< 0.001	4.65	13.02
I feel agitated (i.e., unable to settle and sit still)	0.59	0.86	4.44	< 0.001	2.78	7.11
I cannot be cheered up by things or people that would normally give me pleasure	0.44	0.88	11.85	< 0.001	6.89	20.40
I start feeling more self-critical and hard on myself	0.75	0.95	4.66	< 0.001	2.50	8.69
I feel sad, empty and hopeless	0.56	0.93	10.79	< 0.001	6.06	19.23
I have trouble getting started with simple everyday tasks	0.52	0.90	12.67	< 0.001	6.42	25.01
I cannot look forward to things that would normally give me pleasure	0.47	0.87	12.17	< 0.001	6.60	22.43
I have trouble getting off to sleep	0.50	0.72	2.46	< 0.001	1.70	3.56
My mood and energy are lower in the mornings	0.66	0.82	1.75	0.01	1.17	2.63
I feel angry	0.55	0.84	6.47	< 0.001	3.70	11.32
I lose weight (even though I am not dieting)	0.14	0.17	1.01	0.98	0.60	1.69
I sleep for much longer	0.35	0.52	1.79	< 0.001	1.26	2.54
I feel as though I have lost my core identity and/or essence	0.66	0.94	7.84	< 0.001	4.30	14.31

My appetite is increased and/or I have food cravings	0.48	0.68	2.05	< 0.001	1.45	2.90
I keep to myself	0.67	0.93	7.77	< 0.001	3.43	17.58

Note: *OR* = Odds ratio. The ratio reported for each depression item is the ratio of the odds of responding “moderately” or “distinctly” versus “not at all” or “slightly” for Class 2 against those odds for Class 1. The *p* values of each *OR* were adjusted to control the false discovery rate at $q = 0.05$ level using the Benjamini-Hochberg method (Benjamini & Hochberg, 1995). Confidence intervals were subsequently constructed to reflect such adjustment (Benjamini & Yekutieli, 2005) such that the confidence level was set at 95.27%. Odds ratios with confidence intervals that do not contain 1.00 are significant.

Seven such depression items are included in the final 34-item SBM measure (see Table 8.2). To assess whether bimodality in scores was driven by the SBM’s depression items having created a ‘depressive’ sub-group, those seven items were removed and a mixture analysis was run on a shorter 27-item version of the measure in the reduced burnout cohort. A bimodal solution (Figure 8.4) remained superior ($\lambda = 59.2$, $p < 0.001$). A *z*-test was used to compare the effect size (Cohen’s *d*) of the difference between the two class means in the bimodal solution for the 34-item measure ($d = 2.3$) with the corresponding effect size for the 27-item version of the measure ($d = 2.6$), and with the difference not significant ($z = 1.8$, $p = 0.08$). Furthermore, *z*-tests showed that there was not a significant change in the standardised distributions for Class 1 ($z = 0.05$, $p = 0.96$) or Class 2 ($z = 0.05$, $p = 0.96$) between the bimodal solutions generated for the 34-item and 27-item versions of the measure. That there were no significant differences between the bimodal solutions for either version of measure indicated that the original bimodality in scores on the 34-item version did not appear to be driven solely by the seven depression items (and thus the presence or absence of a depressive syndrome sub-group).

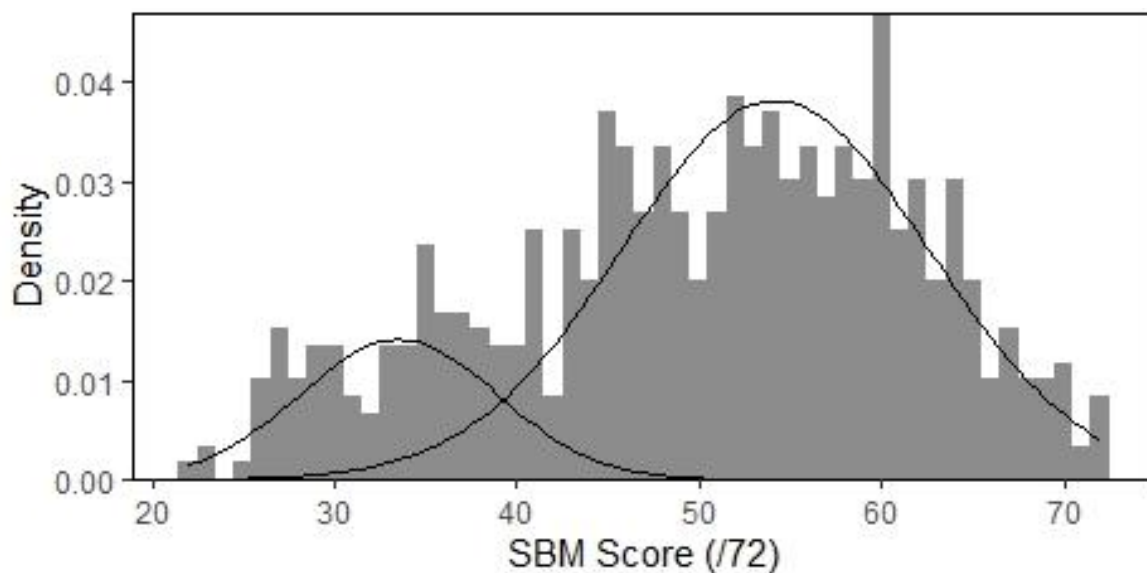
Figure 8.4. Bimodal distribution of scores on the 27-item version of the SBM after removing depression items from the measure (from the reduced burnout cohort, $n = 596$).



To further explore the possibility that bimodality in total SBM scores was driven by some participants having a depressive disorder, data from the group of participants with clinically-diagnosed depression were examined. Specifically, mean scores on each of the 34 items from the 137-item questionnaire that were included in the SBM were calculated for the depressed group and ranked from highest to lowest (with a higher mean indicating that item was more often affirmed by the depressed group and/or rated more severely). The 10 highest SBM items so scored by the clinically depressed sample were removed from the measure, leading to a 24-item version of the measure (see Table 8.2). A mixture analysis was undertaken of data from this 24-item version of the measure in the reduced burnout cohort ($n = 596$). A bimodal solution (Figure 8.5) remained superior ($\lambda = 45.1, p < 0.001$) and the effect size of the difference between the two class means in the bimodal solution for the 34-item measure ($d = 2.3$) was not significantly different from the corresponding effect size for the 24-item version of the measure ($d = 2.6; z = 1.7, p = 0.09$). Furthermore, z -tests showed that there was not a significant change in the standardised distributions for Class 1 ($z = 0.15$,

$p = 0.88$) or Class 2 ($z = 0.24$, $p = 0.81$) between the bimodal solutions generated for the 34-item and 24-item versions of the measure. Thus, the bimodality in scores for the reduced burnout cohort on the full 34-item version of the SBM did not appear to be driven by those symptoms in the measure most often reported and/or experienced more severely by those with a clinically-diagnosed depression. Taken together, the analyses of the 27-item and 24-item versions of the SBM argue against bimodality in the 34-item measure having resulted from differing burnout and depression sub-groups.

Figure 8.5. Bimodal distribution of scores on the 24-item version of the SBM (from the reduced burnout cohort, $n = 596$) after removing 10 items from the measure most often affirmed by the depressed group.

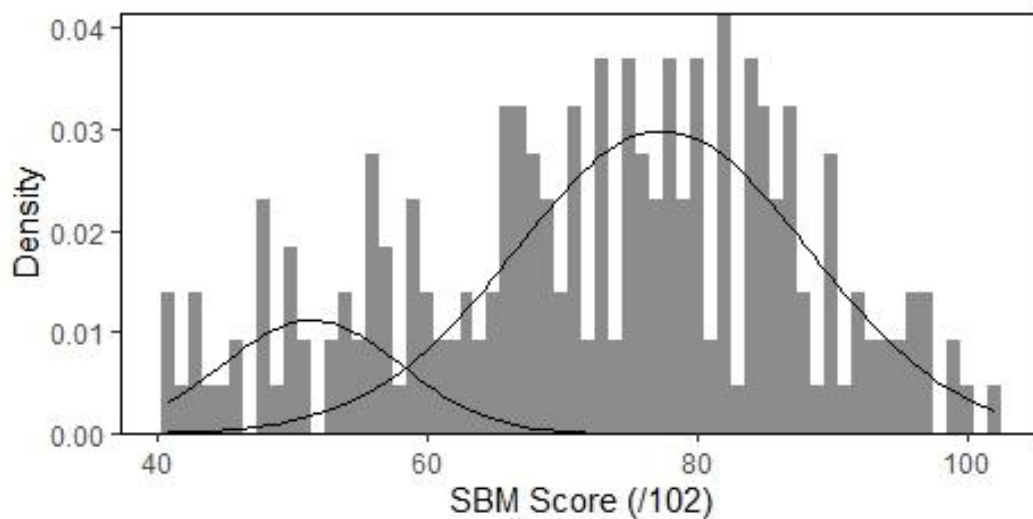


8.3.4. *The impact of mental illness history.*

As reported earlier, members of the higher scoring class (Class 2) in the reduced burnout cohort more frequently reported having been previously diagnosed with depression and/or any other mental illness by a mental health professional. Such results could indicate that bimodal SBM scores could reflect two sub-populations of those with and those without a history of mental ill health. To explore this possibility, another mixture analysis was undertaken on SBM data from only those participants from the reduced burnout cohort who

reported no previous depression diagnosis ($n = 217$). A bimodal solution (Figure 8.6) remained superior in this subset ($\lambda = 15.2, p = 0.03$), with mean class scores being 51.5 ($SD = 6.6$; 19.0% of the sample) and 77.4 ($SD = 10.9$; 81.0% of the sample) respectively. Thus, after excluding those with a history of diagnosed depression, bimodality in SBM scores remained.

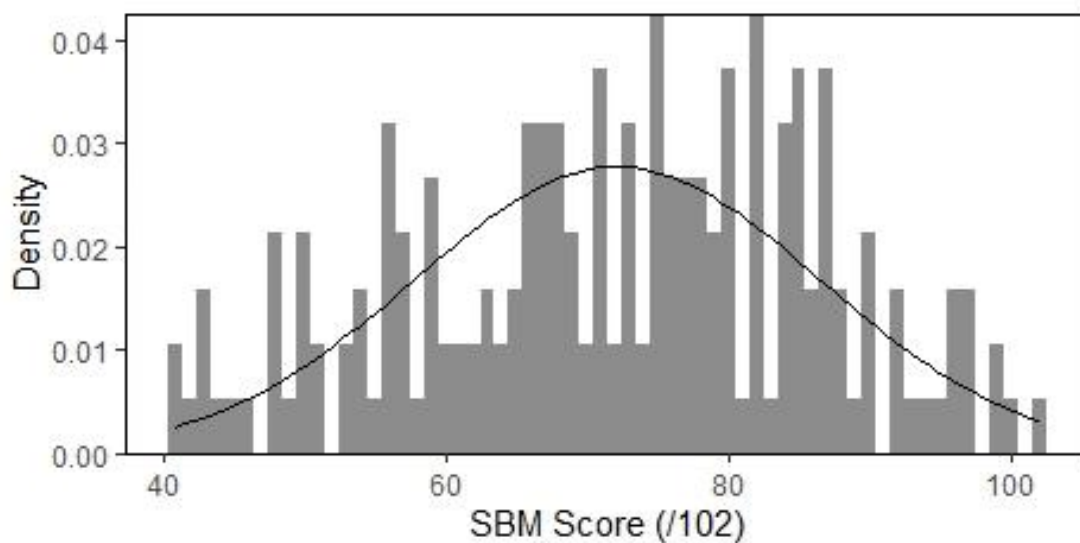
Figure 8.6. Bimodal distribution of SBM scores for those who reported no history of depression (from the reduced burnout cohort, $n = 217$).



A final mixture analysis was undertaken on SBM data from only those participants in the reduced burnout cohort who reported no history of any mental illness (including depression) diagnosed by a mental health professional ($n = 188$). A unimodal distribution (Figure 8.7) emerged as the superior solution (i.e., the test for superiority of the bimodal distribution was not significant; $\lambda = 10.4, p = 0.13$). Thus, scores on the SBM were unimodal when analyses evaluated only those individuals lacking a history of any diagnosed mental disorder. To check that the resulting unimodal distribution was not an artefact of having reduced the sample size from 596 to 188 participants (after excluding those with a diagnosis history of mental illness) and therefore the power to reject the null hypothesis (that a unimodal fit to the data was superior), mixture analyses testing whether a unimodal or

bimodal model was superior were run on 100 random samples of 188 participants from the reduced burnout cohort. The null hypothesis of a unimodal fit to the data being superior was rejected in 94/100 samples, which suggested that the superior unimodal distribution computed after excluding those with a diagnosis history of mental illness was likely not artefactual.

Figure 8.7. Unimodal distribution of SBM scores for those who reported no history of mental illness (from the reduced burnout cohort, $n = 188$).



8.4. Discussion.

The objective of Study 3 was to examine whether scores on the SBM developed in Study 2 were best modelled dimensionally or categorically, and to pursue potential factors influencing any categorical distinction. However, before discussing the results, several study limitations are acknowledged. First, as was the case in Study 2, the broad inclusion criteria utilised for the burnout group meant that a proportion of participants may have had an alternate primary diagnosis that influenced their symptom reporting, such as depression. Although the possibility that depression influenced the distribution of scores was somewhat evaluated in the current study (see shortly), future studies would benefit from submitting

participants with self-identified burnout to a standardised diagnostic interview to identify those who also met diagnostic criteria for other mental or physical illnesses concurrently and then examining how such concurrent illness influences study results.

Another limitation (also discussed in relation to Study 2) was that the reliability of participants' reports as to whether they had a history of diagnosed mental illness cannot be ascertained in the current study. Further, participants were assigned to the depressed group based on a clinician-based depression diagnosis, rather than by the administration of a standardised diagnostic interview. While clinician-based diagnoses have advantages as they allow for consideration of a wide set of candidate variables (such as symptom severity, patient history, and whether clinically significant distress or impairment is present), they are subjective in nature and may be affected by biases of clinicians. Future studies would therefore be advanced by administering a structured diagnostic measure for depression to confirm clinicians' diagnoses.

Finally, although bootstrapped likelihood ratio tests (BLRTs) were used in the current study to decide which solution (i.e., unimodal, bimodal, trimodal and so on) best fitted the data, several other approaches have been proposed (such as applying Bayesian-based or classification-based information criteria; see McLachlan et al., 2019). There is a lack of consensus as to which of these approaches is most appropriate for selecting the adequate number of distributions to retain in mixture models (McLachlan et al., 2019; Oliveira-Brochado & Martins, 2005), and thus alternatives to BLRTs may have sufficed in the current study.

Turning to the results, identification of a low-scoring class in the initial three-class solution for the whole burnout sample was an important by-product of this study in suggesting that a score of less than approximately 40 on the SBM measure is likely to reject

the likelihood of a burnout syndrome or, at least, one of any substance. After removing those participants with scores below 40, a bimodal distribution of SBM scores was demonstrated, suggesting that a categorical difference of some kind existed between the two resulting distributions (represented by Class 1 and Class 2). Results displayed in Table 8.3 suggested several variables that differed between Classes 1 and 2 that could potentially explain the bimodality of scores, and three of these were explored in more detail. First, it was deemed possible that participants in Class 1—who had lower scores on the SBM and were less likely to report having to both stop work and seek medical assistance due to burnout—may have been still “burning out” as opposed to being completely “burnt out”. Assuming that those who are able to continue working belong to the former “burning out” group, examining whether bimodality in SBM scores was driven by subsets of participants who had and had not stopped working due to their burnout was deemed potentially informative. However, when an additional mixture analysis was undertaken analysing data from only those who reported they had stopped working due to burnout, the distribution of SBM scores remained bimodal, indicating that the bimodality of scores for the reduced burnout cohort was not solely due to the ‘working’ versus ‘not working’ subsets.

It is conceded that whether an individual has or has not stopped working due to burnout is unlikely to be the sole indicator of those burning out and those burnt out (respectively) if such a categorical distinction exists. For instance, a study using latent profile analysis (Leiter & Maslach, 2016) reported five burnout ‘profiles’ that were judged as helping to distinguish between those who are completely burnt out (as conceptualised by the MBI) versus only “on the pathway there” (Maslach and Leiter, 2021). Specifically, scores on the MBI indicated that the profiles of ‘engagement’ (low levels of exhaustion, inefficacy and cynicism) and ‘burnout’ (high levels of exhaustion, inefficacy and cynicism) were opposite end points on the burnout spectrum, while the intermediate profiles of ‘overextended’ (high

levels of exhaustion only), ‘ineffective’ (high levels of profession inefficacy only) and ‘disengaged’ (high levels of cynicism only) could indicate those who are still in the burning out phase. Other potentially indicative factors (e.g., physiological differences between those burning out versus burnt out, responsiveness to specific interventions) should be examined in future studies. Studies incorporating a longitudinal design might be of benefit, as markers of the transition from ‘burning out’ to ‘burnt out’ stages or states could be better identified. If studies confirm such distinct stages exist, further research would then be required to determine whether those in the ‘burnt out’ stage should be afforded clinical status.

Another potential explanation of bimodal SBM scores was that the sample may have comprised ‘burnout’ and ‘depression’ sub-groups. Somewhat supporting this hypothesis was the finding that those in Class 2—those with more severe burnout symptomatology as quantified by SBM scores—had significantly greater odds of reporting all but two of the depression items included in the initial questionnaire (Tavella et al., 2021) as being experienced to a moderate or distinct degree during their burnout episodes. Such a finding aligns with the assertion of Bianchi et al. (2014) that burnout’s differentiation from depression becomes less apparent when considering only severe cases of burnout, and could indicate that less severe burnout transitions into depression as burnout symptoms become more severe. The postulate that burnout can lead to depression has been supported in previous studies (e.g., Armon et al., 2014; Hakanen & Schaufeli, 2012). However, other research does not support such sequencing (Bianchi et al., 2015d). Future studies are needed to clarify the interdependence of burnout and depressive states, with longitudinal research again likely to be of benefit in evaluating whether there are clear points of transition from a burnout syndrome to a formally-diagnosable depressive condition.

Irrespective of such nuances, when the depression items included in the SBM were removed from the measure, bimodality in scores remained, indicating that depression items were not driving the bimodal distribution. Furthermore, when those items in the SBM most often affirmed as symptoms of depression by those in the clinical depression group were removed from the measure, bimodality in scores on remaining SBM items was again evident. Thus, the categorical distinction in scores on the SBM found in the current study was not due solely to differences in depression symptomatology between participants. If bimodality of SBM scores reflected such interactions, it was anticipated that a unimodal distribution of SBM scores would have been generated when depression items were removed from the analysis.

The exploratory analyses identified that those in the higher scoring class (Class 2) from the reduced burnout cohort were significantly more likely to have reported receiving a previous diagnosis of depression or another mental health disorder from a mental health professional. When participants who reported a history of depression were excluded from the analysis, a bimodal distribution remained, but when those reporting a history of any mental health disorder (including depression) were removed, a unimodal distribution of SBM scores was superior, suggesting that bimodality in SBM scores was explained by groups with and without a history of a diagnosed mental illness.

Such a result suggests that having a history of mental illness (whether previous or ongoing) impacts on the experience of self-diagnosed burnout, with individuals with such a history being more likely to require professional assistance for managing their burnout symptoms and for them to have to take time off work due to their burnout. In potentially explaining this finding, it is reasonable to presume that those with a history of a diagnosed mental health condition would be more likely to continue to have their condition(s) still

operative, whether at full syndrome level or modulated. This then allows that, in the bimodal distributions, one class might have a burnout syndrome alone and the other class might have been evidencing symptoms from their previously diagnosed mental health condition with or without a co-occurring burnout syndrome, with the effects of their mental health condition leading to more severe symptoms (that they have attributed to burnout) and requiring them to seek professional assistance to manage and/or take time off work. Alternatively, the presence of a mental illness history in one subset of participants may indicate that such individuals have a psychological vulnerability that has led to a differing (and seemingly more severe) clinical presentation of burnout compared to those identifying as burnt out but who do not have any psychiatric history. While both of these explanations are speculative and require further investigation in future studies, the current results could be informative to employers and clinicians when assessing burnout risk and other likely correlates of any burnout syndrome identified in patients/employees, as well as indicate the likelihood that such individuals will require additional support to overcome their symptoms.

If those with a psychiatric history do have a psychological vulnerability affecting subsequent experiences of burnout, this would also have theoretical implications. Namely, as discussed in Chapter 2, traditional models of burnout weight the influence of environmental (i.e., work) stressors on triggering burnout, such as the JD-R model (Demerouti et al., 2001) and the AW model (Leiter & Maslach, 2003). Newer models applied to burnout – such as a diathesis-stress model (Geuens et al., 2021; Nixdorf et al., 2020) — argue that personal factors can predispose an individual to develop burnout. However, the personal factors most often examined in past studies are usually demographic (e.g., age; Ahola et al., 2008) and personality (Bakker et al., 2006; Swider & Zimmerman, 2010) variables, while studies considering whether a psychiatric or medical history is a vulnerability factor for burnout are scarce. Such scarcity is likely due to most existing studies being cross-sectional and

examining for the co-occurrence rather than sequential development of burnout and other psychological syndromes/conditions (Aydemir & Icelli, 2013). Future longitudinal studies are therefore needed to explore the impact of a mental illness history on subsequent burnout risk and phenotype, and how it might act as a pre-dispositional factor.

In conclusion, results from Study 3 found evidence of a categorical distinction in scores on the SBM which could suggest qualitative differences in self-identified burnout syndromes experienced by the lay population. Three potential explanations of such differences were pursued, with results indicating that the most likely determinant of the bimodal data distribution was a history of a diagnosed mental illness, potentially reflecting the effects of a co-occurring mental illness on the burnout experience for some participants, or a degree of psychological vulnerability being present or absent and impacting on burnout phenotype. While the study did not consider multiple other explanations for possible determinants of the bimodality, it allows several refined hypotheses to be pursued in future studies, which would ideally (i) be longitudinal, (ii) variably include and exclude those with preceding mental health disorders and at-risk personality styles, (iii) evaluate specific markers and predictors of an ‘end stage’ burnout as against a presumably milder ‘burning out’ syndrome in those with no previous or comorbid mental health disorder, and (iii) investigate whether a previous mental health disorder diagnosis (or only certain such disorders) impacts on burnout phenotype.

PART III: EXAMINING THE BURNOUT-DEPRESSION OVERLAP

9. Study 4

This chapter reports a qualitative study that examined how individuals who self-reported having experienced both burnout and depression differentiated the two conditions experientially. The sample utilised in this Study was a subset of that used in Study 1. The contents of this chapter have been adapted from a published paper (Tavella & Parker, 2020a)⁵ that is first-authored by the PhD candidate.

9.1. Introduction.

As overviewed in Chapter 4, burnout has never been included as a diagnostic category in any editions of the APA's DSM, while its inclusion by WHO in the ICD-11 specifies that while burnout may influence an individual's health status, it is "in itself not a disease or injury". Depression, on the other hand, is formally accepted by scientists and practitioners as a diagnosable condition, and is listed in both the DSM-5 and the ICD-11 with a set of diagnostic criteria.

Inconsistent findings regarding the overlap between burnout and depression have hindered the recognition of burnout as a distinct, formally diagnosable condition. Specifically, and as reviewed in Chapter 3, previous studies have reported varying degrees of symptom overlap and correlations between the two states (e.g., Ahola et al., 2005; Iacovides et al., 1999; Schonfeld & Bianchi, 2016), while other research has variably demonstrated that burnout and depression can (e.g., Bakker et al., 2000; Leiter & Durup, 1994; Mikolajczak et al., 2020) and cannot (e.g., Bianchi et al., 2021b; Schonfeld et al., 2019a; Verkuilen et al., 2021) be distinguished from each other using factor analytic strategies.

⁵Correspondence with the publisher confirmed that permission to adapt material from this article into a thesis chapter was not required.

Despite the lack of scientific consensus as to how burnout should best be defined, measured and diagnosed, the lay community perceive burnout to be an omnipresent and relatable experience. As evidenced in Part II of this thesis, individuals readily self-identify as experiencing burnout and report several symptoms of the syndrome. Further exploration of the perspectives of those who self-report as burnt out can provide important information as to why the lay population believe burnout to be a legitimate illness (Frankel, 2001). This includes understanding if and how individuals experience burnout as distinct from depression.

To the candidate's knowledge, most existing studies examining the differences and similarities between burnout and depression have been quantitative in design. While such analyses are useful for comparing observed variables in an objective manner, qualitative studies allow the collection of richer and better-contextualised descriptions of individuals' experiences, providing researchers with a greater understanding of “‘what it is like’ to experience particular conditions” (Willig, 2001, p. 9). It was therefore judged that an examination of qualitative data would provide greater insight into differences between burnout and depression not elucidated in past quantitative studies and was thus the objective of Study 4.

9.2. Methods.

9.2.1. Ethical considerations.

Ethical approval for the research was given by the UNSW Human Research Ethics Committee (UNSW HREC #HC17678). Individuals were required to provide consent via an online PISCF before they could participate.

9.2.2. Participants.

The sample used in Study 4 were a subset of participants from Study 1 (Chapter 6). To reiterate, participants were recruited through advertisements in local newspapers and posted on the Black Dog Institute website. Broad inclusion criteria were used, with individuals invited to participate if they were fluent in written and spoken English, between the ages of 18 and 65, and self-identified as currently experiencing ‘burnout’. Only those from the sample who reported that they had previously been formally diagnosed with or treated for depression were included in the current study.

9.2.3. Procedure.

Participation involved anonymously completing an online questionnaire administered via the Qualtrics website. As reported in Study 1 (and in Tavella et al., 2020; Tavella & Parker, 2020b), the questionnaire first sought demographic information, and then presented open-ended questions asking participants to (i) record symptoms and features suggesting to them that they were experiencing burnout, (ii) nominate the judged principal cause, (iii) suggest how they judged burnout as distinguishable from a pure state of depression and (iv) anxiety, and (v) detail if it had been helped by any strategies and, if so, to nominate which ones. Participants were then asked to indicate whether they had stopped working due to their burnout or were still working, whether they had ever been diagnosed with or treated for a mental health disorder (and, if so, to specify which disorder), as well as to complete a 106-item self-report measure of putative burnout features and symptoms. Analysis of the responses to question (iii) was the objective of the current study.

9.2.4. Analysis.

The analysis and results presented here are based on those detailed in Tavella and Parker (2020a), which describes the qualitative content analysis of responses to the question

“How would you distinguish your burnout from a pure state of depression?”. To begin the analysis, all answers were read through twice to provide an overview of responses. Initially a NVivo word frequency query was run, as had been undertaken in the analysis of the qualitative data in Study 1. However, in this case, individual words returned by this query were judged as not meaningful without surrounding context. For example, the word “sad” in response to this question could denote feeling less sad when burnt out compared to when depressed or vice versa. The word frequency query was therefore judged as uninformative, and words returned using this query were not automatically coded. Instead, each response was read through individually and meaningful words and phrases were manually extracted and coded into nodes of similar information. For example, many stated that their burnout was confined specifically to work, unlike their depression, so each of these references were coded under a “work-related” node. After initial coding, all responses were manually examined again to ensure all meaningful phrases had been coded, and any meaningful phrases remaining were allocated to new or existing nodes. Words and phrases that appeared to be prominent during the manual examination of the data were then searched for using NVivo “text search queries” to ensure that all such phrases and their variations were coded into new or existing nodes. The responses were then manually examined a final time to ensure comprehensive coverage of the data.

Nodes that were referenced 10 or more times in response to the question of interest were then examined and grouped into “parent nodes” or categories (and their subcategories) of similar information. The analysis was undertaken using an iterative process of reflection and collaborative discussion between the PhD candidate and the primary supervisor, including initial interpretations, multiple revisions, and the final refinement of the categories. Participant IDs coded at each parent node were extracted to determine how many respondents nominated each category.

9.3. Results.

9.3.1. Demographics.

1042 questionnaires were returned but 23 were excluded due to missing data, leaving a total sample of 1019. Most of the sample identified as Australian (54.5%) and female (74.6%), with the mean age of the sample being 41.4 years. 573 (56.2%) participants reported that they had previously been formally diagnosed with depression and so were included in the current analysis. The occupations most often reported by this subset were managerial positions (14.4%), student (9.4%), teacher (7.5%), nurse (6.2%) or being primarily responsible for home/care duties (5.2%).

9.3.2. Comparison of burnout and depression.

The resulting 11 categories and their subcategories are displayed in Table 9.1 in descending order of frequency and are then detailed.

Table 9.1. Categories and subcategories capturing differences between burnout and depression reported by participants who had experienced both states.

Category	Subcategories
Differential attribution (<i>n</i> = 251, 43.8%)	<p>Burnout has a specific, extrinsic cause</p> <p>Burnout is work related</p> <p>Burnout is less chronic and can be improved or corrected once the extrinsic cause is removed</p>
Level of functioning (<i>n</i> = 107, 18.7%)	<p>Still able to maintain basic functioning despite burnout</p> <p>Can still get out of bed despite burnout</p> <p>Must keep going despite burnout</p>
Sadness and anger (<i>n</i> = 107, 18.7%)	<p>Not always sad when burnt out</p> <p>Feel apathetic or empty rather than sad when burnt out</p> <p>More angry/irritable when burnt out compared to depressed</p> <p>Anger replaces sadness in burnout</p>
Levels of hopelessness and helplessness (<i>n</i> = 106, 18.5%)	<p>Burnout associated with more optimism and less hopelessness than depression</p> <p>In burnout helplessness is more salient than hopelessness</p>
Feeling anxious and emotional (<i>n</i> = 106, 18.5%)	<p>Feeling more overwhelmed and/or anxious when burnt out compared to when depressed</p> <p>Burnout is an “active” state while depression is a “passive” state</p> <p>More emotional/reactive when burnt out</p>
Exhaustion contribution (<i>n</i> = 97, 16.9%)	<p>Exhaustion more prominent in burnout</p>
Anhedonia (<i>n</i> = 88, 15.4%)	<p>No anticipatory anhedonia in burnout</p> <p>No consummatory anhedonia in burnout</p>
Physical and cognitive dysfunction (<i>n</i> = 58, 10.1%)	<p>Burnout more likely to be associated with physical symptoms than depression</p> <p>More cognitive symptoms when burnt out</p>

Effect on self-esteem (<i>n</i> = 42, 7.3%)	Burnout is less likely to effect on self-esteem/self-worth Burnout effects self-worth to the extent is effects work identity
Social impact (<i>n</i> = 26, 4.5%)	Burnout somewhat less likely to impact on social behaviour than depression
Self-harm/suicide (<i>n</i> =18, 3.1%)	No thoughts of self-harm/suicide when burnt out

Note. Percentages sum to more than 100% as more than one category was identified by most participants.

Differential attribution

The most prevalent category was differential attribution, in that 43.8% of the sample stated that their burnout has a clear cause, unlike their depression. One participant noted, for example: “When I’m depressed, I usually don’t know why. But burnout is different because I know why I’m feeling low”. Most who referred to differential causes of their burnout and depression went on to identify the specific cause of their burnout as work-related stressors. Some respondents judged that their burnout was more easily treatable than their depression, because being able to identify the causal stressors of their burnout meant steps could then be taken to neutralise such stressors, for instance: “I guess there is chance of recovery from burnout with a change in circumstances whereas depression seems more related to intrinsic factors”.

Level of functioning

Almost one-fifth (18.7%) of the sample indicated that burnout and depression differentially impacted their daily functioning. Burnout was associated with higher functioning, with participants noting they could still get out of bed and “power on because you have to” despite feeling burnt out. On the other hand, many participants could “not leave

the house” when depressed, with one participant explaining “(Depression) for me was all-consuming, I was unable to function...with burnout I can still function and do what I have to do.”

Sadness and anger

18.7% of the sample noted that burnout and depression had different impacts on affect and emotional regulation. Many stated that, unlike when depressed, they were “not sad” when burnt out, and that instead it was “possible to be in quite a good mood and happy... and still burned out.” Some specified that sadness in depression was replaced by feelings of emptiness in burnout, for instance: “I’m not sad as such, I just feel... as though my cup is empty”. The sadness of depression was replaced with anger in burnout for many participants, for instance: “Rather than sad I feel angry”, “I’m more angry than sad”, and “I am not sad but just pretty constantly pissed off”.

Levels of hopelessness and helplessness

Lower levels of hopelessness distinguished burnout from depression for almost one-fifth (18.5%) of participants. Specifically, respondents indicated they were optimistic and less desperate when burnt out, for instance “There is less desperation (with burnout). Depression is just a black pit of desperation... You feel beyond rescue with depression”. For many of these participants the hopelessness they associated with depression was replaced by helplessness in burnout, remaining “stuck” in a state of burnout despite their attempts to overcome it, for instance: “I feel like I am a hamster on a hamster wheel - going nowhere” and “Its a continual walking on the tightwire and running as fast as you can, sprinting - but never getting far and just getting more and more fried as you go along.”

Feeling anxious and emotional

18.5% of the sample reported levels of anxiety as distinguishing burnout from depression. Specifically, burnout was described as an active state associated with high levels of anxiety and panic, being “out of control and highly emotional” and as if “everything is in overdrive”, whereas depression was described as “heavy” and “slow”. One participant described burnout as “the ratcheting up of anxiety... Depression I thought was less active. (Burnout) is hard to turn down.”

Exhaustion contribution

Exhaustion was nominated by 16.9% of the sample as a key distinguishing feature, with participants stating that the common symptoms of depression such as low mood or hopelessness were not prominent when they burnt out, and that instead burnout was simply “pure” and “utter” exhaustion. The prominence of exhaustion as a key discriminating feature of burnout was made evident by the following participants: “When my depression was an issue I felt numb... with burnout I was just exhausted to the bone”, and “(burnout) doesn’t feel as suffocating as depression, it just is a state of pure exhaustion”.

Anhedonia

The absence of anhedonia in burnout was a distinguishing feature for 15.4% of the sample. For instance, “When depressed I have no interest or desire in any activity. When feeling burnt out I still enjoy people’s company and...leisure activities”. As many situated their burnout as relating only to work, they noted still being able to look forward to upcoming events in their personal lives and were still able to enjoy non-work activities. For example, one noted “Outside of work is joyous. And still exciting”.

Physical and cognitive dysfunction

Some participants (10.1%) highlighted differences in the physical symptoms of burnout and depression. A few participants noted that the physical symptoms common to depression, such as appetite loss, were not present when they were burnt out. More commonly, however, burnout was reported as having a greater physical impact than depression, with burnout being characterised by one participant as a “purely physical reaction”, while another participant stated that, unlike depression, “there is actual physical ache to burnout.” Similarly, symptoms of cognitive dysfunction were reported as more prominent in burnout than depression, for instance: “With depression I was able to push myself and with this I feel completely blocked, my brain and memory function is extremely affected with feeling burnt out.”

Effect on self-esteem

7.3% of the sample noted the effects of burnout and depression on their self-esteem. In most cases, burnout was judged as being less influential on self-esteem and self-worth, such as: “With depression, there is this self-loathing that is vicious. The way I talk to myself would be considered abuse if I spoke to someone else like that... I have not been vicious towards myself this time (with burnout)”. For those who did notice an impact of burnout on their self-esteem, they specified that this was due to their work performance being integral to their identity, such that any decrease in productivity related to their burnout resulted in reductions in their self-worth. For example, “My working life as a teacher is so tied to my identity, that when I wasn't able to succeed in this area of my life, when I had always been able to before, absolutely broke me.”

Social impact

A small number (4.5%) specified that the two conditions had differential effects on their social behaviour. Burnout was mostly viewed as being less impactful on social life than depression, with one participant stating “Burnout has not stopped me from seeing family and friends whereas depression makes me into a hermit who actively avoids people” and another explaining that, while burnt out, they could “bring other people into the emotional tent rather than isolate myself” like they did when they were depressed.

Self-harm and suicide

A few participants (3.1%) talked about suicide and self-harm, reporting an absence of self-harm or suicidal thoughts or behaviours in burnout, unlike depression, with one stating “The lack of suicidal thoughts and ideation (in burnout) is nice.”

9.3.3. *Overlapping of the two conditions*

While most participants were able to nominate at least one distinguishing feature, approximately one-fifth (21.8%) of respondents noted that there was significant overlap between their burnout and depression, with some in this group reporting that they could not separate the two, for instance: “depression and burnout are synonymous for me”. Others stated that one condition led to the other, with the suggestion that burnout leads to depression more often nominated than the reverse scenario.

9.4. Discussion.

Several past studies have sought to determine whether depression and burnout are synonymous or distinct. Findings from such studies have overall been inconclusive, but with most of these studies having been quantitative in design. Qualitative data were therefore analysed in Study 4 to assesses whether and how participants who self-identified as having experienced both burnout and depression distinguished between the two states.

There were several limitations to the study which must be conceded when interpreting results. As discussed in relation to Study 1, a convenience sample involving those self-identifying as suffering from burnout was utilised so that the perspectives of the lay community on burnout and depression could be better understood. Furthermore, the participants included in the current study were those who reported a previous depression diagnosis, however it is acknowledged that the reliability of self-report diagnoses can be hindered by several factors (Smith et al., 2008). In addition, while participants were asked whether they had previously been diagnosed with or treated for depression, they were not asked which of the depressive subtypes (i.e., melancholic or non-melancholic depression) they had experienced. This is a potentially important limitation because, as detailed in Chapter 3, the failure to find clear points of difference between burnout and depression in previous studies may have been a consequence of including those with melancholic and those with non-melancholic depression in the same depression comparison group (see Bianchi et al., 2015a).

Turning to findings, the participants' ability to make multiple qualitative distinctions between burnout and depression suggests that the lay community do not consider the two states to be synonymous. The most prevalent category, nominated by almost half of the sample, was that burnout had a specific cause that was usually work-related, while depression usually did not have a known cause. This finding suggests that the aetiological nuances of burnout and depression may be more distinguishing than symptom differences. While there is increasing reports of burnout occurring outside of formal work environments (Gérain & Zech, 2019; Roskam et al., 2017; Salmela-Aro et al., 2018), the current finding indicates that burnout is still largely perceived by the lay community as contextually-bound and restricted to formal work scenarios. Importantly, however, while many participants specified that burnout was work-related, for some 'work' was not formal employment, with the fifth most

commonly nominated ‘occupation’ by study participants identified as being primarily responsible for home and care duties.

As overviewed in Chapter 3, some studies report incidences of work-related depression (e.g., Clays et al., 2007; Kahn, 2008; Rugulies et al., 2006), and it is impossible to determine from the current study whether participants identifying as burnt out due to work-related causes actually had a work-related depression. A more nuanced examination of the type of work-related triggers of depression versus burnout is needed to delineate whether true differences exist between work-related depression and burnout. For people who do have a clinical depression, it has been shown that those with melancholic depression are more likely to identify their depression as having commenced “out of the blue” (and explaining why melancholia has also been labelled ‘endogenous’ depression with assumed primary biological causes), while those with non-melancholic depression are more likely to nominate a specific environmental trigger (Parker et al., 2013) and are therefore often diagnosed as having an ‘exogenous’ or ‘reactive’ depression. If burnout is indeed akin to a work-related depression, it may thus be non-melancholic in nature. If valid, participants in the current study who distinguished burnout from depression based on the former being work-related may have been comparing their experience of ‘burnout’ (or work-related/non-melancholic depression) to a previous or co-occurring melancholic depression. Further examination of the differential overlap of burnout with each of the depressive subtypes is clearly required to better understand such nuances.

Several participants stated they had higher levels of day-to-day functioning when burnt out compared to when depressed. The ability to “power on” by sufferers is observed in the majority of burnout studies that have been conducted in the workplace, as participants of such studies are evidently still functioning occupationally to the extent that they are able to continue working (Schaufeli et al., 2001). This is unlike clinical depression, which by

definition (i.e., according to DSM-5 criteria) requires that an individual is distinctly impaired in social, occupational, or other areas of functioning (APA, 2013). Burnout was also viewed by participants as having less of an impact on social functioning than depression. This is surprising, as Studies 1 and 2 of the current thesis (Tavella et al., 2020, 2021; Tavella & Parker, 2020b) identified social disconnection and withdrawal as a key feature of burnout. It is possible participants' abilities to maintain social connectedness while burnt out was related to the higher levels of day-to-day functioning reported, which could include daily social interactions. As discussed in relation to Study 3, until a clearer distinction between those burning out and those who are burnt out (and therefore potentially experiencing a 'clinical' burnout syndrome) can be delineated, it is difficult to ascertain whether levels of impairment in daily functioning is equivalent for those completely burnt out and those who are clinically depressed.

The prominence of exhaustion distinguished burnout from depression for a percentage of participants. This finding is supportive of all existing models of burnout, which invariably position exhaustion as its cardinal feature (e.g., Halbesleben & Demerouti, 2005; Kristensen et al., 2005; Maslach & Jackson, 1981; Maslach et al., 2016; Maslach et al., 2001; Pines & Aronson, 1981). The current findings extend on this notion by indicating that exhaustion may have greater specificity, at least qualitatively, to burnout than to depression.

Depressed mood and anhedonia – two required DSM-5 diagnostic criteria for major depressive disorder (APA, 2013) - were significantly less prominent in burnout for many participants, therefore affording them some specificity status. While there were items denoting both depressed mood and anhedonia in the symptom model of burnout derived in Study 2, this finding is preliminary and requires comparison in samples of those with a clinically diagnosed depression, as is the objective of Study 5. The results of the current study suggest that although such symptoms commonly accompany a burnout syndrome, they

remain much more distinct in cases of depression, and therefore are likely to be rated as more prevalent in a clinically depressed sample. In the current study, many noted that their feelings of sadness and heaviness while depressed were replaced by a more active, anxious state in burnout that often was accompanied by emotional outbursts, particularly of frustration and anger. Heightened anger and emotional lability were also found to be key features of burnout in Study 1 (Tavella & Parker, 2020b), and by other researchers (Schaufeli et al., 2020), suggesting that burnout may be a more ‘externalising’ emotional state than depression, which is generally an ‘internalising’ state (APA, 2013).

Several participants indicated that their levels of hopelessness were lower, while their self-esteem was higher, when burnt out compared to when depressed. While there were items denoting both feeling hopeless and self-critical in the symptom model of burnout derived in Study 2, it is again noted that this finding is preliminary and requires comparison in samples of those with a clinically-diagnosed depression, as is the objective of Study 5. With both hopelessness and lowered self-esteem being cardinal features of depression (Abramson et al., 1989; Orth et al., 2009; Roberts & Monroe, 1992), if such features are indeed less prominent in burnout (as indicated in the current study) their differential status could be distinctive. The view of many of the participants that burnout was caused by external work stressors may have played a protective role in preserving their self-esteem, as research suggests that negative experiences are associated with low self-esteem when attributed to internal rather than external causes (McFarland & Ross, 1982). Participants’ feelings of helplessness may also be explained by their attribution of burnout to external, and therefore uncontrollable, work circumstances, leaving them to feel ineffective despite continually striving to achieve at work. Those who did associate burnout with a reduction in self-esteem or self-worth stated that it was because their career formed an integral part of their identity, and therefore presumably work problems not only led to their burnout but also compromised their self-

esteem. Future studies may be able to test this hypothesis by evaluating the relationship between burnout and self-esteem and the effect of any mediating factors on this relationship.

Participants were more likely to report cognitive disturbances when burnt out rather than depressed. This finding supports the results from Study 1 and Study 2 (Tavella et al., 2020, 2021; Tavella & Parker, 2020b), which established a high prevalence of cognitive symptoms (e.g., concentration and memory problems) being reported by those identifying as burnt out, as have previous studies (Schaufeli et al., 2020; Schaufeli & Taris, 2005). In depression, cognitive and memory problems are generally restricted to those with the melancholic sub-type (and captured by its prototypic feature of psychomotor disturbance). Thus, it could be that those participants who distinguished burnout as having a greater impact on cognition than depression most distinctly had the non-melancholic depressive sub-type. Again, a comparison of burnout against each of the depressive subtypes would be needed to test such a hypothesis. Participants also associated physical symptoms with burnout more so than with depression. This finding is not surprising considering the multiple physical manifestations of fatigue and exhaustion (Masuda et al., 1994). Physical symptoms were identified as pertinent in burnout in Analysis 1A of Study 1 (Tavella & Parker, 2020b), but their usefulness in defining the syndrome (or any psychological state) is likely limited as various psychosomatic symptoms are common concomitant states associated with psychological disturbances (Haug et al., 2004; Henningsen et al., 2003).

In Study 1 (Analysis 1A), there was a small subset of participants who reported suicidal thinking as a burnout symptom. Here, however, when participants were asked to compare their experiences of burnout to their experiences of depression, suicidal thoughts and behaviours were reported as having a greater association with the latter than the former. Previous research has also found suicidal association to be significantly associated with depression but not burnout (Galán et al., 2014). Oquendo et al. (2019) have argued that this

aspect provides an extremely important distinction, because if suicidal behaviours are uncommon in those with burnout, a misdiagnosis of burnout when a patient is actually depressed could lead to suicidal tendencies being overlooked, thus risking severe consequences. Future research confirming the specificity of suicidal ideation to depression as opposed to burnout is therefore imperative in light of such risks.

There was a subset of participants who struggled to distinguish between burnout and depression, which could indicate that the two conditions are completely synonymous or largely interdependent. Other participants stated that their burnout led to the development of their depression, a sequence that has been supported in longitudinal studies (Armon et al., 2014; Hakanen & Schaufeli, 2012), and which could indicate that burnout is a phase in the development of depression—in essence, a dimensional model in which burnout and depression are the less and more severe expression of the same syndrome, respectively. Against this interpretation, however, is the previous finding that burnout does not predict later depression (Bianchi et al., 2015d), as well as the finding in the current study that some participants offered the reverse scenario (i.e., that their depression led to the later development of burnout), with this sequence having also been previously supported (Armon et al., 2012; Campbell et al., 2010; Tóth-Király et al., 2021) and somewhat challenging the severity model (in suggesting the opposite directionality). Furthermore, that only a fifth of the sample noted distinctive overlap between the two states suggests that many individuals who resonate with the burnout label experience phenomenological differences between it and depression.

Overall, Study 4 contributes qualitative information to the complex debate surrounding the burnout-depression distinction that to date has mostly utilised quantitative data. While some of the participants were not able to make clear distinctions between the two states, the majority were able to nominate several qualitative differences, suggesting that, at

least from a lay person's perspective, the experiences of burnout and depression are distinct. The beliefs and lived experiences of patients and the broader community play an important role in the legitimisation of diagnoses (Leone et al., 2011; Wessely et al., 1998) and, as such, the perspectives of the lay community on their experiences of burnout and depression should not be ignored. Future research is needed to elucidate the burnout-depression distinction and should incorporate further qualitative research to elucidate phenomenological nuances that may explain why and how burnout is considered a distinct illness by the lay population. As burnout is yet to be formally defined and diagnosable, it could be beneficial in future studies to assess how those with a clinically diagnosed depression are able to distinguish their condition from any previous experiences of self-diagnosed burnout. Furthermore, any future research examining the burnout-depression overlap — whether qualitative or quantitative in design — should take into account the influence of depressive subtypes on findings. Such studies will be vital in clarifying the nosological status of burnout and allow the implementation of effective syndrome-specific treatment strategies on a more rational basis.

10. Study 5

This chapter details a quantitative study undertaken to further examine burnout's potential interrelationship or overlap with depression. Analysis 5A evaluated the symptom overlap between the two states, while Analysis 5B examined for differential contributions of multiple causal factors to each state. The contents of this chapter have been adapted from a paper that has been submitted for publication (Tavella et al., submitted) that is first-authored by the PhD candidate.

10.1. Introduction.

The provisional symptom model of burnout detailed in Study 2 and captured in the SBM was derived from data from individuals who self-reported burnout. As detailed earlier, few depression items loaded on the principal factor, and while one specific factor captured anhedonia items, this factor was not found to make a distinct contribution to the variance in the sample. Such findings suggest that some depressive symptoms may be integral to the broader burnout syndrome, but that depression and burnout are not synonymous. That said, whether burnout can be differentiated from depression cannot be ascertained from the results of Study 2. Indeed, despite only a few depression symptoms being present in the final burnout model, those with a clinically diagnosed depression may experience many if not all of the other burnout symptoms in the model as part of their depressive condition.

As many of the items included in the SBM are commonly experienced by those with depression, the risk is of the measure assigning 'false positive' cases of burnout (where a depressed individual returns a distinctive score on the burnout measure and is therefore judged as a positive burnout case). This caveat has rarely been conceded in the development

of other burnout measures, and thus this specificity concern is likely to apply across all extant measures of burnout. This concern was noted in a review by Kaschka et al. (2011), who highlighted the lack of integration of differential diagnostic screening tools in existing burnout measures (including the MBI, the BM, the OLBI, and the CBI), and observed that “for the differential diagnosis [of burnout] the only resource is catalogs of symptoms with a high degree of generality” (p. 783).

It was therefore deemed important to test whether the symptom model of burnout derived in the current thesis could differentiate between those with burnout and those with clinical depression. Participants with a clinician-diagnosed depressive condition were therefore recruited and compared to participants self-identifying as burnt out on both the provisional burnout measure and other symptom data so to examine the degree of symptom overlap between the two psychological states (shortly reported as Analysis 5A).

Importantly, in Study 4, participants who reported having experienced both burnout and depression did not distinguish between the two states based primarily on their respective symptoms. Rather, the most prevalent distinguishing feature for the participants in that study was that burnout was judged as having a specific cause (i.e., work), while depression was less likely to be perceived as specific to any particular context and thus specific triggers of their depressive episodes were less likely to be nominated. Such a finding aligns with arguments by Maslach and others (Leiter & Durup, 1994; Maslach & Leiter, 2016; Maslach et al., 2001; Schaufeli et al., 2009), who assert that one of the key distinguishing features between burnout and depression is that the former is always situation-specific and caused by work-related factors, while the latter is not restricted to work environments and their related stressors, and is instead context-free (although contextual nuances relating to the depressive subtypes will be considered shortly). Indeed, arguing against the notion that burnout (as conceptualised by the MBI) may occur outside of a work setting, Schaufeli et al. (2009) stated that, while

people may feel exhausted in any context, the cynicism and reduced professional efficacy constructs specific to burnout (according to the MBI) must be directed towards a particular situation: work.

As overviewed in Chapter 3, others oppose such an argument on two grounds. First, there has been increasing recognition that burnout may be triggered by factors other than work-specific stressors, such as stressors relating to parenting, caring for a sick or injured loved one, or being a student (albeit with such stressors still imputing an informal ‘work’ cause, in that they are necessary and/or goal-directed, as considered by Schaufeli et al., 2020). Second, some argue that depression itself can be precipitated by work factors, with research indicating adverse psychosocial events as responsible for the subsequent development of a depressive condition in participants (Bonde, 2008).

The aim of Analysis 5B was therefore to examine causal attribution nuances of burnout and depressive states to elucidate points of contextual overlap and distinction. Respecting both sides of the context-specificity argument, participants with self-reported burnout or a clinically diagnosed depression could participate irrespective of their employment status and could select as many stressors from a list of work and non-work factors that they perceived as responsible for triggering their condition, with analyses of such data anticipated to assist in clarifying contextual similarities and differences between the two states.

As detailed in Chapter 3, inconsistent findings of past studies evaluating the burnout-depression overlap may reflect such studies having mostly viewed depression as an entity, rather than acknowledging depressive subtypes and their potentially variable relevance. The risk then is of posing a simple query (i.e., are burnout and depression synonymous or not?) as against evaluating whether burnout might approximate to some depressive sub-type and be distinct from another sub-type. The influence of the principal depressive subtypes (i.e.,

melancholic and non-melancholic depression) on the degree of symptom and causal overlap between burnout and depression was therefore evaluated in Analysis 5A and Analysis 5B. As noted in Chapter 3, melancholic depression is characterised by symptoms such as a distinctly low and non-reactive mood, anhedonia and psychomotor disturbance. It has generally been modelled as a biologically weighted condition, with a strong genetic loading and responding preferentially to antidepressant medications as against psychotherapies. Its earlier label of ‘endogenous depression’ reflected the view that melancholic episodes emerged from intrinsic genetic and biological factors rather than from external causes. As such, melancholic depressive episodes can seemingly occur ‘out of the blue’, or if they are triggered by an external stressor, the severity and duration of the resulting melancholic episode are disproportionate to the antecedent event. In contrast, non-melancholic depression has previously garnered the monikers of ‘neurotic’ or ‘reactive’ depression, reflecting views that it usually occurs in individuals who (respectively) have a personality predisposition, and/or experience a distinctive psychosocial precipitant impacting directly on the individual’s self-esteem and with the depressed mood improving or worsening depending on environmental circumstances. With burnout generally accepted as resulting in reaction to an (albeit usually work-related) environmental stressor, like non-melancholic depression, rather than being ‘endogenous’ or biologically underpinned like melancholic depression, it is hypothesised here that burnout’s degree of overlap in both symptoms and causal factors would be greater with non-melancholic rather than with melancholic depression.

10.2. Methods.

10.2.1. Ethical considerations.

Ethical approval for the research was given by the UNSW Human Research Ethics Committee (UNSW HREC #HC190213). Individuals were required to provide consent via an online participant information and consent form before they could participate.

10.2.3. Participants.

Two groups of participants were compared: a burnout group and a depression group. The latter group was divided into melancholic and non-melancholic subgroups for further analyses.

Burnout group.

The burnout group comprised the participants from Study 2 (Chapter 6). To reiterate, individuals in this group could participate if they were fluent in written and spoken English, between the ages of 18 and 65, and self-identified as currently experiencing ‘burnout’. Participants were recruited through advertisements posted on the Black Dog Institute website.

Depression group.

Participants in the depression group were those described in Study 3. They were patients of psychiatrists or clinical psychologists from four private practices in Sydney, Australia. All had been diagnosed with a mood disorder and had experienced major depressive episodes while their depressive sub-type diagnosis (i.e., melancholic or non-melancholic depression) was assigned by their diagnosing clinician. A melancholic diagnosis was given to those patients who experienced prototypic features such as consummatory anhedonia, psychomotor disturbance, a non-reactive mood, impaired concentration and anergia, as well as reporting episodes with no antecedent stressor or ones that were more severe and longer lasting than anticipated from the nature of any antecedent stressor. A

diagnosis of non-melancholic depression was assigned to those patients not meeting criteria for melancholic depression, and who therefore had a reactive mood, absent or less severe consummatory anhedonia, no psychomotor disturbance, and/or depressive episodes that were considered reactive to an antecedent stressor and with its severity consistent with the trigger. Clinicians' diagnoses were largely respected in recruiting depressed patients and allocating such participants to the melancholic and non-melancholic depression groups. However, any participant in the depression group who reported experiencing less than five of the necessary DSM-5 Criterion A symptoms for a major depressive episode (MDE) was excluded from further analyses (see Study 3) to weight 'depression' to a clinical status level.

Importantly, as the objective was to compare those with a clinical depressive condition against those with a self-identified burnout, any eligible patients with clinically diagnosed depression were ineligible to participate if (in the absence of diagnostic criteria for burnout) they reported or were judged by their clinician as likely to also be experiencing burnout.

10.2.4. Procedure.

Participation for subjects in both groups involved anonymously completing online questionnaires administered via the Qualtrics website.

Burnout group questionnaire.

The questionnaire completed by those in the burnout group was that described in relation to Study 2. Of relevance to the current study, the first section contained a list of 137 potential symptoms of burnout, and participants indicated on a 4-point scale the degree to which each symptom was present during their burnout state. This list contained 37 items adapted from validated depression measures (see Study 2). The second section included a list of 45 items that described potential triggers of a burnout state, and participants were asked to

nominate any items from the list that they perceived as having caused their burnout (coded as 1 = yes, 0 = no), and could therefore nominate more than one trigger. The items included several work factors that have been shown to contribute to burnout (Leiter & Maslach, 2003; Sharma & Cooper, 2016), and several items covering depressogenic causal factors (e.g., a relationship breakdown). As described previously, some items relating to work stressors were repeated but couched so to represent those work stressors outside of a formal work environment (e.g., both “I was overloaded at work” and “I was overloaded in my home-care duties” were included). Participants were also allowed to indicate that their burnout had no identifiable cause (“There was no trigger”) or that they experienced some other causal event not included in the list. Participants were also asked in this section if they had ever been diagnosed with depression or any other mental health condition from a mental health professional.

Depression group questionnaire.

As described in Chapter 8 (Study 3), the depression group (both those in the melancholic and non-melancholic subgroups) completed an identical questionnaire to the burnout group, however the word “burnout” was replaced with the word “depression” or “depressive episodes” throughout the questionnaire. The contents of the questionnaire were the same for all participants in the depression group regardless of their depressive sub-type, however the completed questionnaires were separated into subgroups based on whether the completer had a melancholic or non-melancholic depression diagnosis.

10.2.3 Statistical considerations.

Sample size.

As described in relation to Study 2 there were 622 participants in the burnout group. Based on practical limits as to the number of patients that could be recruited through the

participating private practices, a target of 100 clinically depressed patients was set (with 50 having a melancholic depressive condition and 50 having a non-melancholic depressive condition), with a compromise power analysis (Erdfelder, 1984, as cited in Erdfelder et al., 1996) conducted using the statistical package G*Power (Faul et al., 2007) indicating an analysis using 622 burnout participants and 100 depression participants could detect mean differences (the primary outcomes of interest) equal to an effect size of 0.3 or greater with 80% power at $p = 0.05$ level.

10.3. Analysis 5A: Assessing for symptom overlap between burnout and depression

10.3.1. Statistical analyses.

Comparison Sets

The main objective of Analysis 5A was to assess for differences in scale scores on the SBM (derived in Study 2) between the burnout and depression groups. Scores on the items included in the measure were therefore summed so that each participant had a total score, as well as a score for each of the five specific factors: a cognitive dysfunction score, a social withdrawal score, an exhaustion score, a reduced work performance score, and an empathy loss score. In examining differences, four sets of comparisons were undertaken, and are shown in Table 10.1. Comparison Set I assessed for differences between all those in the burnout group (BO-all) and all those in the clinically-diagnosed depression group (DEP-all). In Comparison Set II, the depression group was split into subgroups based on whether participants had been diagnosed with a melancholic (DEP-mel) or non-melancholic (DEP-nonmel) depression, and then compared against the BO-all group.

As considered in Study 3, there were members of the burnout group with low total scores on the SBM, indicating that they may have potentially lacked syndromal status. Thus,

as for Study 3, those scoring less than 40 on the SBM in the BO-all group were excluded for Comparison Set III and Comparison Set IV, resulting in a BO-reduced group, with members then compared against the DEP-all group (Comparison Set III), as well as the DEP-mel and DEP-nonmel groups (Comparison Set IV).

Finally, as considered in Study 2 and Study 3, a risk of relying on self-identification of burnout by participants in the burnout group is that a percentage may have had a depressive condition (or another mental health condition) that influenced their symptom reporting. To somewhat reduce this possibility, the analyses conducted for Comparison Sets I through to IV were repeated after adjusting for two covariates: (i) a previous depression diagnosis and (ii) a previous diagnosis of any other mental health condition.

Table 10.1. Groups compared in Analysis 5A.

Comparison set name	Groups being compared
Comparison Set I	BO-all versus DEP-all
Comparison Set II	BO-all versus DEP-mel versus DEP-nonmel
Comparison Set III	BO-reduced versus DEP-all
Comparison Set IV	BO-reduced versus DEP-mel versus DEP-nonmel

Scores on 34-item burnout measure.

The assumptions of homogenous variance and data normality that must be met for use of traditional analysis of variance (ANOVA) and multivariate analysis of variance (MANOVA) are commonly violated in practice (Glass et al., 1972), and are exacerbated when sample sizes are unequal, as was the case in the current study. Shapiro-Wilks normality tests of standardised residuals and Levene's test of homoscedasticity confirmed such assumptions had been violated for some of the dependent variables here. Welch's ANOVA, which does not assume homoscedasticity and is relatively robust to nonnormality for unequal sample sizes (Delacre et al., 2017; Delacre et al., 2019), was therefore used to compare mean

scores in cases where univariate data were being examined, such as when comparing total scores on the SBM (with a Bonferroni adjustment applied to adjust for multiple comparisons where necessary). The Games-Howell procedure, which also does not assume homoscedasticity, was used for post-hoc multiple comparisons.

Coefficient ω and hierarchical coefficient ω (ω_H) indices calculated in Study 2 suggested that the symptom model of burnout derived would be adequately measured through the use of a single total score of the 34 SBM items. However, to examine for any nuanced symptom differences between the burnout and depression participants, scale scores for each specific factor of the 34-item bifactor solution were calculated for each participant and compared in the current study, as described earlier. To analyse these multivariate data, MANOVAs were performed, with the Pillai's Trace statistic chosen to indicate significance as it is relatively robust to violations of MANOVA assumptions (Field, 2009; Queen et al., 2002). Following any significant Pillai's trace, Welch's ANOVA were performed (with a Bonferroni adjustment applied to adjust for multiple comparisons where necessary) to determine which group differences were contributing to the significant MANOVA. Analyses were conducted in SPSS Version 26 (IBM Corp., 2019).

Receiver operating characteristic (ROC) analyses.

To determine whether and to what degree total scale scores and specific factor scale scores on the SBM discriminated between those with self-diagnosed burnout and those with clinician-diagnosed depression, receiver operating characteristic (ROC) analyses were undertaken. The area under the curve (AUC) generated for a ROC analysis is an indicator of discriminatory capacity, where an AUC of 0.5 generally suggests no discrimination, 0.7 to 0.8 is considered acceptable, 0.8 to 0.9 is considered excellent, and 0.9 or greater is considered outstanding (Hosmer & Lemeshow, 2000). ROC analyses were undertaken

comparing the BO-all and DEP-all participants, the BO-all and the DEP-mel participants, and the BO-all versus DEP-nonmel participants.

Depression items

As stated in Chapter 7 (Study 2), there were 37 items collated from several depression measures that were assessed for inclusion in deriving the SBM. While only 7 of these were included in the final measure, secondary analyses were undertaken to examine for differences in odds of reporting each of the 37 depression items between the burnout and depression groups. To achieve this objective, for each of the 37 depression symptom items included in the initial 137-item questionnaire (Tavella et al., 2021), the odds of responding “moderately” or “distinctly” versus “not at all” or “slightly” were compared across three comparisons represented by the contrasts: (i) the BO-all group versus the combined depression groups (i.e., the DEP-all group), (ii) the BO-all group versus the DEP-mel group, and (iii) the BO-all group versus the DEP-nonmel group. To test if the ratio of these odds differed from 1, a log-linear model (Hall and Bird, 1986) was estimated in SPSS GENLOG (Version 26; IBM Corp., 2019). Within each comparison set, the *p* values associated with the odds ratio for each depression item were adjusted by calculating corresponding Benjamini-Hochberg critical values so to reduce the false discovery rate (FDR; Benjamini & Hochberg, 1995).

The rank order of the odds ratios (from largest to smallest) was calculated by examining the relative size of the absolute values of log-odds ratio of each odds ratio, with a larger log-odds indicative of greater discriminatory capacity. Subsequently, a series of ROC analyses were undertaken to examine which *combinations* of depression items were best at discriminating between the comparison groups, the nuances of which are described in more detail in the following Results section.

10.3.2. Results.

Demographics.

As noted earlier, 622 completed questionnaires were collected for the burnout group, while 92 patients with clinically diagnosed depression (58 with melancholic depression, 34 with non-melancholic depression) completed the depression questionnaire. Two participants in the melancholic depression subgroup did not affirm five of the necessary DSM-5 Criterion A MDE symptoms and were therefore excluded. Due to an issue with the questionnaire platform 56 of the 622 responses from the burnout group had missing data for the second half of the questionnaire, and therefore only 566 participants in the burnout group answered the question asking if they had been previously diagnosed with depression (58.8% answered “yes” and 41.2% answered “no”) or another mental health condition (36.7% answered “yes” and 62.4% answered “no”) by a doctor or mental health professional.

Demographic and other variables were compared between the BO-all and DEP-all group and are summarised in Table 10.2. There was no significant difference in mean age, and participants in both groups were equally likely to be Australian. A significantly greater proportion of the BO-all group was female compared to the DEP-all group. In addition, greater proportions of the BO-all group were university educated and in full- or part-time employment, while a greater proportion of the DEP-all group reported having been previously diagnosed with a mental health condition (other than depression).

Being an education professional (e.g., teacher, lecturer) was reported equally as the most common occupation for both groups. Other commonly nominated occupations were specialty managers (e.g., advertising manager, sales manager; 10.0%), public servants (8.0%), community/welfare workers (e.g., social workers; 7.2%), and midwives/nurses (5.6%) for the BO-all group; and technology professional (7.8%), clerical or administrative

worker (7.8%), small-business owner (6.7%), and financial services professional (6.7%) for the DEP-all group.

Table 10.2. Comparison of response rates to demographic and other variables for Analysis 5A.

	BO-all group (<i>n</i> = 622)	DEP-all group (<i>n</i> = 90)	Test statistic	<i>p</i> value
Mean age	41.47 (<i>SD</i> = 11.23)	40.27 (<i>SD</i> = 14.41)	0.76	0.44
Gender	78.42% female	60.67% female	13.52	< 0.001
Ethnicity	73.47% Australian	70.00% Australian	0.48	0.49
Education level	77.49% university degree	66.67% university degree	5.07	0.02
Employment status	86.01% employed full- or part-time	65.56% employed full- or part-time	23.80	< 0.001
Most frequently nominated occupation	10.61% education professional	10.00% education professional	0.03	0.86
Previous diagnosis of mental health condition other than depression	37.63% yes	70.00% yes	33.38	< 0.001

Note: Test statistic for age was a Student's *t* value (*df* = 710), all other test statistics were χ^2 values (*df* = 1). Test was deemed significant if *p* < 0.05. Rates of a previous diagnosis of depression was not compared between the two groups as 100 percent of the DEP-all group had a depression diagnosis by definition.

Scores on the SBM.

Mean total and subscale SBM scores are displayed in Table 10.3 and significant differences are summarised in Figures 10.1 through Figure 10.4.

Table 10.3. Mean (and standard deviation) total and subscale scale scores on the SBM for all groups.

Subscale of SBM	Mean (standard deviation)				
	BO-all (n = 622)	BO-reduced (n = 596)	DEP-all (n = 90)	DEP-mel (n = 56)	DEP-nonmel (n = 34)
Total score	73.83 (17.14)	75.80 (14.46)	76.04 (13.85)	75.43 (14.01)	77.06 (13.74)
Cognitive dysfunction	15.68 (4.65)	16.12 (4.18)	16.33 (4.56)	16.18 (4.64)	16.59 (4.48)
Exhaustion	15.54 (3.30)	15.90 (2.76)	15.78 (2.94)	15.73 (2.64)	15.85 (3.42)
Reduced work performance	12.35 (4.23)	12.70 (3.92)	12.40 (4.21)	12.11 (4.27)	12.88 (4.12)
Social withdrawal	7.76 (3.13)	7.99 (2.98)	9.61 (2.43)	9.91 (1.99)	9.12 (2.97)
Empathy loss	6.48 (3.08)	6.63 (3.03)	4.68 (3.42)	4.61 (3.44)	4.79 (3.44)

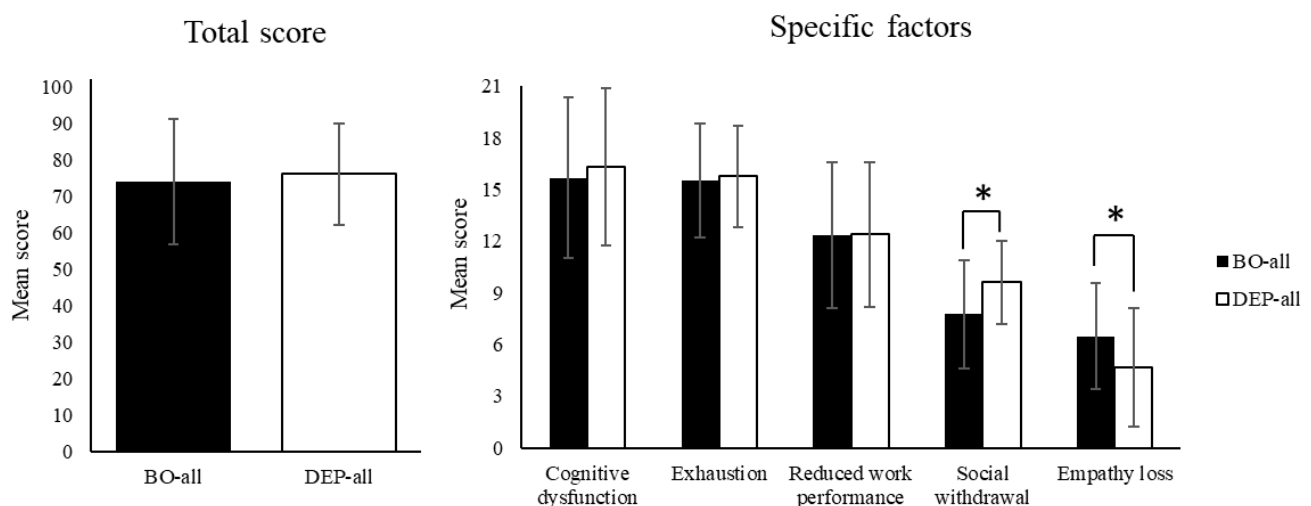
Note: SBM = Sydney Burnout Measure. BO-all group included all participants with self-identified burnout, BO-reduced group included participants from BO-all group who has a total score greater than 40 on the SBM, DEP-all included all participants with a clinically-diagnosed depression, DEP-mel group included only those DEP-all participants with a diagnosis of the melancholic depression subtype, DEP-nonmel group included only those DEP-all participants with a diagnosis of the non-melancholic depression subtype.

Comparison Set I. The results of Comparison Set I are displayed in Figure 10.1.

There was no significant difference between the BO-all group and the DEP-all group in total SBM scores (Welch's $F_{(1, 131.84)} = 1.88, p = 0.17$). There was also no significant difference

between the BO-all group and the DEP-all group in total scores when including previous diagnosis of depression or any other mental health condition as covariates ($F_{(1,652)} = 0.16, p = 0.69$). The overall MANOVA, which examined for differences between groups on the five specific factor scale scores (alone or in combination), was significant for the BO-all group versus the DEP-all group comparison (Pillai's Trace = 0.11, $F_{(5,706)} = 18.09, p < 0.001$), and remained significant after including the two covariates in the model (Pillai's Trace = 0.09, $p < 0.001$). Welch's ANOVA tests were significant (at $p = 0.01$ level after Bonferroni adjustment) for the social withdrawal and empathy loss specific factors, such that the BO-all social withdrawal mean was significantly lower than that of the mean for the DEP-all group (Welch's $F_{(1, 135.96)} = 42.23, p < 0.001$), while the BO-all empathy loss mean was significantly higher than that of the DEP-all group (Welch's $F_{(1, 110.97)} = 22.41, p < 0.001$). Both differences remained significant ($p < 0.01$) when adjusting for the covariates.

Figure 10.1. Mean SBM total and specific factor scale score comparisons for Comparison Set I.



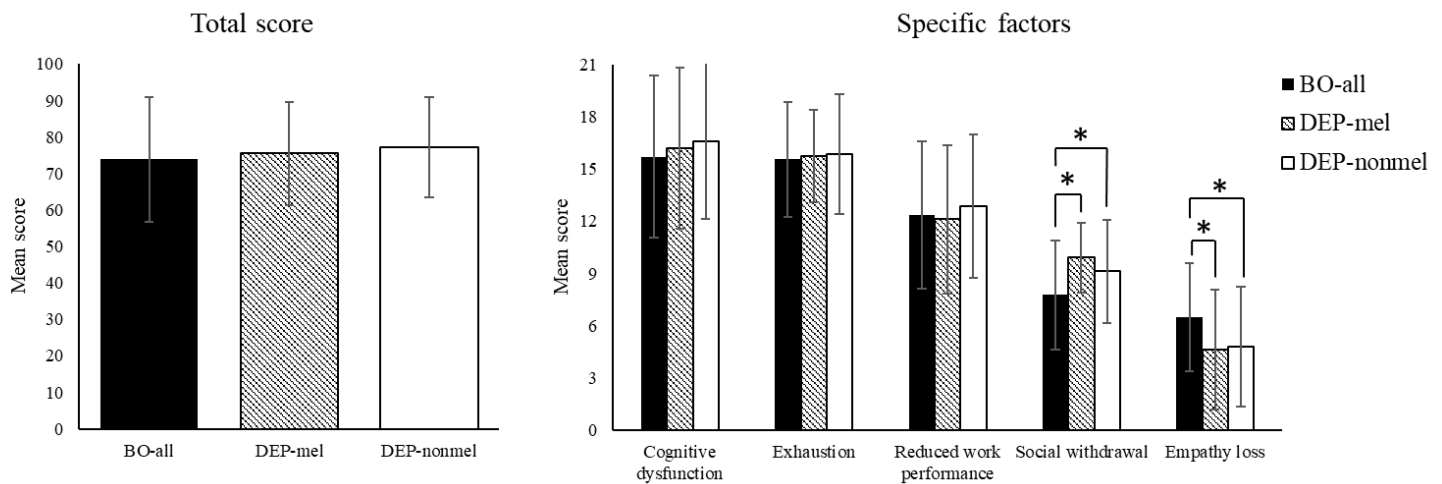
Note: * indicates significance.

Comparison Set II. The results of Comparison Set II are displayed in Figure 10.2.

There were no significant differences between the BO-all group, the DEP-mel group, and the DEP-nonmel group in total SBM scores (Welch's $F_{(2, 65.58)} = 1.08, p = 0.35$). There was also

no significant difference in total scores when including previous diagnosis of depression or any other mental health condition as covariates ($F_{(2, 651)} = 0.15, p = 0.86$). The MANOVA for the specific factor scale scores was significant (Pillai's Trace = 0.12, $F_{(10, 1412)} = 8.91, p < 0.001$), and remained significant after including the two covariates in the model (Pillai's Trace = 0.10, $p < 0.001$). Welch's ANOVA tests were significant (at $p = 0.01$ level after Bonferroni adjustment) for the social withdrawal (Welch's $F_{(2, 66.64)} = 28.09, p < 0.001$), and empathy loss (Welch's $F_{(2, 60.78)} = 11.01, p < 0.001$) specific factors. Both differences remained significant ($p < 0.01$) when adjusting for the covariates. Games-Howell post-hoc comparisons indicated that the social withdrawal mean was significantly lower for the BO-all group than for the DEP-mel group ($p < 0.001$) and DEP-nonmel groups ($p = 0.04$), while the BO-all empathy loss mean was significantly higher than those of the DEP-mel group ($p = 0.001$) and DEP-nonmel group ($p = 0.02$).

Figure 10.2. Mean SBM total and specific factor scale score comparisons for Comparison Set II.



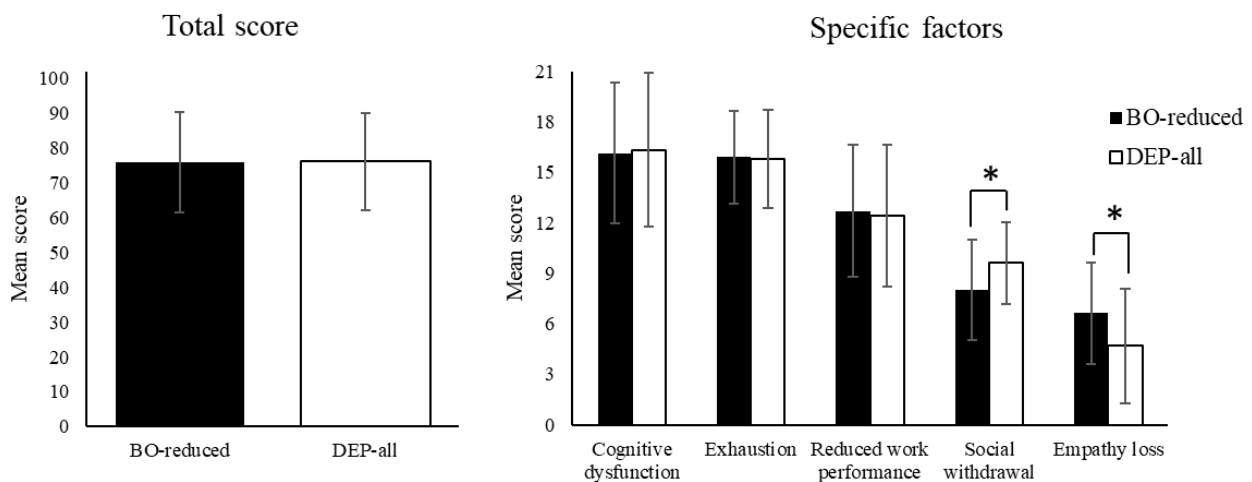
Note: * indicates significance.

Comparison Set III. The results of Comparison Set III are displayed in Figure 10.3.

There was no significant difference between the BO-reduced group and the DEP-all group in total SBM scores (Welch's $F_{(1, 120.21)} = 0.02, p = 0.88$). There was also no significant

difference in total scores when including previous diagnosis of depression or any other mental health condition as covariates ($F_{(1, 628)} = 1.54, p = 0.22$). The MANOVA for the specific factor scale scores was significant (Pillai's Trace = 0.12, $F_{(5, 680)} = 17.68, p < 0.001$), and remained significant after including the two covariates in the model (Pillai's Trace = 0.10, $p < 0.001$). Welch's ANOVA tests were significant (at $p = 0.01$ level after Bonferroni adjustment) for the social withdrawal and empathy loss specific factors, such that the BO-all social withdrawal mean was significantly lower than the mean of the DEP-all group (Welch's $F_{(1, 133.03)} = 32.84, p < 0.001$), while the BO-all empathy loss mean was significantly higher than the mean of the DEP-all group (Welch's $F_{(1, 111.08)} = 26.37, p < 0.001$). Both differences remained significant ($p < 0.01$) when adjusting for the covariates.

Figure 10.3. Mean SBM total and specific factor scale score comparisons for Comparison Set III.

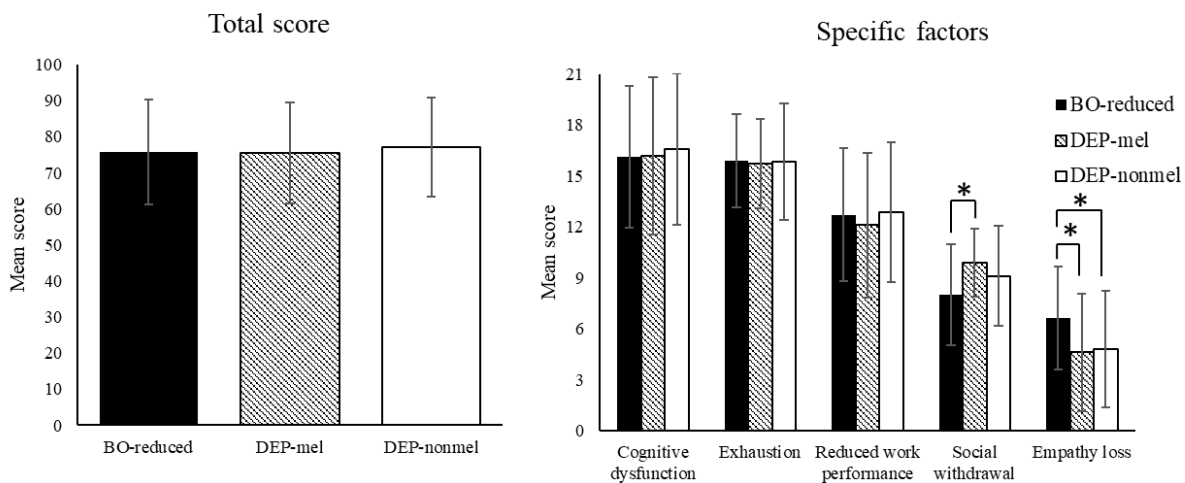


Note: * indicates significance.

Comparison Set IV. The results of Comparison Set IV are displayed in Figure 10.4. There were no significant differences between the BO-reduced group, the DEP-mel group, and the DEP-nonmel group in total SBM scores (Welch's $F_{(2, 63.01)} = 0.16, p = 0.85$). There was also no significant difference in total scores when including previous diagnosis of depression or any other mental health condition as covariates ($F_{(2, 627)} = 0.86, p = 0.42$). The

MANOVA for the specific factor scale scores was significant (Pillai's Trace = 0.12, $F_{(10, 1360)} = 8.71$, $p < 0.001$), and remained significant after including the two covariates in the model (Pillai's Trace = 0.10, $p < 0.001$). Welch's ANOVA tests were significant (at $p = 0.01$ level after Bonferroni adjustment) for the social withdrawal (Welch's $F_{(2, 66.05)} = 22.47$, $p < 0.001$), and empathy loss (Welch's $F_{(2, 60.80)} = 12.95$, $p < 0.001$) specific factors. Both differences remained significant ($p < 0.01$) when adjusting for the covariates. Games-Howell post-hoc comparisons indicated that the BO-reduced social withdrawal mean was significantly lower than the mean of the DEP-mel group ($p < 0.001$) but not the mean of the DEP-nonmel group ($p = 0.09$), while the BO-reduced empathy loss mean was significantly higher than the means of the DEP-mel group ($p < 0.001$) and DEP-nonmel groups ($p = 0.01$).

Figure 10.4. Mean SBM total and specific factor scale score comparisons for Comparison Set IV.



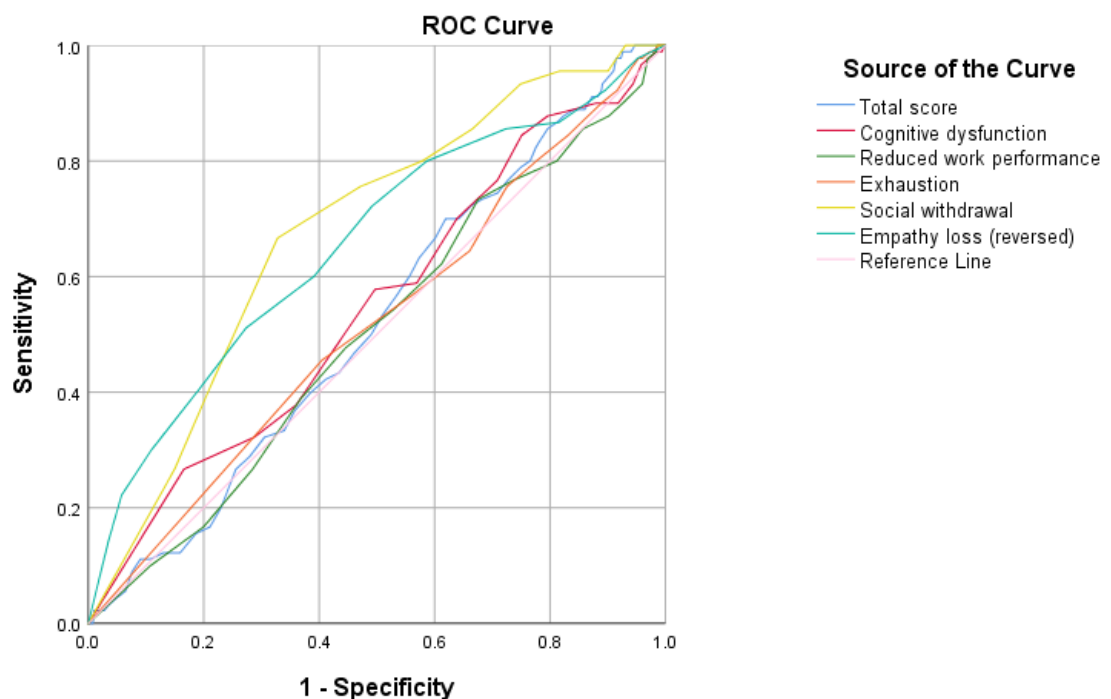
Note: * indicates significance.

ROC analyses.

ROC analyses of the total and specific factor scale scores were conducted for the (i) BO-all versus DEP-all comparison, (ii) BO-all versus DEP-mel comparison, and (iii) BO-all versus DEP-nonmel comparison. ROC curves computed the capacity of the total and specific factor scale scores to identify positive cases of depression (as opposed to burnout). As the

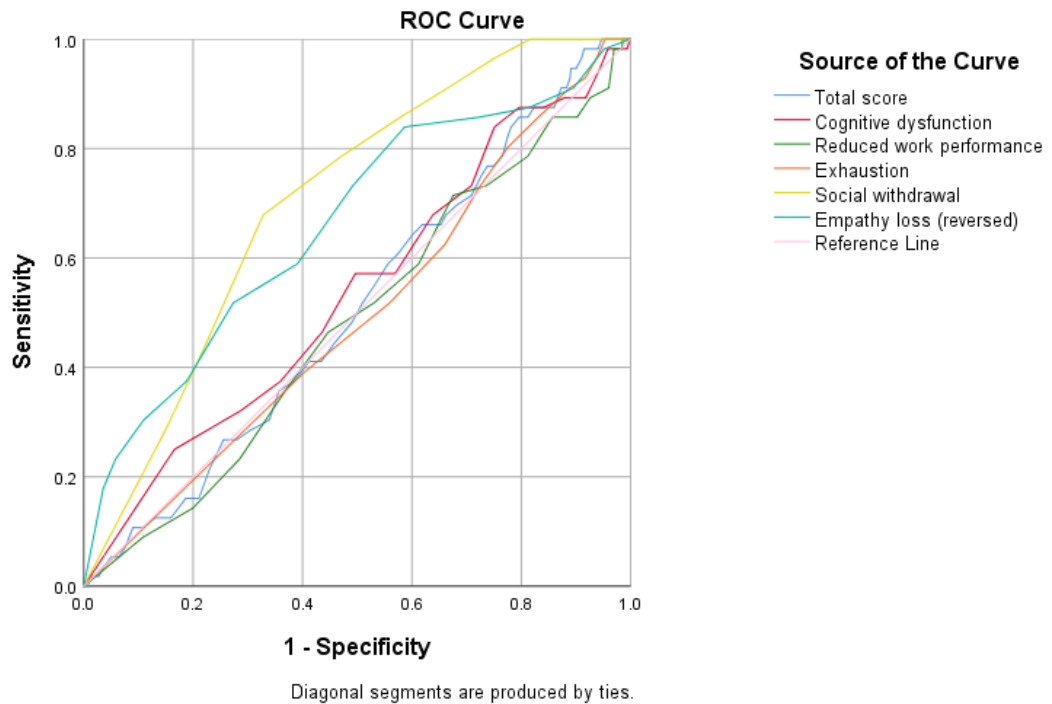
BO-all group had a higher mean scale score on the empathy loss specific factor than each of the depression groups (i.e., DEP-all, DEP-mel and DEP-nonmel groups, respectively), scores on this specific factor were reversed for the ROC analyses. ROC analyses of total and specific factor scale scores for the BO-all versus DEP-all comparison all returned AUCs of less than 0.7 (AUCs range = 0.51 - 0.68), indicating poor discrimination (Figure 10.5). For the BO-all versus DEP-mel comparison, the ROC curve for the social withdrawal specific factor scale score had an AUC of 0.71, which is indicative of acceptable discrimination, while the ROC curve for all other total and specific factor scale scores were less than 0.7 (AUC range = 0.49 - 0.66), indicating poor discrimination (Figure 10.6). ROC analyses of total and specific factor scale scores for the BO-all versus DEP-nonmel comparison all returned AUCs of less than 0.7 (AUC range = 0.54 - 0.65), indicating poor discrimination (Figure 10.7).

Figure 10.5. ROC curves for SBM total and specific factor scale scores for the BO-all versus DEP-all comparison.



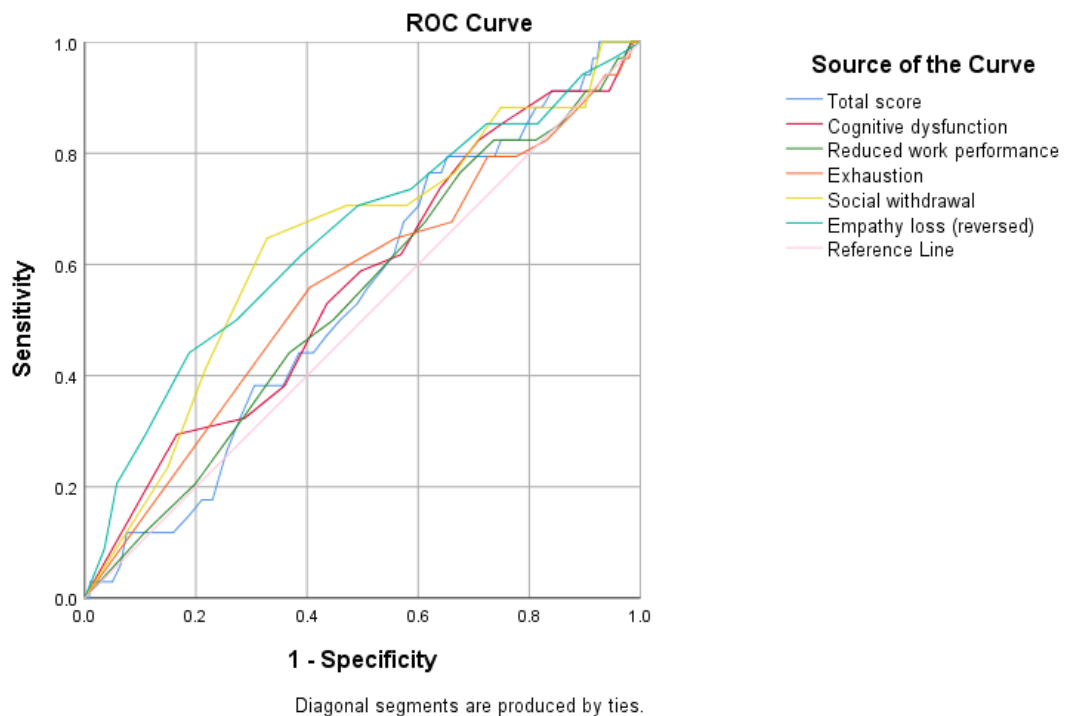
Note: Diagonal reference line indicates discrimination at chance level. Greater deviation of a ROC curve from the reference line indicates greater discriminatory capacity.

Figure 10.6. ROC curves for SBM total and specific factor scale scores for the BO-all versus DEP-mel comparison.



Note: Diagonal reference line indicates discrimination at chance level. Greater deviation of a ROC curve from the reference line indicates greater discriminatory capacity.

Figure 10.7. ROC curves for SBM total and specific factor scale scores for the BO-all versus DEP-nonmel comparison.



Note: Diagonal reference line indicates discrimination at chance level. Greater deviation of a ROC curve from the reference line indicates greater discriminatory capacity.

Depression items.

The proportion of each group responding “moderately” or “distinctly” to each of the 37 depression items included in the original questionnaire are reported in Table 10.4. The generalised odds and log-odds ratios for each of the items are displayed in Table 10.5 and are listed in order from largest to smallest in terms of absolute value of the log-odds ratio for the BO-all versus DEP-all comparison.

Table 10.4. Proportion of group responding “moderately” or “distinctly” to each depression item for the BO-all, DEP-all, DEP-mel and DEP-nonmel groups.

Depression items	Proportion of group responding “moderately” or “distinctly”			
	BO-all	DEP-all	DEP- mel	DEP- nonmel
I experience heavy or “leaden” feelings in my arms or legs	0.55	0.49	0.45	0.56
I have recurrent thoughts of death	0.39	0.66	0.64	0.68
I have little interest or pleasure in most activities	0.68	0.96	0.95	0.97
I wake in the middle of the night for a distinct period	0.69	0.54	0.50	0.62
I cannot concentrate or register new information because of “foggy” thinking	0.79	0.79	0.75	0.85
I feel slowed down mentally (e.g., hard to find words, slowed thoughts)	0.83	0.86	0.88	0.82
I feel slowed down physically (e.g., feeling like I am walking through sand)	0.74	0.77	0.75	0.79
I am distinctly more irritable	0.86	0.81	0.75	0.91
I feel quite worthless and like a failure	0.69	0.83	0.79	0.91
I lack motivation	0.86	0.96	0.98	0.91
I feel that I deserve to be punished	0.25	0.37	0.39	0.32
I experience a loss of energy (making it hard to get going in the morning)	0.91	0.92	0.95	0.88
I feel distinctly guilty	0.58	0.66	0.66	0.65
My self-esteem and self-worth are distinctly less	0.72	0.89	0.88	0.91
I become quite indecisive	0.72	0.82	0.80	0.85
My appetite is decreased	0.33	0.40	0.43	0.35
I gain weight	0.60	0.48	0.48	0.47
I cannot concentrate because of lots of worrying and racing thoughts	0.71	0.81	0.79	0.85
I cry more	0.59	0.67	0.63	0.74

I have trouble and/or a distinct delay in getting to sleep	0.60	0.61	0.54	0.74
I feel fatigued	0.95	0.94	0.96	0.91
I wake very early in the morning and cannot get back to sleep	0.55	0.40	0.36	0.47
I feel quite depressed	0.73	0.97	0.98	0.94
I feel agitated (i.e., unable to settle and sit still)	0.72	0.66	0.61	0.74
I cannot be cheered up by things or people that would normally give me pleasure	0.67	0.83	0.82	0.85
I start feeling more self-critical and hard on myself	0.83	0.89	0.89	0.88
I feel sad, empty and hopeless	0.75	0.98	0.98	0.97
I have trouble getting started with simple everyday tasks	0.71	0.92	0.95	0.88
I cannot look forward to things that would normally give me pleasure	0.67	0.89	0.91	0.85
I have trouble getting off to sleep	0.61	0.63	0.59	0.71
My mood and energy are lower in the mornings	0.73	0.73	0.79	0.65
I feel angry	0.70	0.61	0.52	0.77
I lose weight (even though I am not dieting)	0.15	0.22	0.23	0.21
I sleep for much longer	0.44	0.68	0.73	0.59
I feel as though I have lost my core identity and/or essence	0.80	0.87	0.82	0.94
My appetite is increased and/or I have food cravings	0.58	0.50	0.43	0.62
I keep to myself	0.80	0.88	0.89	0.85

Note: BO-all group included all participants with self-identified burnout, DEP-all included all participants with a clinically-diagnosed depression, DEP-mel group included only those DEP-all participants with a diagnosis of the melancholic depression subtype, DEP-nonmel group included only those DEP-all participants with a diagnosis of the non-melancholic depression subtype.

Table 10.5. Odds and log-odds ratios for the reporting of the depression items, ranked in order from largest to smallest log-odds ratio for the BO-all versus DEP-all comparison.

Depression item	BO-all versus DEP-all				BO-all versus DEP-mel				BO-all versus DEP-nonmel			
	OR	Log(OR)	Confidence interval		OR	Log(OR)	Confidence interval		OR	Log(OR)	Confidence interval	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound			Lower Bound	Upper Bound
I feel sad, empty and hopeless	0.10*	-2.32	0.01	0.71	0.11*	-2.18	0.01	0.99	0.23	-1.48	0.01	3.55
I feel quite depressed	0.11*	-2.20	0.02	0.78	0.10*	-2.26	0.01	0.92	0.31	-1.17	0.02	4.40
I have little interest or pleasure in most activities	0.12*	-2.14	0.03	0.52	0.15	-1.93	0.02	1.09	0.14	-1.95	0.01	2.09
I cannot be cheered up by things or people that would normally give me pleasure	0.18	-1.70	0.03	1.15	0.24	-1.43	0.03	1.66	0.29	-1.25	0.02	3.34
I cannot look forward to things that would normally give me pleasure	0.20*	-1.60	0.05	0.80	0.17	-1.78	0.02	1.21	0.38	-0.96	0.06	2.63
I have trouble getting started with simple everyday tasks	0.23*	-1.48	0.07	0.70	0.16*	-1.84	0.03	0.83	0.35	-1.05	0.05	2.52
My self-esteem and self-worth are distinctly less	0.25*	-1.40	0.06	0.98	0.34	-1.08	0.08	1.51	0.25	-1.37	0.02	3.16
I have recurrent thoughts of death	0.33*	-1.10	0.18	0.61	0.36*	-1.03	0.17	0.77	0.27*	-1.31	0.07	0.99
I feel quite worthless and like a failure	0.38	-0.97	0.13	1.07	0.53	-0.63	0.17	1.65	0.25	-1.39	0.02	3.17
I lack motivation	0.40	-0.92	0.09	1.85	0.29	-1.24	0.03	2.60	0.96	-0.04	0.11	8.26

I sleep for much longer	0.40*	-0.92	0.21	0.77	0.29*	-1.25	0.12	0.71	0.66	-0.42	0.18	2.39
I become quite indecisive	0.50	-0.69	0.21	1.22	0.65	-0.44	0.24	1.74	0.33	-1.12	0.03	3.78
I wake in the middle of the night for a distinct period	1.93*	0.66	1.07	3.46	2.30*	0.83	1.09	4.86	1.42	0.35	0.44	4.60
I feel angry	1.75	0.56	0.95	3.21	2.68*	0.98	1.26	5.70	0.77	-0.27	0.17	3.38
I wake very early in the morning and cannot get back to sleep	1.75	0.56	0.95	3.19	2.05	0.72	0.95	4.44	1.40	0.34	0.39	5.01
I feel as though I have lost my core identity and/or essence	0.58	-0.55	0.23	1.46	0.84	-0.17	0.31	2.33	0.31	-1.18	0.02	4.01
I start feeling more self-critical and hard on myself	0.60	-0.51	0.20	1.76	0.64	-0.44	0.19	2.20	0.64	-0.45	0.05	7.96
I gain weight	1.64	0.50	0.89	3.02	1.47	0.39	0.68	3.20	2.08	0.73	0.56	7.71
I keep to myself	0.62	-0.47	0.21	1.83	0.53	-0.63	0.12	2.45	0.76	-0.27	0.11	5.36
I cannot concentrate because of lots of worrying and racing thoughts	0.63	-0.46	0.30	1.33	0.73	-0.31	0.29	1.83	0.49	-0.72	0.10	2.43
I lose weight (even though I am not dieting)	0.65	-0.43	0.31	1.37	0.64	-0.44	0.25	1.64	0.70	-0.35	0.16	3.16
I feel that I deserve to be punished	0.65	-0.43	0.36	1.19	0.58	-0.55	0.27	1.24	0.80	-0.23	0.24	2.68
I feel agitated (i.e., unable to settle and sit still)	1.49	0.40	0.81	2.74	1.84	0.61	0.86	3.91	0.99	-0.01	0.26	3.77

My appetite is decreased	0.72	-0.33	0.40	1.29	0.66	-0.42	0.31	1.41	0.93	-0.08	0.27	3.19
I feel distinctly guilty	0.74	-0.30	0.41	1.34	0.72	-0.32	0.33	1.59	0.79	-0.24	0.24	2.57
My appetite is increased and/or I have food cravings	1.35	0.30	0.74	2.46	1.88	0.63	0.86	4.10	0.73	-0.31	0.20	2.72
I am distinctly more irritable	1.30	0.27	0.52	3.28	1.96	0.67	0.72	5.35	0.64	-0.45	0.05	8.00
I cry more	0.80	-0.22	0.43	1.49	0.91	-0.10	0.42	1.96	0.63	-0.45	0.16	2.48
I experience heavy or “leaden” feelings in my arms or legs	1.23	0.21	0.69	2.18	1.40	0.33	0.66	2.95	0.96	-0.04	0.31	3.00
My mood and energy are lower in the mornings	1.15	0.14	0.59	2.25	0.91	-0.10	0.36	2.31	1.50	0.41	0.43	5.29
I feel slowed down mentally (e.g., hard to find words, slowed thoughts)	1.15	0.14	0.50	2.65	0.94	-0.06	0.31	2.89	1.46	0.38	0.29	7.27
I cannot concentrate or register new information because of “foggy” thinking	1.12	0.11	0.49	2.56	1.18	0.17	0.39	3.63	0.88	-0.13	0.17	4.49
I have trouble and/or a distinct delay in getting to sleep	1.09	0.08	0.59	2.01	1.61	0.48	0.72	3.62	0.57	-0.56	0.16	2.10
I experience a loss of energy (making it hard to get going in the morning)	0.92	-0.08	0.29	2.97	0.64	-0.45	0.12	3.46	1.44	0.37	0.19	11.13
I have trouble getting off to sleep	0.98	-0.02	0.53	1.82	1.10	0.10	0.51	2.35	0.84	-0.18	0.21	3.28

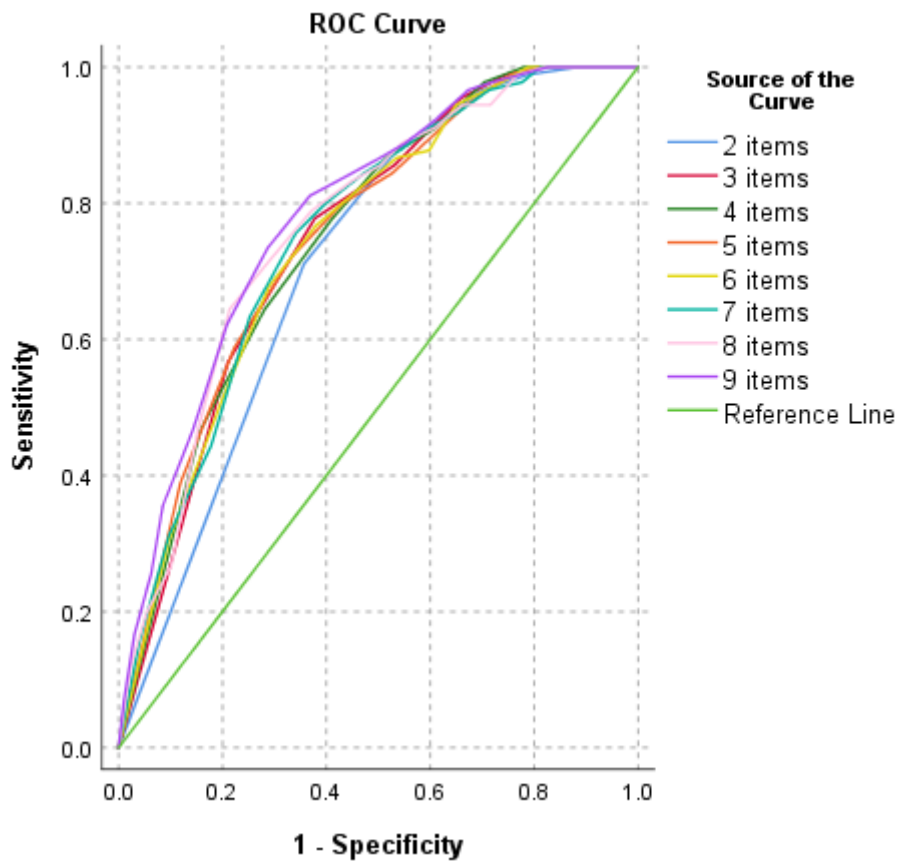
I feel slowed down physically (e.g., feeling like I am walking through sand)	0.98	-0.02	0.47	2.05	0.97	-0.03	0.36	2.59	0.94	-0.06	0.22	3.93
I feel fatigued	1.00	0.00	0.22	4.69	0.75	-0.29	0.11	5.35	1.87	0.63	0.14	25.65

Note: *OR* = odds ratio. $\text{Log}(OR)$ = Log-odds ratio. The odds ratio reported for each depression item is the ratio of the odds of responding “moderately” or “distinctly” versus “not at all” or “slightly” for the burnout group (i.e., BO-all group) against those odds for the relevant depression group (i.e., DEP-all, DEP-mel or DEP-nonmel group). The *p* values of each *OR* were adjusted to control the FDR at $q = 0.05$ level using the Benjamini-Hochberg method (Benjamini and Hochberg, 1995). Confidence intervals were subsequently constructed to reflect such adjustment (Benjamini and Yekutieli, 2005), such that the confidence level was set at 98.78% for the BO-all versus DEP-all comparison, 99.05% BO-all versus DEP-mel comparison, and 99.86% for the BO-nonmel versus DEP-all comparison. Odds ratios with confidence intervals that do not contain 1.00 are significant, and are indicated with *.

Odds ratios were significant for nine of the 37 depression items when comparing the BO-all group to the DEP-all group. The BO-all group had significantly lower odds of reporting items (as occurring “moderately” or “distinctly”) capturing depressed mood nuances (i.e., feeling sad, empty, hopeless and/or depressed), consummatory and anticipatory anhedonia (i.e., having little interest in activities and not looking forward to pleasurable activities), trouble getting started with everyday tasks, lowered self-worth and/or self-esteem, passive suicidal ideation (i.e., having recurrent thoughts of death), and oversleeping. The BO-all group had significantly greater odds of reporting middle insomnia (i.e., waking in the middle of the night).

Of those nine items with significant odds ratios, the item that had an odds ratio above unity (and thus was more likely to be reported as moderately or distinctly experienced by the DEP-all group) was reverse coded, and a new variable was computed to represent the total sum of scores on each of the nine items. As shown in Figure 10.8, a ROC analysis was undertaken with this new variable as the independent variable and group membership (i.e., BO-all or DEP-all) as the dependent variable, and with the AUC being quantified as 0.78, which is considered acceptable discrimination. The analysis was repeated for seven separate variables that represented the sum of the top eight most discriminating items (based on the relative size of the log-odds ratios), the sum of the top seven most discriminating items, and so on through to a variable representing the sum of the top two most discriminating items, with discrimination remaining as acceptable using these variables (AUC ranging from 0.72 to 0.77). Thus, acceptable discrimination between the BO-all and DEP-all groups was achieved when combining several items adapted from previous depression measures, with most of these items reflecting depressed mood nuances (as opposed to other symptoms of clinical depression such as appetite change and psychomotor disturbance).

Figure 10.8. ROC curves for variables representing the sum of scores on the depression items with significant log-odds ratios for the BO-all versus DEP-all comparison.

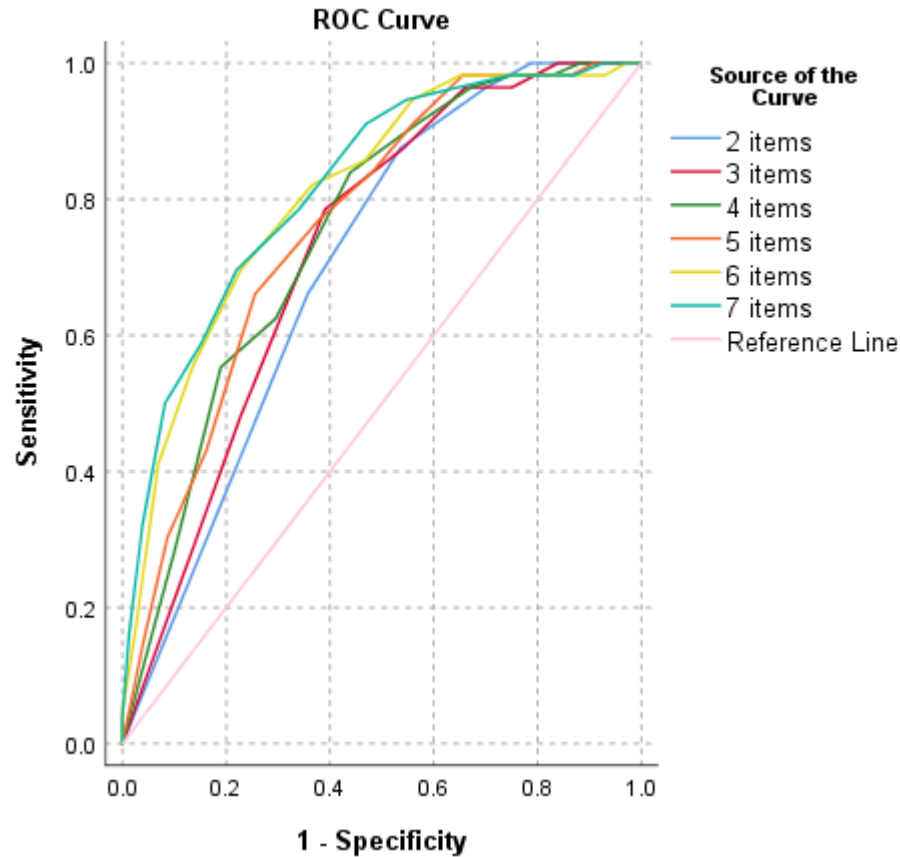


Note: 9 items = variable representing the sum of scores on the 9 depression items with significant log-odds ratios; 8 items = variable representing the sum of the top eight most discriminating depression items (based on the relative size of the log-odds ratios) of the nine items with significant log-odds ratios; 7 items = variable representing the sum of the top seven most discriminating depression items; 6 items = variable representing the sum of the top six most discriminating depression items; 5 items = variable representing the sum of the top five most discriminating depression items; 4 items = variable representing the sum of the top four most discriminating depression items; 3 items = variable representing the sum of the top three most discriminating depression items; 2 items = variable representing the sum of the top two most discriminating depression items. Diagonal reference line indicates discrimination at chance level. Greater deviation of a ROC curve from the reference line indicates greater discriminatory capacity.

Seven of the 37 odds ratios were significant when comparing the BO-all group to the DEP-mel group. The BO-all group had significantly lower odds of reporting items (as occurring “moderately” or “distinctly”) capturing depressed mood, trouble getting started with everyday tasks, passive suicidal ideation and oversleeping, and significantly greater odds of reporting middle insomnia and feeling angry.

Of the seven items with significant odds ratios, the two items that had odds ratios above unity (and thus more likely to be reported as moderately or distinctly experienced by the DEP-all group) were reverse coded, and a new variable was computed to represent the total sum of scores on each of the seven items. A ROC analysis was undertaken with this new variable as the independent variable and group membership (i.e., BO-all or DEP-all) as the dependent variable, with the AUC being quantified as 0.82, which is considered excellent discrimination (Figure Y). When the analysis was repeated for a variable representing the sum of the top six most discriminating variable, discrimination remained excellent (AUC = 0.81). Discrimination dropped to acceptable for variables representing the sum of the top five to top two most discriminating variables (AUC ranged from 0.71 to 0.76). Thus, combining several items adapted from previous depression measures (with most of these again reflecting depressed mood nuances) allowed for excellent to acceptable discrimination between the BO-all group and the DEP-mel group.

Figure 10.9. ROC curves for variables representing the sum of scores on the depression items with significant log-odds ratios for the BO-all versus DEP-mel comparison.



Note: 7 items = variable representing the sum of scores on the seven depression items with significant log-odds ratios; 6 items = variable representing the sum of the top six most discriminating depression items (based on the relative size of the log-odds ratios) of the seven items with significant log-odds ratios; 5 items = variable representing the sum of the top five most discriminating depression items; 4 items = variable representing the sum of the top four most discriminating depression items; 3 items = variable representing the sum of the top three most discriminating depression items; 2 items = variable representing the sum of the top two most discriminating depression items. Diagonal reference line indicates discrimination at chance level. Greater deviation of a ROC curve from the reference line indicates greater discriminatory capacity.

Only one of the odds ratios was significant for the BO-all and DEP-nonmel comparison, with the BO-all group having significantly lower odds of reporting recurrent thoughts of death. As only one item was significant, no ROC analysis was undertaken. Thus, there was minimal discrimination for the depression items between the BO-all and DEP-nonmel groups.

Summary of Analysis 5A results.

In general, SBM total scores were equivalent for the burnout and depression groups, but the two evaluated burnout groups (i.e., the BO-all and BO-reduced groups) had significantly higher empathy loss and significantly lower social withdrawal specific factor scale scores than the three depression groups evaluated (i.e., the DEP-all, DEP-mel and DEP-nonmel groups) across the comparison sets examined. In the ROC analyses, the only SBM scale score that showed acceptable discriminatory capacity was the social withdrawal specific factor when comparing the BO-all to the DEP-mel group, being lower in the former group. Of the 37 depression items adapted from previous measures of depression, odds ratios (comparing the odds of each group reporting each item as being experienced either moderately or distinctly rather than slightly or not at all) were significant for nine items between the BO-all and DEP-all groups and seven items when comparing the BO-all and DEP-mel groups, with combinations of these items having acceptable or excellent levels of discrimination between the relevant groups. Only one odds ratio was significant when comparing the BO-all and DEP-nonmel groups. These findings and their implications will be considered in more detail in the Study 5 Discussion (section 10.5.).

10.4. Analysis 5B: Examining causal attribution nuances in burnout and depression

10.4.1. Statistical analyses.

The objective of Analysis 5B was to compare causal attributions from participants who self-identified as experiencing burnout and those with a clinically-diagnosed depression. The proportion of participants in the BO-all, DEP-all, DEP-mel and DEP-nonmel groups reporting each of the 45 causal items was computed, and the odds of responding “yes” versus “no” to each item were compared using the SPSS GENLOG function described earlier in this chapter (and in Study 3) across three comparisons represented by the contrasts: (i) the BO-all group versus the combined depression groups (i.e., the DEP-all group), (ii) the BO-all group versus the DEP-mel group, and (ii) the BO-all group versus the DEP-nonmel group. The odds ratio calculated for each cause represented was the ratio of the odds of responding “yes” versus “no” for the burnout group (i.e., BO-all group) against those odds for the relevant depression group (i.e., DEP-all, DEP-mel or DEP-nonmel group). The odds ratio for each of the 45 causes were then grouped for each contrast, and the p values of each adjusted by calculating Benjamini-Hochberg critical values so to reduce the false discovery rate.

The variables were ranked in order of the absolute value of the log-odds for that variable, with a larger log-odds indicative of greater discriminatory capacity. Subsequently, a series of ROC analyses were undertaken to examine which *combinations* of causal variables were best at discriminating the groups in each comparison, with the nuances described in more detail in the following Results section.

10.4.2. Results.

The proportion of each group reporting each of the causal triggers as present are displayed in Table 10.6, and the generalised odds ratios for each of the triggers are displayed in Table 10.7 and are ranked in order from largest to smallest in terms of absolute value of the log-odds ratio for the BO-all versus DEP-all comparison.

Table 10.6. Proportion of group nominating each causal trigger item for the BO-all, DEP-all, DEP-mel and DEP-nonmel groups.

Causal attribution	Proportion of group reporting item as present			
	BO-all	DEP-all	DEP-mel	DEP-nonmel
A family member or close friend died or had a serious medical illness or injury	0.26	0.38	0.48	0.21
I had a serious injury or physical illness (not a mental illness)	0.15	0.20	0.21	0.18
I had major difficulties in a personal relationship (i.e., with a family member or friend)	0.28	0.51	0.50	0.53
I had major difficulties in a professional relationship (i.e., with a boss, manager, colleague or client)	0.44	0.36	0.32	0.41
I lost a close personal relationship (e.g., marriage, friendship)	0.16	0.34	0.39	0.27
My responsibilities were suddenly increased (e.g., had to start caring for a parent who became ill)	0.26	0.10	0.11	0.09
I lost a job or was demoted	0.10	0.18	0.18	0.18
I had a major financial crisis	0.15	0.20	0.23	0.15
I had legal issues	0.05	0.08	0.11	0.03
I was rejected in a relationship	0.09	0.31	0.39	0.18
I was demeaned or diminished at work	0.35	0.28	0.25	0.32
I was overloaded in my home-care duties	0.18	0.08	0.09	0.06
I had too many responsibilities at once (e.g., working full-time while also being primary carer of a child)	0.36	0.19	0.20	0.18

I was overloaded at work	0.65	0.26	0.23	0.29
I was underloaded at work	0.07	0.04	0.04	0.06
I had no freedom at home	0.11	0.17	0.21	0.09
I was under extreme time pressure at work	0.42	0.17	0.14	0.21
My role at work was not meaningful	0.24	0.17	0.13	0.24
I experienced unrelenting pressure while caring for my child/children	0.13	0.06	0.07	0.03
I experienced unrelenting pressure while caring for family members other than my own children	0.07	0.04	0.05	0.03
I had no freedom at work	0.19	0.10	0.07	0.15
I have been in the workforce for too long/too many years	0.14	0.06	0.05	0.06
I had to frequently work overtime	0.37	0.11	0.14	0.06
I had to do a lot of shift work	0.07	0.07	0.09	0.03
My skills/abilities at work were not adequate to complete required tasks	0.13	0.13	0.16	0.09
I experienced unrelenting pressure because I was caring for my children as well as other family members (e.g., an elderly parent) at the same time	0.03	0.02	0.04	0.00
I was bored at work	0.21	0.16	0.18	0.12
My contribution at home was not recognised or appreciated	0.21	0.18	0.20	0.15
I wasn't trained properly to do my job	0.15	0.12	0.13	0.12
I was isolated in my home/care duties	0.09	0.09	0.11	0.06
I have been caring for people other than myself (e.g., children, other family members) for too long/too many years	0.15	0.04	0.07	0.00
My contribution to the workplace was not recognised or appreciated	0.47	0.22	0.14	0.35
I was isolated at work	0.28	0.12	0.11	0.15
I made a major mistake at work	0.05	0.10	0.09	0.12
I was not supported in my home/care duties	0.11	0.03	0.02	0.06
I experienced unrelenting pressure because I was caring for my children/other family members while also having to work	0.16	0.02	0.02	0.03

I was not supported at work by my boss or colleagues	0.42	0.23	0.20	0.29
I was harassed or discriminated against at work	0.18	0.19	0.16	0.24
I had a poor work-life balance	0.53	0.32	0.32	0.32
My role was ambiguous at work	0.22	0.06	0.05	0.06
I had no job security	0.18	0.09	0.05	0.15
There was a lack of career development opportunities at my work	0.32	0.16	0.14	0.18
I commenced a medication that triggered the symptoms	0.04	0.14	0.18	0.09
I experienced some other triggering event not mentioned (please specify)	0.15	0.18	0.14	0.24
There was no trigger (i.e., the symptoms arose “out of the blue”)	0.03	0.39	0.45	0.29

Note: BO-all group included all participants with self-identified burnout, DEP-all included all participants with a clinically-diagnosed depression, DEP-mel group included only those DEP-all participants with a diagnosis of the melancholic depression subtype, DEP-nonmel group included only those DEP-all participants with a diagnosis of the non-melancholic depression subtype. Total proportion for each group could exceed 1 as participants could nominate more than one variable.

Table 10.7. Odds and log-odds ratios for the reporting each of the causal trigger items, ranked in order from largest to smallest log-odds ratio for the BO-all versus DEP-all comparison.

Nominated cause	BO-all versus DEP-all				BO-all versus DEP-mel				BO-all versus DEP-nonmel			
	OR	Log(OR)	Confidence interval		OR	Log(OR)	Confidence interval		OR	Log(OR)	Confidence interval	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound			Lower Bound	Upper Bound
There was no trigger (i.e., the symptoms arose “out of the blue”)	0.05*	-3.09	0.02	0.10	0.03*	-3.42	0.01	0.08	0.06*	-2.76	0.02	0.23
I experienced unrelenting pressure because I was caring for my children/other family members while also having to work	7.87*	2.06	1.46	42.42	10.16	2.32	0.96	107.77	6.10	1.81	0.33	111.67
I had to frequently work overtime	5.71*	1.74	2.15	15.16	3.50*	1.25	1.41	8.68	9.32*	2.23	1.15	75.32
I was overloaded at work	5.30*	1.67	2.89	9.69	6.22*	1.83	2.90	13.32	4.51*	1.51	1.50	13.53
I have been caring for people other than myself (e.g., children, other family members) for too long/too many years	5.07	1.62	0.86	29.84	2.09	0.74	0.65	6.73	12.34	2.51	0.21	721.83
My role was ambiguous at work	4.79*	1.57	1.57	14.63	5.04*	1.62	1.24	20.40	4.56	1.52	0.56	37.03
I was rejected in a relationship	0.25*	-1.39	0.12	0.50	0.14*	-1.94	0.07	0.30	0.43	-0.83	0.11	1.67
I commenced a medication that triggered the symptoms	0.26*	-1.33	0.10	0.68	0.18*	-1.73	0.07	0.46	0.40	-0.92	0.06	2.46
I was not supported in my home/care duties	3.58	1.28	0.82	15.71	6.64	1.89	0.62	70.79	1.93	0.66	0.23	15.90
I was under extreme time pressure at work	3.55*	1.27	1.78	7.07	4.42*	1.49	1.78	10.97	2.84	1.05	0.83	9.73
My responsibilities were suddenly increased (e.g., had to start caring for a parent who became ill)	3.19*	1.16	1.31	7.76	2.86*	1.05	1.02	8.00	3.55	1.27	0.62	20.25

My contribution to the workplace was not recognised or appreciated	2.97*	1.09	1.57	5.62	5.38*	1.68	2.17	13.33	1.64	0.50	0.58	4.68
I experienced unrelenting pressure while caring for my child/children	2.97	1.09	0.77	11.52	1.86	0.62	0.54	6.44	4.73	1.55	0.26	86.97
I was overloaded in my home-care duties	2.84*	1.04	1.01	8.00	2.26	0.82	0.74	6.92	3.55	1.27	0.44	28.91
I have been in the workforce for too long/too many years	2.77	1.02	0.90	8.54	2.91	1.07	0.71	11.88	2.64	0.97	0.32	21.56
I had major difficulties in a personal relationship (i.e., with a family member or friend)	0.37*	-0.99	0.22	0.64	0.39*	-0.93	0.20	0.76	0.35*	-1.05	0.13	0.96
I was isolated at work	2.68*	0.99	1.22	5.86	3.21*	1.17	1.15	8.96	2.23	0.80	0.55	9.08
I lost a close personal relationship (e.g., marriage, friendship)	0.39*	-0.94	0.21	0.72	0.29*	-1.23	0.15	0.58	0.53	-0.64	0.17	1.66
I had too many responsibilities at once (e.g., working full-time while also being primary carer of a child)	2.49*	0.91	1.26	4.93	2.33*	0.85	1.04	5.23	2.66	0.98	0.72	9.80
There was a lack of career development opportunities at my work	2.47*	0.90	1.21	5.05	2.80*	1.03	1.13	6.96	2.18	0.78	0.59	8.03
I had a poor work-life balance	2.36*	0.86	1.33	4.18	2.37*	0.86	1.19	4.73	2.35	0.85	0.81	6.84
I was not supported at work by my boss or colleagues	2.22*	0.80	1.20	4.12	2.90*	1.06	1.30	6.49	1.70	0.53	0.57	5.09
I had no job security	2.17	0.78	0.86	5.48	3.80	1.33	0.93	15.42	1.25	0.22	0.30	5.11
I made a major mistake at work	0.47	-0.75	0.19	1.20	0.55	-0.59	0.17	1.78	0.41	-0.90	0.08	2.02
I had no freedom at work	2.03	0.71	0.86	4.80	3.04	1.11	0.89	10.42	1.36	0.31	0.33	5.56
I experienced unrelenting pressure while caring for family members other than my own children	1.88	0.63	0.46	7.75	1.38	0.32	0.33	5.74	2.57	0.95	0.14	47.92
I lost a job or was demoted	0.53	-0.63	0.26	1.10	0.53	-0.64	0.22	1.26	0.54	-0.63	0.14	2.03

I was underloaded at work	1.66	0.51	0.48	5.76	2.16	0.77	0.39	11.95	1.28	0.25	0.15	10.66
I was bored at work	1.58	0.46	0.73	3.43	1.24	0.21	0.53	2.88	2.02	0.70	0.43	9.44
My role at work was not meaningful	1.54	0.43	0.77	3.10	2.26	0.82	0.86	5.94	1.05	0.05	0.32	3.43
I had to do a lot of shift work	1.43	0.36	0.37	5.52	0.80	-0.23	0.25	2.51	2.57	0.95	0.14	47.92
I had a serious injury or physical illness (not a mental illness)	0.72	-0.33	0.36	1.44	0.64	-0.45	0.29	1.42	0.81	-0.21	0.22	3.04
I experienced unrelenting pressure because I was caring for my children as well as other family members (e.g., an elderly parent) at the same time	1.39	0.33	0.21	9.18	0.78	-0.25	0.16	3.82	2.47	0.90	0.04	149.48
A family member or close friend died or had a serious medical illness or injury	0.72	-0.32	0.39	1.34	0.38*	-0.96	0.20	0.74	1.37	0.31	0.40	4.71
I had no freedom at home	0.73	-0.31	0.31	1.72	0.44*	-0.83	0.19	0.98	1.23	0.20	0.21	7.14
I was demeaned or diminished at work	1.34	0.29	0.74	2.42	1.61	0.47	0.76	3.38	1.12	0.11	0.38	3.27
I had major difficulties in a professional relationship (i.e., with a boss, manager, colleague or client)	1.34	0.29	0.77	2.34	1.63	0.49	0.82	3.26	1.10	0.10	0.40	3.06
I had a major financial crisis	0.76	-0.27	0.37	1.57	0.57	-0.55	0.26	1.25	1.01	0.01	0.24	4.15
I wasn't trained properly to do my job	1.31	0.27	0.58	2.96	1.26	0.23	0.48	3.35	1.35	0.30	0.29	6.36
I had legal issues	0.78	-0.25	0.20	3.04	0.39	-0.93	0.13	1.18	1.56	0.44	0.08	29.49
My contribution at home was not recognised or appreciated	1.27	0.24	0.62	2.63	1.07	0.07	0.47	2.42	1.52	0.42	0.37	6.20
I experienced some other triggering event not mentioned (please specify)	0.80	-0.23	0.40	1.60	1.08	0.08	0.43	2.73	0.59	-0.53	0.18	1.93
I was isolated in my home/care duties	1.16	0.15	0.41	3.29	0.84	-0.17	0.29	2.42	1.61	0.48	0.20	13.36
I was harassed or discriminated against at work	0.91	-0.09	0.46	1.80	1.16	0.15	0.48	2.80	0.72	-0.33	0.22	2.37

My skills/abilities at work were not adequate to complete required tasks	1.08	0.08	0.46	2.58	0.77	-0.26	0.32	1.88	1.53	0.42	0.26	8.83
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Note: OR = odds ratio. $\text{Log}(OR)$ = Log-odds ratio. The odds ratio reported for each item is the ratio of the odds of responding “yes” versus “no” for the burnout group (i.e., BO-all group) against those odds for the relevant depression group (i.e., DEP-all, DEP-mel or DEP-nonmel group). The p values of each OR were adjusted to control the FDR at $q = 0.05$ level using the Benjamini-Hochberg method (Benjamini and Hochberg, 1995). Confidence intervals were subsequently constructed to reflect such adjustment (Benjamini and Yekutieli, 2005), such that the confidence level was set at 98.00% for the BO-all versus DEP-all comparison and the BO-all versus DEP-mel comparison, and 99.56% for the BO-nonmel versus DEP-all comparison. Odds ratios with confidence intervals that do not contain 1.00 are significant, and are indicated with *.

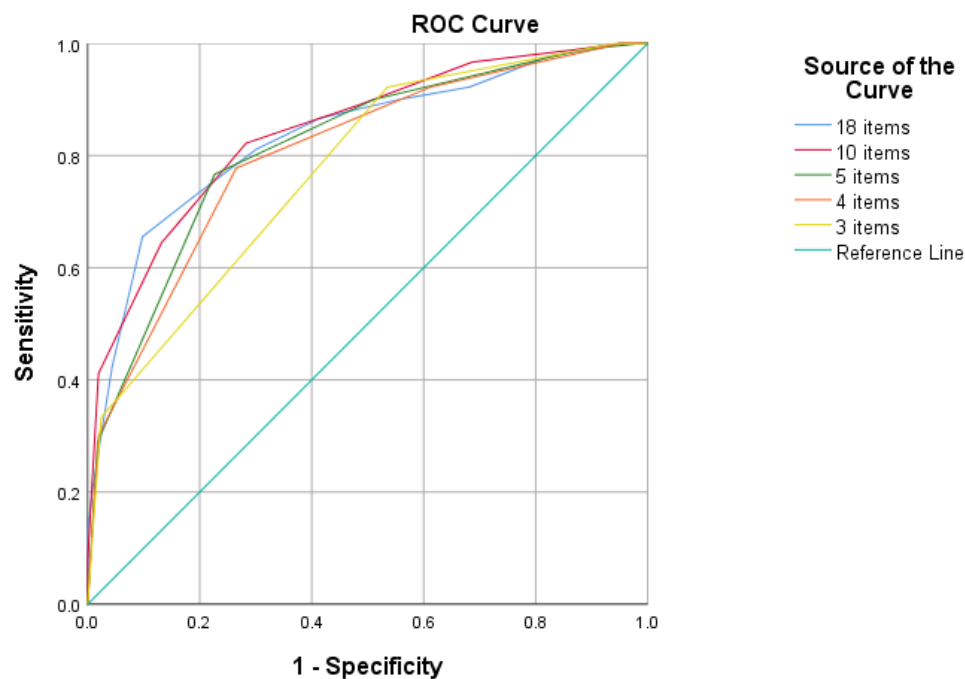
BO-all versus DEP-all comparison.

Eighteen of the 45 log-odds ratios were significant for the BO-all versus DEP-all comparison, with those in the BO-all group having significantly lower odds than the DEP-all group of reporting there being no trigger, having commenced a medication that triggered their symptoms and having relationship issues (i.e., having been rejected in a relationship, had major difficulties in a relationship, or having a close personal relationship end). The BO-all had higher odds of reporting formal work factors (i.e., being overloaded at work, working overtime or under extreme time pressure, having an ambiguous role at work, having a lack of career development opportunities, being isolated or not recognised or supported at work), being overloaded in their home/care duties, having experienced unrelenting pressure from juggling caring and work responsibilities, having too many responsibilities (e.g., working full-time while also being primary carer of a child), having a sudden increase in responsibilities (e.g., had to start caring for a parent who became ill), or having a poor work-life balance.

Of the 18 variables with significant odds ratios, those that were more likely to be reported by the DEP-all group were reverse coded, and a new variable was computed to represent the total sum of scores on each of the 18 variables. As shown in Figure 10.10, a ROC analysis was undertaken with this new variable as the independent variable and group membership (i.e., BO-all or DEP-all) as the dependent variable, and with the AUC being quantified as 0.84, which is considered excellent discrimination. The analysis was repeated with a variable that was the sum of only the top ten most discriminating items (based on the relative size of the log-odds ratios; AUC = 0.84), the top five most discriminating items (AUC = 0.82), and the top four most discriminating items (AUC = 0.81). Once only the top three variables were used, the discriminatory capacity dropped from excellent to acceptable

(i.e., $AUC = 0.77$). Thus, discrimination between the groups was excellent when the combination of the top four, top five, top ten and top 18 refined causal variables were evaluated, with the top four most discriminating variables for the burnout group being “There was no trigger” (reversed coded), “I experienced unrelenting pressure because I was caring for my children/other family members while also having to work”, “I had to frequently work overtime” and “I was overloaded at work”.

Figure 10.10. ROC curves for variables representing the sum of scores on the causal attribution items with significant log-odds ratios for the BO-all versus DEP-all comparison.



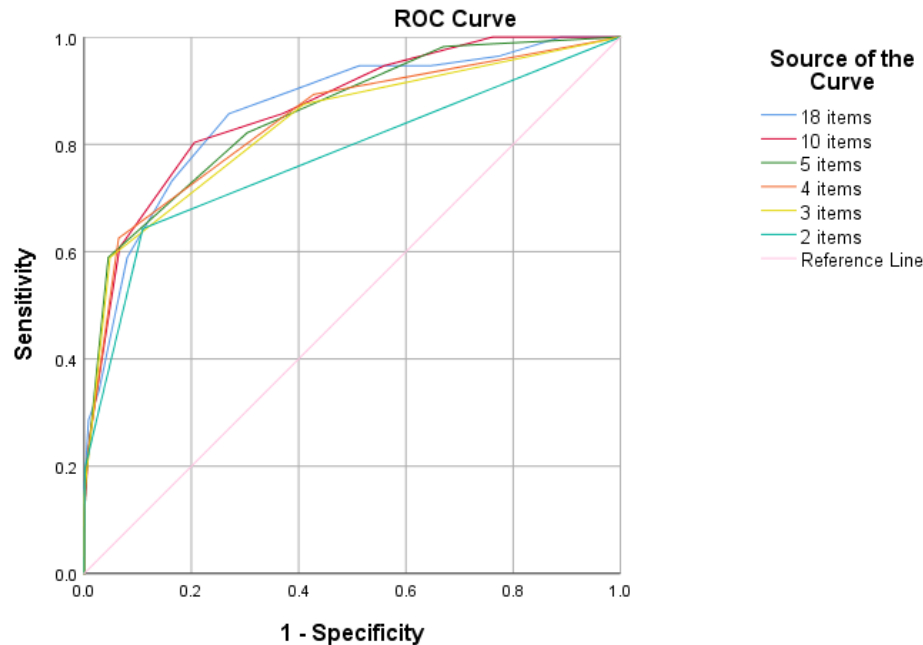
Note: 18 items = variable representing the sum of scores on the 18 causal attribution items with significant log-odds ratios; 10 items = variable representing the sum of the top ten most discriminating causal attribution items (based on the relative size of the log-odds ratios) of the 18 items with significant log-odds ratios; 5 items = variable representing the sum of the top five most discriminating causal attribution items; 4 items = variable representing the sum of the top four most discriminating causal attribution items; 3 items = variable representing the sum of the top three most discriminating causal attribution items. Diagonal reference line indicates discrimination at chance level. Greater deviation of a ROC curve from the reference line indicates greater discriminatory capacity.

BO-all versus DEP-mel comparison.

Sixteen of the 18 significant variables for the BO-all versus DEP-all comparison were significant when comparing the BO-all group to the DEP-mel group (with “I experienced unrelenting pressure because I was caring for my children/other family members while also having to work” and “I was overloaded in my home-care duties” no longer significant). In addition, the BO-all group had significantly lower odds than the DEP-mel group of reporting having no freedom at home or having a close friend or family member having died or being ill/injured.

Of the 18 variables with significant odds ratios for the BO-all versus DEP-mel comparison, those that were more likely to be reported by the DEP-mel group were reverse coded, and a new variable was computed to represent the total sum of scores on each of the 18 variables. As shown in Figure 10.11, a ROC analysis was undertaken with this new variable, which had excellent discrimination ($AUC = 0.86$). The analysis was repeated with a variable that was the sum of only the top ten most discriminating items (based on the relative size of the log-odds ratios; $AUC = 0.87$), the top five most discriminating items ($AUC = 0.86$), the top four most discriminating items ($AUC = 0.84$), and the top three most discriminating items ($AUC = 0.84$). Evaluating the top two variables only reduced the discriminatory capacity from excellent to acceptable (i.e., $AUC = 0.78$). Thus, discrimination between the groups was excellent when a combination of the top three to 18 causal variables were affirmed by participants, with the top three most discriminating variables for the burnout group in this comparison being “There was no trigger” (reversed coded), “I was rejected in a relationship” (reversed coded), and “I was overloaded at work”.

Figure 10.11. ROC curves for variables representing the sum of scores on the causal attribution items with significant log-odds ratios for the BO-all versus DEP-mel comparison.



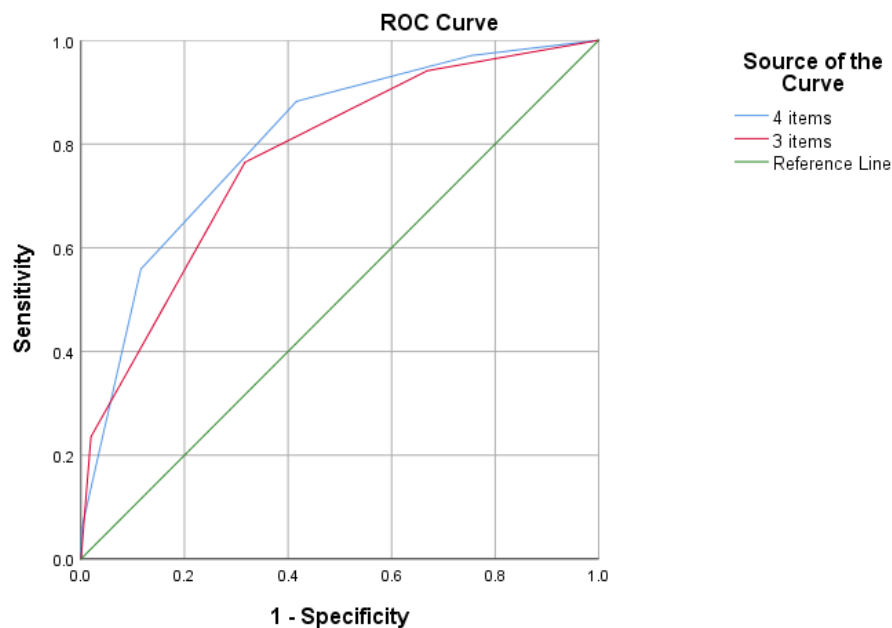
Note: 18 items = variable representing the sum of scores on the 18 causal attribution items with significant log-odds ratios; 10 items = variable representing the sum of the top ten most discriminating causal attribution items (based on the relative size of the log-odds ratios) of the 18 items with significant log-odds ratios; 5 items = variable representing the sum of the top five most discriminating causal attribution items; 4 items = variable representing the sum of the top four most discriminating causal attribution items; 3 items = variable representing the sum of the top three most discriminating causal attribution items; 2 items = variable representing the sum of the top two most discriminating causal attribution items. Diagonal reference line indicates discrimination at chance level. Greater deviation of a ROC curve from the reference line indicates greater discriminatory capacity.

BO-all versus DEP-nonmel comparison.

When comparing the BO-all group to the DEP-nonmel group, only four of the 45 odds ratios were significant, such that the BO-all group had lower odds than the DEP-nonmel group of reporting there being no trigger or that they had had major difficulties in a personal relationship, while having higher odds of reporting having to work overtime or being overloaded at work. As displayed in Figure 10.12, a ROC analysis of a variable representing the sum of scores of these four variables (with those more likely to be nominated by the DEP-

nonmel group reverse coded) also had excellent discrimination ($AUC = 0.81$), with the discriminatory capacity dropping from excellent to acceptable when only the top three variables were included ($AUC = 0.77$).

Figure 10.12. ROC curves for variables representing the sum of scores on the causal attribution items with significant log-odds ratios for the BO-all versus DEP-nonmel comparison.



Note: 4 items = variable representing the sum of scores on the four causal attribution items with significant log-odds ratios; 3 items = variable representing the sum of only the top three most discriminating causal attribution items (based on the relative size of the log-odds ratios). Diagonal reference line indicates discrimination at chance level. Greater deviation of a ROC curve from the reference line indicates greater discriminatory capacity.

10.5. Discussion.

Study 5 was undertaken to examine the degree of overlap between self-diagnosed burnout and clinically diagnosed depression. Analysis 5A examined whether the 34-item SBM derived in Study 2 could differentiate between those with self-diagnosed burnout and those with clinically-diagnosed depression, and also assessed whether any symptoms (and which ones) collated from previous depression measures best distinguished between the

burnout and clinical depression groups. Analysis 5B was undertaken to assess the degree to which causal attributions differed between those with burnout and those with depression.

Before interpreting results, limitations are acknowledged. First, the sample was predominantly female, Caucasian, university educated and employed full-time, and thus not wholly representative of the general population. Further, there were some differences in the percentages of those who were female, university educated and employed full-time between the burnout and depression groups. As symptom reporting may be affected by such differences, future studies would benefit from ensuring groups are matched on these demographic variables. Symptom reporting may have also been impacted by any current treatment that participants were receiving (e.g., taking antidepressant medication), but as participants were not asked for specific treatment nuances the effects of such interventions on the results could not be ascertained.

Further, as was the case with all studies reported in this thesis, a convenience sample of individuals who self-identified as experiencing burnout comprised the burnout group, rather than a sample of individuals clinically diagnosed with burnout. Furthermore, clinician-based diagnoses of depression were relied on to assign participants to the depression groups (and to the melancholic and non-melancholic subgroups). As detailed in Chapter 8 (Study 3) clinician-based diagnoses have benefits as they allow for the consideration of a wider set of candidate variables, including symptom pattern and severity, a patient's lifetime history, as well as contextual information including whether symptoms are causing clinically significant distress or impairment (Brockington & Meltzer, 1982) before a diagnosis of a mental health condition is made. However, clinician-based diagnoses have disadvantages due to their subjective nature and may be affected by idiosyncrasies and biases of clinicians that influence their diagnostic procedures. Future studies would therefore be advanced by administering a

structured diagnostic measure for depression to determine concordance with clinicians' diagnoses and whether such a strategy generates different findings.

Relatedly, there is a comorbidity issue that complicates any study attempting to determine if burnout is a distinct state (Nadon et al., 2022). Namely, if burnout is a nosological entity, the possibility of some participants having comorbid burnout and depression will impact on the capacity of a study to tease out differences between the two states (as participants might report a true symptom of depression as a symptom of their burnout and vice versa). The current study attempted to overcome this by (i) disallowing patients with clinically-diagnosed depression from participating if they reported feeling burnt out or were judged by their clinician as potentially experiencing burnout (in the absence of formal diagnostic criteria for burnout), and (ii) recognising that some participants identifying as burnt out may have a comorbid depression diagnosis and (through covariates) controlling for (a) a previous diagnosis of depression or (b) any other mental health condition. Nonetheless, the complexities associated with possible comorbidity require consideration when interpreting results, and innovative methods are required in future studies to address such nuances.

Another limitation was the relatively small sample size of the depression group ($n = 90$), and especially the non-melancholic subgroup ($n = 34$), which might have contributed to the lack of significance for some of the statistical comparisons. While it was originally intended to recruit 100 depression patients, with 50 of those having non-melancholic depression, a lack of eligible patients being treated by the recruiting clinicians meant that the recruitment target could not be reached over a lengthy period of two years, compromising the statistical power of the current studies to some degree. A post-hoc power analysis using G*Power (Faul et al., 2007) indicated that a sample size of 90 rather than 100 in the DEP-all group only reduced power from 80% to 76% to detect the effect size where Cohen's $d = 0.3$.

However, having only 34 participants in the DEP-nonmel group only had sufficient (i.e., 80%) power to detect a difference between the BO-all and DEP-nonmel groups with at least a medium effect size (Cohen's $d = 0.5$), but substantially less power to detect any smaller effect (e.g., 20% power for a small effect, where Cohen's $d = 0.2$). It is therefore possible that more differences between the burnout and non-melancholic groups would have been detected if more participants were able to be recruited for the latter group. Relatedly, while multiple comparisons were accounted for within each set of analyses (e.g., a Bonferroni adjustment when comparing scores on the five SBM subscales and the Benjamini-Hochberg method used to control the FDR in the odds ratios analyses), multiple comparisons were not controlled for *across* the sets of analyses and is thus a limitation of the study. The choice to control for type I errors within but not across analyses was made to ensure adequate power (and therefore control type II errors), and thus any future similar study seeking to control for multiple comparisons across same-sized analysis sets would require a larger sample than the current study.

Finally, while there were several items included in the questionnaires to cover DSM-5 MDE Criterion A symptoms, items assessing active suicidal ideation or behaviours (e.g., specific suicide plans) were not included. Only one item capturing passive suicidal ideation (i.e., recurrent thoughts of death, as suggested by Turecki & Brent, 2016) was included, and thus future research assessing the burnout-depression overlap would benefit from a closer examination of suicidal ideation nuances (i.e., both active and passive ideation, as well as suicidal plans) pertaining to both states.

10.5.1. Analysis 5A.

Turning to findings, the primary objective of Analysis 5A was to examine whether scores on the SBM derived in Study 2 distinguished those with self-diagnosed burnout from

those with clinically diagnosed depression. Total scores on the measure were not significantly different between the burnout and depression groups, overall and regardless of depressive subtype (Comparison Sets I and II), or when excluding those from the burnout group who may have lacked syndromal status (Comparison Sets III and IV). This result was unchanged when including a previous diagnosis of depression or any other mental health condition as covariates. Such findings suggest that the burnout symptoms identified in Study 2 are prevalent in those experiencing clinical depression, such that the preliminary burnout measure derived in Study 2 based on such symptoms alone has a high risk of false positives (i.e., assigning those with true depression as cases of burnout).

The equivalent SBM total scores between groups indicates that there is a high degree of symptom overlap between self-identified burnout and clinically-diagnosed depression, which could suggest that the two conditions are synonymous. Such an interpretation aligns with several studies that have positioned burnout and depression as equivalent (e.g., Bianchi et al., 2020; Bianchi et al., 2021b; Schonfeld & Bianchi, 2016; Verkuilen et al., 2021) as overviewed in Chapter 3. However, the interpretation that burnout and depression are synonymous is not supported by the analyses comparing the groups' scale scores on the SBM specific factors. Specifically, two symptom constructs captured by separate specific factors consistently differed between the groups. Firstly, those self-reporting burnout had higher empathy loss specific factor scale scores when compared to the consolidated clinical depression group (Comparison Set I), as well as to both the melancholic and non-melancholic depression subgroups (Comparison Set II). Such differences were upheld when excluding those from the burnout group who may have lacked syndromal status (Comparison Sets III and IV), and when controlling for previous diagnoses of depression or another mental health condition.

In Study 2, it was interpreted (based on coefficient ω and hierarchical coefficient ω indices) that, while the general factor likely represented the core symptoms of a burnout syndrome, the loss of empathy factor was a more independent construct (possibly reflecting empathy loss being a coping strategy rather than a core symptom of burnout). In this study however, it appears that the general factor was instead capturing symptoms common to both self-diagnosed burnout and clinically-diagnosed depression, while the empathy loss specific factor was capturing a group of symptoms that distinguished burnout from depression in the sample. Previous studies evaluating the significance of empathy loss in burnout have returned mixed findings. In relation to the MBI's conceptualisation of burnout, some have suggested that empathy loss (as represented by the depersonalisation subscale) and emotional exhaustion are the core aspects of burnout (Mészáros et al., 2014; Schaufeli & Van Dierendonck, 1993), while reduced personal accomplishment is a more independent construct (and perhaps a consequence rather than symptom of the syndrome, as discussed in Chapter 1). Interestingly, however, when the original MBI (the MBI-HSS) was adapted to be used in the general working population (the MBI-GS), the depersonalisation subscale was replaced by a broader cynicism subscale (denoting loss of connection to one's job rather than from one's clients), suggesting that empathy loss is only relevant to burnout as experienced in the human services sector. This position has been challenged by others (e.g., Salanova et al., 2005) and is not supported here as, while the most frequently nominated occupations in the burnout group (see Study 2) were not restricted solely to the human services industry, empathy loss was shown to be distinctive for those with self-reported burnout. Future studies should focus on elucidating the prominence of empathy changes in distinguishing between burnout and depression, and should include measures of both self-reported empathy as well as more objective laboratory tests of the construct, such as the Multifaceted Empathy Test (MET; Dziobek et al., 2008).

Secondly, the burnout group had lower scale scores on the social withdrawal specific factor than the consolidated clinical depression group and both the melancholic and non-melancholic depression groups (Comparison Sets I and II). When excluding those from the burnout group who may have lacked syndromal status, the reduced burnout group had lower scale scores on the social withdrawal specific factor than both the consolidated clinical depression group (Comparison Set III) and the melancholic depression group (Comparison Set IV).

The finding that those in the depression group scored higher on the social withdrawal specific factor than those in the burnout group is consistent with the results of Study 4, in which participants identified burnout as having less of an impact on their social behaviour than depression. Further, as discussed in Study 2, the social withdrawal factor contained items indicative of anhedonia, a primary symptom of clinical depression, so it is understandable that members from the clinical depression groups would score higher on this factor than those with burnout. Ultimately, while a burnout syndrome is likely to commonly if not always be accompanied by some depressive symptoms (as concluded in Study 2), differences in the social withdrawal specific factor here indicate that those symptoms (especially anhedonia) are distinctly more severe in those with a clinical depression diagnosis.

If burnout and depression are not synonymous, a possible explanation for the equivalent total SBM scores between the groups is that the SBM contains several items that capture non-specific psychological distress (NSPD). NSPD refers to a group of symptoms that are not specific to any particular psychiatric disorder and include symptoms of dread, anxiety, sadness, helplessness, and hopelessness, among others (Dohrenwend et al., 1980). Other research indicates that burnout and depression are both marked by symptoms of NSPD. For instance, Schonfeld et al. (2019a) reported that the MBI burnout symptoms (especially

those included in the emotional exhaustion subscale) and symptoms measured by validated depression and anxiety scales including the PHQ-9 and the Generalized Anxiety Disorder scale (GAD-7; Spitzer et al., 2006) all loaded on the same underlying factor, which the authors interpreted as representing the impact of NSPD symptoms. Similar results were reported in a study measuring burnout symptoms using the SBMB instead of the MBI (Bianchi, 2020). Thus, both burnout and depression appear to be marked by NSPD symptoms, a situation which complicates any attempt to differentiate the two states based on symptoms alone.

For instance, exhaustion, while promulgated by many to be the key feature of burnout (and captured here by the exhaustion specific factor in the SBM), was not distinctive in this study in that it did not differentiate burnout from depression. Such results indicate that considering burnout as analogous with exhaustion, as some have done previously (Pines & Aronson, 1981; Shirom & Melamed, 2006), has attendant risks in defining the syndrome, as other psychological states such as depression are marked by the same key symptom (albeit more likely to be described as ‘anergia’ in the depression literature). Similarly, while the results in Studies 1 and 2 suggested that cognitive dysfunction is a prominent symptom for those identifying as burnt out, such dysfunction is also reported as seemingly equally salient by those with clinical depression (for a review of cognitive issues related to depression see Gonda et al., 2015), and is therefore not particularly differentiating.

Furthermore, there were no significant differences between any of the groups on the reduced work performance subscale. A DSM-5 criterion of major depressive disorder is impaired functioning, including occupational functioning (APA, 2013), and thus it is not surprising that those with depression reported a reduction in work performance. Similarly, reduced work performance is seen as a core component of burnout as conceptualised by the MBI (Maslach et al., 2016). The finding here that both those experiencing self-diagnosed

burnout and those with clinically-diagnosed depression are equally likely to affirm items indicative of reduced work performance further indicates that it is not a useful clinical feature in distinguishing burnout as a distinct state. Rather, if burnout is to be awarded nosological status, a level of distinct impairment in work or other areas of functioning in burnout may simply be useful in indicating the relative severity of an individual's condition and whether their syndrome should be accorded 'clinical' status. This latter suggestion aligns with the current DSM-5 model, in which listed psychiatric conditions require an impairment criterion to be met for a diagnosis to be allocated.

Other differences between the burnout and depression participants emerged when considering their odds of reporting items adapted from a set of depression measures as being experienced “moderately” or “distinctly” during their respective burnout or depressive episodes. The burnout group had lower odds of reporting items indicative of depressed mood than the consolidated depression group (i.e., including both the melancholic and non-melancholic participants). This finding is worthy of noting because it indicates that, while an item depicting depressed mood is included in the SBM, a depressed mood is more likely to be pronounced in those with clinical depression. Similarly, while one item representing feelings of worthlessness was included in the SBM, the burnout group had significantly lower odds of reporting this symptom than the consolidated depression group, indicating that such a symptom is less distinctive in burnout. Diminished self-worth is one of the key differentiators of clinical depression when compared to a “normative” or non-clinical depressive state (Parker et al., 2020), and, in a similar vein, might be helpful in distinguishing between clinical depression and burnout, with participants in Study 4 also reporting such a distinction. Further examination of the differential impact of burnout and depression on individuals' self-worth may therefore be warranted in future studies.

Unsurprisingly, those in the burnout group also had lower odds than the consolidated depression group of reporting anhedonia, mirroring the higher scores of the depression group on the social withdrawal specific factor (which includes anhedonia items) scale scores. The burnout group also had lower odds of reporting trouble initiating everyday tasks than the consolidated depression group, which aligns with Study 4 findings, where participants reported that depression had more of an impact on their everyday functioning than burnout. In addition, the burnout group had lower odds than the consolidated depression group in reporting recurrent thoughts of death. This finding supports the results from Study 4, in which participants reported less suicidal thinking while burnt out compared to when depressed. While such a distinction has been reported previously (Galán et al., 2014; Menon et al., 2020), other studies have suggested that burnout is a risk factor for suicidal behaviours (Patel et al., 2018; Van der Heijden et al., 2008), and thus future research confirming the specificity of suicidal ideation to depression is required.

A secondary objective of the current study was to assess whether any burnout-depression symptom overlap showed greater specificity to either of the principal depressive sub-types. When comparing SBM scores in Comparison Set II, all significant findings were the same regardless of whether the burnout group was being compared to the melancholic or non-melancholic subgroup. Specifically, the burnout group had lower social withdrawal scores and higher empathy loss scores than both the melancholic and non-melancholic groups. This finding may indicate that depressive subtyping does not influence the degree of overlap between burnout and depression. Interestingly, however, there was also no significant differences between the melancholic and non-melancholic groups in total scores on the measure or on any of the specific factor scales scores. These results suggest that the symptoms captured by the SBM are reported in equal measure by those with melancholic and

non-melancholic depression and are therefore not symptoms specific to either depressive subtype.

However, some of the significant differences between the burnout group and the non-melancholic group were eliminated when excluding those in the burnout group who possibly lacked syndromal status (Comparison Set IV). Furthermore, in the ROC analyses, the only AUC that indicated acceptable discrimination was found for the social withdrawal specific factor when comparing the burnout group to the melancholic depression group, with the former scoring lower on this subscale than the latter.

A subsequent focus on depressive symptoms provided greater clarification as to whether burnout and depression are likely to be synonymous or not. Specifically, the odds ratio analyses for the items that had been adapted from previous depression measures indicated that symptom overlap with the burnout group was greater for the non-melancholic group compared to the melancholic group. That is, seven of the 37 odds ratios were significant when comparing the burnout group to the melancholic depression group, while only one of the 37 odds ratios was significant when comparing the burnout group to the non-melancholic depression group. Many of the seven items with significant odds ratios in the BO-all versus DEP-mel comparison were the same as those significant when comparing the burnout group to the consolidated depression (DEP-all) group. Interestingly, however, discrimination of the BO-all and DEP-mel groups was ‘excellent’ when scores on those seven (and the top six of those seven) items were combined into a single score, while discrimination was only ‘acceptable’ in the corresponding analyses for the BO-all versus DEP-all comparison. Thus, while it is assumed that there was lower power to detect differences in the BO-all versus DEP-mel comparison compared to the BO-all versus DEP-all comparison (due a smaller size of the depression group in the former), the discriminatory capacity actually

improved (thus suggesting a greater true difference) when comparing the burnout participants to participants with melancholic depression only.

Collectively, these findings suggest that the distinction between burnout and depression is dependent on the depressive sub-type being examined and that any overlap is more distinctive for those with a non-melancholic than those with a melancholic depression. This result aligns somewhat with the hypothesis of Bianchi et al. (2015a) that burnout overlaps less with melancholic depression than it does with atypical depression (with atypical depression being a non-melancholic depressive condition marked by sensitivity to rejection, leaden paralysis, hypersomnia and hyperphagia). Alternatively, the lack of difference between the burnout and non-melancholic group may have been due to a lack of statistical power resulting from the small sample size of the non-melancholic group, and thus more adequately powered studies are needed in the future to examine this possibility.

A final symptom nuance uncovered in the current study should be acknowledged. Those in the burnout group had lower odds of reporting oversleeping and greater odds of reporting waking in the middle of the night than the consolidated depression group and the melancholic group. Insomnia has been associated with burnout symptoms in previous studies (Åkerstedt et al., 2012; Söderström et al., 2004; Vela-Bueno et al., 2008), while it has been suggested that oversleeping (i.e., hypersomnia) in those with burnout symptoms may be due to a co-occurring depression rather than burnout (Merey et al., 2013), which aligns with the current findings (in that those in the depression group reported oversleeping to a greater degree). When considering the depressive subtypes, however, hypersomnia is more common in non-melancholic compared to melancholic depressive states (Parker et al., 2006). If burnout overlaps more with non-melancholic than melancholic depression, as is suggested by the current study, the finding here that those with melancholic depression reported more hypersomnia than those self-identifying as burnt out is difficult to interpret. No information

was collected from participants concerning current medication use (as mentioned previously), but it is possible that some in the depression group (and especially the melancholic depression subgroup) were using sedating medication to assist with insomnia — as commonly prescribed to depressed patients in clinical practice (Murphy & Peterson, 2015) — therefore impacting on the reporting of sleep disturbance symptoms in the current study. Evidently, while sleeping issues appear to be a common complaint for both those with depression and those identifying as burnt out, a more in-depth exploration of sleeping dysfunction nuances associated with each state in future studies is needed.

Overall, it was clear from Analysis 5A that there was a high degree of symptom overlap between those with self-reported burnout and those with a clinically-diagnosed depressive condition. This could be due to burnout not being a nosologically distinct from depression, or because burnout, while distinct, shares a set of NPSD symptoms with depression (and other conditions). That being said, there may a few symptom nuances (such as reduced self-worth and thoughts of death for depression; empathy loss for burnout) that may assist in distinguishing between the two states, while the depressive subtype analyses suggested that any overlap is more likely for those with non-melancholic as against those with a melancholic depression. Such findings logically argued for determining whether burnout and depression might be better differentiated across a non-symptom domain, thus leading to evaluating causal factor differentiation.

10.5.2. Analysis 5B.

There were several differences in causal attributions between the BO-all and DEP-all group, with most of these differences maintained when considering the BO-all versus the DEP-mel group only, while few of the odds ratios were significant when comparing the BO-all group to the DEP-nonmel group. Most notably, the DEP-all, DEP-mel and DEP-nonmel

groups had greater odds than the BO-all group of reporting there being no trigger for their depressive episodes. This finding aligns with Study 4, in which participants noted that the key difference between their burnout and depressive episodes was that they could not identify a trigger for the latter. Many of the specific triggers more likely to be nominated by the burnout group were formal work factors, such as being overloaded at work and working overtime. At first glance, these results support the argument that burnout can be distinguished from depression based on the former but not the latter being work related (Maslach et al., 2016; Maslach et al., 2001; Schaufeli et al., 2009). However, it was not just workplace factors that distinguished burnout in the current study, as the burnout group also had higher odds of reporting being overloaded in their home/care duties as triggering their burnout state. Further, many of the triggers more often reported by burnout group members related to pressure arising from having too many responsibilities in general, such as juggling work factors with home and care duties. These results align with previous research indicating that almost fifty percent of individuals with burnout symptoms report that their job (i.e., ‘formal’ work) is not the main cause of their symptoms (Bianchi & Brisson, 2019) and that burnout symptoms are exacerbated when work interferes with home life and vice versa (Ádám et al., 2008; Montgomery et al., 2006; Verweij et al., 2017). Furthermore, studies indicating that depression can also be work-related, as detailed in Chapter 3, are again acknowledged (e.g., Clays et al., 2007; Rugulies et al., 2006). Taken together, such results indicate that burnout resonates with the lay population in contexts outside of the formal/paid work environment, while depression can also be precipitated by work-related stressors, and thus distinguishing burnout from depression based on the work-specificity of the former risks being too simplistic.

Many of the odds ratios that were significant when comparing the BO-all group to the DEP-all group remained significant when comparing the BO-all group to the DEP-mel group

only. Of note, the melancholic group had significantly greater odds of reporting medication as having triggered their episode while this was not applicable to the non-melancholic group. Studies suggest that certain medications can trigger depressive episodes, and the DSM-5 lists several drugs – including stimulants, steroids, antibiotics, and chemotherapeutic medications – as potential candidates (APA, 2013). In relation to melancholia specifically, evidence suggests that it is the more “quintessentially biological” (Parker et al., 2013, p. 200) subtype (hence the moniker ‘endogenous’ depression), due to factors such as the greater contribution of genetic and other biological – as against psychosocial – determinants, and it having a differentially preferential response to physical treatments such as antidepressant drugs and ECT than to psychotherapy. Such a biological basis may explain why those with melancholic group (but not the non-melancholic group) in the current study were more likely to perceive their episodes as having been triggered by medication, while those with burnout group were not.

While 18 odds ratios were significant for both the BO-all versus DEP-all and BO-all versus DEP-mel comparison, only a small set (i.e., four items for the former and three items for the latter) of discriminating causal factors for each comparison were required to generate high AUCs in the ROC analyses. The items “there was no trigger” (reverse coded) and “I was overloaded at work” were part of the discriminatory set in both instances, again emphasising that the greatest perceived difference between the two states was the perception that burnout, unlike depression, results from an external stressor, and that that external stressor most often involves being overloaded in one’s formal work role.

Substantially fewer odds ratios were significant when comparing the BO-all group with the DEP-nonmel group. While a lack of power may have limited the significance of some of the odds ratios (as previously noted), the overlap between the two groups could also suggest that the environmental stressors that contribute to a self-diagnosis

of burnout may also contribute to the development and subsequent clinical diagnosis of non-melancholic depression. As discussed earlier in this chapter, non-melancholic depression is usually triggered by a specific stressor or stressors, while the results of Study 4 indicated that the greatest distinguisher of burnout for participants was that it could always be attributed to a specific environmental cause. Thus, it is not surprising that there appears to be greater causal overlap between burnout and non-melancholic (compared to melancholic) depression in the current study when both are generally determined by environmental stressors.

Nonetheless, there were some significant odds ratios for the burnout and non-melancholic depression comparisons indicative of differential stressor impacts. Namely, the burnout group had greater odds of reporting work factors (e.g., being overloaded at work and working overtime) as contributing to their burnout state, while the non-melancholic subgroup had greater odds of reporting major difficulties in a personal relationship as a trigger. As mentioned in Chapter 3, triggers for depressive episodes (and especially non-melancholic depression) are often events that diminish an individual's self-esteem (Kendler et al., 2003; Parker et al., 2020). While the extent to which changes in one's self-esteem is contingent on interpersonal acceptance and rejection varies from person to person (Berenson & Downey, 2006), interpersonal rejection sensitivity has been shown to be heightened in those with depression and especially the non-melancholic subtype (Boyce et al., 1993). It is therefore possible that interpersonal relationship issues have a greater effect on mood and overall wellbeing in those susceptible to non-melancholic depression as opposed to those at risk of burnout, and are therefore more distinctly identifiable as triggers for the former state. Future studies examining how relationship issues differentially impact on depression and burnout would benefit from examining the mediating effects of rejection sensitivity and levels of self-worth to test this hypothesis.

Overall, the findings of Analysis 5B suggest that burnout is attributed as caused by specific triggers (both inside and outside of the formal work environment) to a greater degree than depression. While the finding of such attribution differences does not allow for the conclusion that burnout is worthy of nosological status, results were informative in indicating that factors outside of the formal work environment are judged by the lay population as contributing to their burnout. Future research into burnout may therefore benefit from considering the syndrome in relation to both formal and informal work environments. In terms of burnout's overlap with each of the depressive subtypes, the current results suggest that burnout shares more causal attribution similarities with non-melancholic rather than melancholic depression. This finding and those of Analysis 5A provide preliminary evidence that self-diagnosed burnout may overlap more distinctly with non-melancholic than with melancholic depression.

10.5.3. Conclusion.

Study 5 contributes novel information the burnout-depression overlap debate through its examination of whether a new symptom model of burnout, captured by the SBM, could distinguish between burnout and clinically-diagnosed depression. Furthermore, in doing so, the study is one of the few to examine for any differential impact of depressive subtype on any syndromal overlap. Overall, the results of Analysis 5A highlighted that, while there are some nuanced symptoms differences between self-identified burnout and clinically-diagnosed depression, many of the symptoms of the former state captured by the SBM are not specific to the syndrome, as those with a clinically-diagnosed depressive condition report many of the same symptoms. This finding could indicate that burnout is not nosologically distinct from depression, or that burnout and depression, while distinct, share a set of NPSD symptoms. If distinct, the results of Analysis 5B suggests that separation of the two conditions may rely more on weighting aetiological factors than symptoms. Furthermore, the odds ratio analyses

in both Analysis 5A and 5B indicate that burnout overlaps to a greater degree with non-melancholic as opposed to melancholic depression, both in terms of symptoms and causal factors. Such nuanced findings provide support for the melancholic versus non-melancholic subtyping model of depression, and highlight that the burnout-depression distinction is likely best evaluated by comparing burnout to each of the depressive subtypes in turn, rather than treating depression as an entity diagnosis. Evidently, the relationship between burnout and depression is complex, and while many studies, including the current one, have examined the burnout-depression distinction using a variety of methods, future research that (i) explores features *beyond* the symptoms of each state, such as aetiological and biological factors, and (ii) acknowledges the differential impact of the depressive subtypes on study results, may be best positioned to reveal points of overlap and distinction.

PART IV: DISCUSSION

11. General Discussion and Conclusion

This chapter summarises the results of Parts I through III of this thesis before highlighting the significance and implications of the findings. The chapter concludes by acknowledging limitations of the studies and considering directions for future research.

11.1. Overview of findings.

The prevailing definition of burnout, as conceptualised by the MBI, has remained largely unchanged since the introduction of the syndrome into the psychological discourse in the 1970s. As overviewed in Part I, this is despite ongoing critiquing of the MBI burnout model, expansion of burnout's scope from the human services sector to other employment scenarios and even to contexts outside of formal employment, and questions as to whether the current conceptualisation of burnout adequately considers the syndrome's potential overlap with depression. As the burnout label resonates with so many individuals (Heinemann & Heinemann, 2017), and with reports of a current burnout "epidemic" (Hauck & Gabbard, 2019; Lemaire & Wallace, 2017; Moss, 2021; Seo et al., 2021), the studies in this thesis examined self-diagnosed burnout to address two primary research objectives: (i) to determine the prominent symptoms of burnout as experienced by the lay population and capture such symptoms in a new definitional model, and (ii) to examine to what extent the new syndromal definition of burnout and other syndromal features overlap with experiences of clinical depression, and therefore shed light on whether burnout should be considered a distinct nosological entity. These objectives were addressed in in Part I, II and III of the thesis.

11.1.1. Part I.

The literature review reported in Part I (Chapters 1 to 5) highlighted several caveats in relation to the current conceptualisation of burnout as well as gaps in the literature pertaining to the syndrome's overlap with depression, thus justifying the objectives of the thesis. Specifically, Chapter 1 detailed critiques of the most-promulgated definition of burnout — that which is captured by the MBI — as well as other syndromal definitions and measures of burnout (e.g., the BM, SMBM, CBI and OLBI) with issues concerning the interpretability, scope and factorial structure of such measures arguing for redefinition of the burnout construct. In Chapter 2, several developmental models and recognised causes of burnout were considered, with evidence suggesting that the previous restriction of burnout to the formal work domain requires expansion, and that the syndrome is potentially best modelled through a diathesis-stress lens. Chapter 3 reviewed evidence of the syndrome's apparent overlap with several other psychological conditions, and, most notably, depression. It was argued that the inconsistent findings concerning burnout's overlap with depression highlight the need for further research in this area, and it was suggested that the influence of the depressive subtypes on the overlap should be considered in any such research. Chapter 4 highlighted burnout's ambiguous diagnostic status, and the potential consequences of diagnosing depression in individuals with probable burnout were then considered. The chapter concluded by highlighting that the recognition of burnout as a formal diagnosis in other cultures, coupled with the beliefs and experiences of the lay community who perceive burnout to be a real and relatable psychological condition, should not be ignored when considering whether burnout is a legitimate illness. The research reviewed in Chapters 1 to 4 thus provided a rationale, as detailed in Chapter 5, as to why redefinition of burnout and further exploration of the syndrome's overlap with depression was warranted in the current thesis.

11.1.2. Part II.

Part II (Chapters 6 to 8) detailed the first set of studies, which were undertaken to determine which symptoms were most prominent in those with self-diagnosed burnout and how these symptoms might best be modelled. Specifically, **Study 1** (Chapter 6) utilised both qualitative and quantitative data that had been previously collected by the primary supervisor's research team. In Analysis 1A, qualitative content analysis was undertaken on responses to an open question asking participants with self-diagnosed burnout what they perceived to be the key symptoms of the syndrome, which identified 12 symptom categories (and their constituent subcategories) capturing a broad set of possible burnout features. While some of the identified symptoms (i.e., exhaustion, indifference, reduced performance) mirrored the emotional exhaustion, cynicism and reduced professional efficacy constructs underpinning the MBI's definition of burnout, several additional symptom sets not included in the traditional conceptualisation of burnout were identified (i.e., anxiety/stress, depression, irritability and anger, sleep disturbances, lack of motivation or passion, executive functioning issues, withdrawal from others, physical symptoms, and emotional lability).

In Analysis 1B, participants' responses to a list of 106 possible burnout symptoms and features were factor analysed, which ultimately led to a bifactor solution with a general factor and three additional specific factors being judged as the solution most adequately capturing the data. The general factor contained items weighting exhaustion, cognitive dysfunction, social withdrawal, worry and depressed mood symptoms. The first specific factor captured empathy loss as well as social withdrawal, which was interpreted as a general 'inability to feel' factor. The second factor included cognitive dysfunction items in conjunction with items representing reduced work efficacy, while the third 'work-focussed' factor include items indicating dutifulness/perfectionistic personality traits, which was likely a consequence of such personality items being included in the questionnaire and thus grouping together, rather

than reflecting a burnout symptom construct *per se*. Overall, the solution overlapped somewhat with the MBI (with exhaustion, empathy loss and reduced efficacy all represented), but also captured additional symptom sets, including cognitive dysfunction, social withdrawal and a set of psychological symptoms (including anxiety and depression) that might be integral to the syndrome. These preliminary findings argued for pursuing further clarification and redefinition of burnout in a new sample of participants.

In **Study 2** (Chapter 7), a second sample of participants with self-diagnosed burnout was recruited. They completed a questionnaire, the first section of which contained a long list of 137 potential symptoms of burnout and included items derived from previous burnout measures, a detailed review of the burnout literature, the results of Study 1, and the clinical experience of the PhD candidate's primary supervisor. Included in the list were 37 items that had been adapted from validated measures of depression, so to assess whether the symptoms represented by these items might be integral to the definition of burnout. Iterative analyses resulted in a bifactor solution that comprised a 34-item general factor and five uncorrelated specific factors. The general factor weighted items capturing exhaustion, cognitive dysfunction, depressed mood and reduced self-worth, and also included items indicative of reduced work performance and social withdrawal. The five specific factors were interpreted as representing (i) cognitive dysfunction, (ii) empathy loss, (iii) exhaustion, (iv) reduced work performance, and (v) social withdrawal. Reliability indices suggested that the general factor accounted for most of the of variance in the sample, and model fit statistics indicated that the model fit was satisfactory for both subsets of those who had and had not ceased working due to their burnout, as well as for both subsets of those who did and did not have a previous diagnosis of depression. Overall, the results suggested a new heuristic model that defined burnout as having more key symptom constructs (particularly in including an impaired cognition construct as well as depressive symptoms as key components) than

captured by the MBI triadic model. The reliability indices suggested that the symptoms identified might be appropriately measured using a single scale derived from the model's general factor, with the measure derived from the model subsequently labelled the Sydney Burnout Measure (SBM) for the remainder of the thesis.

In further pursuing how self-diagnosed burnout might best be conceptualised, **Study 3** (Chapter 8) examined whether scores on the SBM of those self-identifying as experiencing burnout were best modelled dimensionally or categorically using mixture modelling. The initial mixture model suggested three classes of participants, with one class made up of those with low scores (i.e., less than 40) on the SBM and therefore potentially lacking syndromal status. After removing such participants, a two-class model of the data provided best fit, indicating some categorical difference(s) across the participants. In pursuing potential factors influencing the bimodality of the data, subsequent analyses indicated that those in the higher scoring class were more likely to have reported having stopped working due to their burnout and having been previously diagnosed with depression and/or another mental illness by a mental health professional. A series of subsequent mixture analyses indicated that bimodality of scores remained after (i) considering only those participants who had stopped working due to their burnout, and (ii) removing items from the SBM that had been adapted from validated depression measures or were affirmed most often by a group of participants with clinically diagnosed depression. The results of these mixture analyses were interpreted as indicating bimodality in data was not likely due to respective 'burning out' and 'burnt out' subsets, or differences in depression symptomatology between participants. A unimodal distribution was only achieved after excluding participants who reported a previous diagnosis of any mental illness (including depression). Such analyses indicated that a categorical difference in self-identified burnout exists between those with and without a history of mental ill health, which was interpreted as potentially reflecting the effects of a co-occurring mental illness on the

burnout experience for some participants, or differing degrees of psychological vulnerability impacting on burnout phenotype and severity.

11.1.3. Part III.

Any valid conceptualisation of burnout requires understanding and accounting for any overlap between burnout and depression. Examining this overlap was thus the objective of Part III (Chapters 9 and 10). In **Study 4** (Chapter 9), qualitative data from participants who reported experiencing both burnout and depression were analysed to determine how individuals distinguished between the two states. While approximately one-fifth of the participants noted substantial overlap between burnout and depression, most reported several identifiable differences, with these differences captured by 11 categories (and their constituent sub-categories). The most prominent difference was the perception that burnout had a specific cause that was usually work-related, while depression often did not have a known cause. Other key indicators of burnout (as opposed to depression) for participants included being able to maintain a higher level of functioning, being angry rather than sad, feeling more helpless than hopeless, and feeling more anxious and emotional. Such findings indicated that the experiences of burnout and depression can be readily distinguished by the lay population based on several features, but that the biggest difference between the two states for participants was related to causal factors rather than being symptom-based.

Study 5 (Chapter 10) examined the burnout-depression overlap by comparing participants with self-diagnosed burnout to participants with clinically-diagnosed depression. Analysis 5A evaluated the symptom overlap between the two states by first comparing scores on the SBM between the burnout and depression groups. SBM total scores were equivalent between the groups, but the burnout group (BO-all group) had significantly higher empathy loss and significantly lower social withdrawal specific factor scale scores than the depression

group (DEP-all group). Most of these differences were maintained when the DEP-all group was split into subgroups of those with melancholic (DEP-mel group) and non-melancholic (DEP-nonmel group) depression, as well as when those in the burnout group potentially lacking syndromal status were removed (resulting in the BO-reduced group) and when controlling for a prior diagnosis of depression or any other mental health condition. In addition, the BO-all group had significantly lower odds of reporting (to a moderate or distinct degree) several symptoms of depression, including depressed mood, consummatory and anticipatory anhedonia, having trouble getting started with everyday tasks, passive suicidal ideation and oversleeping than the DEP-all and DEP-mel groups, while only rates of reporting passive suicidal ideation differed between the BO-all and DEP-nonmel groups (with the former group having lower odds of reporting than the latter). Analysis 5A thus indicated a high degree of symptom overlap between those with self-reported burnout and those with a clinically-diagnosed depressive condition, albeit with some nuanced symptom differences that were more pronounced when considering melancholic as opposed to non-melancholic depression.

Analysis 5B assessed for differences in causal attributions between the groups as quantified by generalised odds ratio analyses. The BO-all group had higher rates of reporting 18 out of a possible 45 causal factors, including several formal work factors, having too many or a sudden increase in responsibilities and having poor work-life balance, and lower odds than the DEP-all and DEP-mel groups of reporting items such as relationship issues (including having been rejected, having had major difficulties in a relationship, or having a close personal relationship end) and there being no trigger for their episodes. Substantially fewer (i.e., only four) causal differences were found between the BO-all and DEP-nonmel groups, with the BO-all group having lower odds of reporting there being no trigger or that they had had major difficulties in a personal relationship, while having higher odds of

reporting having to work overtime or being overloaded at work. The findings of Analysis 5B therefore showed that while burnout was attributed to specific triggers to a greater degree than depression, such triggers were not just restricted to formal work environment. Furthermore, and as noted, when considered in conjunction with Analysis 5A findings, self-diagnosed burnout was found to overlap to a greater degree with non-melancholic depression than with melancholic depression, with differences between self-diagnosed burnout and clinically-diagnosed depression evidently more apparent when considering causal factors rather than symptoms.

11.2. Original contribution and significance of findings.

The original contribution of the five thesis studies to the burnout literature and the importance of their key findings can be summarised into four categories, as now detailed.

11.2.1 Expanding the definition of burnout.

In redefining burnout, the studies in Part II, specifically Studies 1 and 2, **examined a more exhaustive list of potential burnout symptoms than has been undertaken in previous definitional studies.** The results of those studies **revealed that those who self-identified as experiencing burnout experienced several key symptom constructs that are not included in the traditional MBI conceptualisation of burnout and in the WHO ICD-11 definition.** In particular, the prominence of cognitive dysfunction as integral to experiences of burnout was evident in both the qualitative and quantitative data in Study 1, as well as in the final bifactor solution using a new sample of participants in Study 2.

The symptom sets identified in Study 2 and captured by the SBM overlap with central acedia symptoms, the fourth century phenomenon described in Chapter 1, which had core symptoms of mental and physical exhaustion, inertia, cognitive impairment, reduced productivity and a state of non-caring (Finlay-Jones, 1983). The symptoms of burnout identified in Study 2 therefore have historical support. The SBM symptoms also correspond

with those included in the new BAT burnout measure (Hadžibajramović et al., 2020; Schaufeli et al., 2020), which, as overviewed in Chapter 1, characterises burnout as comprising four core symptom dimensions of (i) exhaustion, (ii) mental distance, (iii) emotional impairment, and (iv) cognitive dysfunction, as well as two secondary symptom dimensions of (v) psychological complaints and (vi) psychosomatic complaints. Specifically, both the SBM and the BAT have items/subscales quantifying exhaustion and cognitive impairment, while items from the emotional impairment and psychological complaints BAT subscales (e.g., “During my work I become irritable when things don’t go my way”, “I get upset or sad at work without knowing why”, “I have trouble falling or staying asleep”, “I tend to worry”) correspond with several items in the SBM denoting frustration, feeling sad, excessive worrying and experiencing sleep disturbances. Additionally, the BAT’s mental distance subscale, which includes items such as “I struggle to find any enthusiasm for my work” and “I’m cynical about what my work means to others” correspond with some of the items in the reduced work performance specific factor of the SBM (e.g., “I cannot get pleasure out of my work”, “I feel like I am making less of a difference at work”). The BAT was developed using a top-down approach, in which items were derived through interviews with general practitioners, psychologists and occupational physicians who regularly assess and manage individuals presenting with burnout. In contrast, Study 2 of this thesis employed a bottom-up approach, examining the experiences and symptoms of those who self-identified as suffering from burnout. While the validity of the SBM burnout model requires further evaluation, the overlap in symptoms identified through both such top-down and bottom-up approaches supports the centrality of such symptoms in defining a burnout syndrome.

Study 3 further aided in re-conceptualising burnout by examining for the existence of subcategories of self-diagnosed burnout. It is, to the candidate’s knowledge, **one of the first studies to consider whether a categorical difference exists between burning out versus**

burnt out subgroups (represented by working and not working subsets). Indeed, it has been suggested that some previous burnout studies may have been biased by a “healthy worker effect”, with such studies conducted inside the workplace and therefore only evaluating burnout in those who are still in the process of burning out and are therefore well enough to continue working (Schaufeli et al., 2001). Examining whether bimodality in SBM scores was driven by subsets of participants who had and had not stopped working due to their burnout was therefore deemed potentially informative. While results indicated that working and not working subsets were not responsible for the bimodal SBM data, it was acknowledged that such a variable is likely not the only indicator of burning out versus burnt out status. Thus, Study 3 can be perceived as a first step in pursuing a possible ‘burning out’ versus ‘burnt out’ distinction, with the potential for future studies to explore this issue in more detail. The main finding from Study 3 — that bimodality in the SBM data was most likely explained by subsets of participants with and without previous mental illness diagnoses — was also novel, as studies assessing the impact of psychiatric history on presentations of burnout are scarce (Aydemir & Icelli, 2013). **The finding indirectly supports recent modelling of burnout as a diathesis-stress syndrome** (Geuens et al., 2021; Nixdorf et al., 2020), as it indicates that personal factors, and in particular an individual’s psychiatric history, may influence on presentations of burnout. The studies in Part II therefore all contributed to enhancing the current understanding of how ‘burnout’ is experienced by the lay population, suggesting new putative definitional symptoms as well as highlighting personal factors that could influence experiences of burnout.

11.2.2. Uncovering nuances of the distinction between burnout and depression.

The contribution of depression symptoms to participants’ experiences of burnout made evident across all studies in Part II (Studies 1, 2 and 3) is an important finding when considering questions as to burnout’s entity status. In Analysis 1A of Study 1, several

participants freely nominated (in response to an open question) depressive symptoms (e.g., low mood, feelings of worthlessness and guilt) as pertinent to their burnout experience. Furthermore, in positing and quantifying that symptoms of depression may be integral to experiences of burnout, Study 2 is, to the candidate's knowledge, **the first study to assess the contribution of depression items to a new definitional model of burnout**. In doing so, the study revealed that some depressive symptoms, including low mood, reduced self-worth and anhedonia are common to experiences of burnout, and thus should be considered concomitants of a burnout syndrome. This finding is of significance considering that depression items are not included in the MBI or in the core symptom constructs included in the BAT. In again considering the BAT, it is important to note that its authors stated that they decided not to include depression items in their measure because other well-validated depression measures (like the 4-DSQ) already exist in the literature (Schaufeli et al., 2020). Their validation studies of the BAT indicated that depressed mood, as measured using a subscale of the 4-DSQ, loaded on a separate factor to their core burnout symptoms. This finding is at odds with those of Study 2 in this thesis, which found that the depression items had moderate to high loadings on the general factor (which is said to capture the 'primary' domain being measured), in conjunction with exhaustion and cognitive dysfunction items, **indicating that such depressive symptoms were cardinal features of burnout for study participants**. Importantly, however, the depression items included in the final SBM model more suggested depressed mood in quality rather than clinical depression *per se*, as items more indicative of latter, such as psychomotor disturbance and suicidal thinking, were not evident in the final model. This finding *does* align with the views of Schaufeli et al. (2020), who specified that the depressed mood that is expected to accompany burnout "should be distinguished from mood disorder or a major depression, which is a psychiatric disorder" (p. 4). Overall, as only a few (seven of a potential 37 depression items) of the many depression

items evaluated were found to contribute to the final factorial solution, and the finding that no depression specific factor emerged, indicated that **depression and burnout are not synonymous.**

The studies in Part III of this thesis contributed further information to the ongoing debate as to whether burnout is or is not synonymous with depression through two additional novel studies (Studies 4 and 5). While many studies have explored the burnout-depression overlap in the past using a range of methods (e.g., correlational analyses, factor analyses, biological studies; see Chapter 3), Study 4 is, to the candidate's knowledge, **one of the first qualitative studies directly comparing individuals' experiences of burnout and depression**, with most existing studies pursuing this debate having been quantitative in design. Study 4 identified several symptom nuances that may assist in differentiation, including greater levels of anger compared to sadness, and helplessness compared to hopelessness in burnout (as opposed to depression). The following study, Study 5, is **one of few studies to consider the impact of depressive subtyping on the burnout-depression overlap.** In Analysis 5A of Study 5, equivalent total SBM scores indicated that there is a large degree of symptom overlap between those with self-diagnosed burnout and those with a clinically-diagnosed depressive condition. However, there were two consistent SBM symptom differences between the burnout and depression groups, in that the former had higher empathy loss scores and lower social withdrawal scores than the latter. Furthermore, odds ratio analyses indicated that symptoms such as depressed mood, anhedonia, oversleeping and passive suicidal thinking were less severe in those with burnout than those with depression, while middle insomnia and feeling angry had some specificity to the burnout participants.

Taken together, the findings of Studies 4 and 5 suggest **several potentially differentiating symptom constructs between burnout and depression.** Perhaps most notably, that the burnout group consistently scored higher on the empathy loss SBM specific

factor suggests that this symptom construct has some specificity to burnout, and therefore may be one of its core symptoms. Such positioning of empathy loss as a core burnout symptom aligns with some previous studies (Mészáros et al., 2014; Schaufeli & Van Dierendonck, 1993). However, such an interpretation is somewhat at odds with the MBI model, whereby the MBI-HSS's depersonalisation subscale (whose items captured loss of empathy and detachment from service recipients) was replaced with a broader cynicism scale in the MBI-GS adaption, suggesting empathy loss is not a core symptom of burnout within the general population. The specific role of empathy loss in burnout and its specificity to the syndrome as compared to other psychological states therefore requires clarification in future studies.

The findings of Analysis 5B indicated that burnout and depression are attributed to several different condition-specific causal triggers. This result aligned with the results of Study 4, which showed that the greatest perceived difference between burnout and depression for participants was that burnout had a specific, usually work-related cause, while depression usually did not have a known cause. While such differences in attribution in no way prove that burnout should be considered a diagnostic entity distinct from depression, when taken together, Study 4 and Study 5 results indicate that for the lay population, **perceived aetiological differences between burnout and depression may be more distinguishing than symptom differences**. The implications of this finding are explored in more detail in the following section on NSPD symptoms (Section 11.2.3 below), but here it is noted, as was suggested by the results in Study 5, that while environmental stressors may trigger episodes of both burnout and (especially non-melancholic) depression, such stressors are potentially distinguishable in that those that are depressogenic (rather than leading to burnout) are likely the ones that have greater impact on an individual's sense of self-worth. Support of such a hypothesis in future studies would have implications for both the differential diagnosis of

depression and burnout, as well as for treatment, in that interventions for the former may require a greater focus on improving the self-worth of an affected individual.

Analysis 5B also indicated that **the lay population considers several factors *outside of the formal work environment as contributing to their burnout***, and therefore distinguishing burnout from depression based on the work-relatedness of the former is likely to be too simplistic. While the overarching treatment implications of all the studies reported in this thesis will be considered in more detail later in this chapter, a specific treatment implication of the results of Analysis 5B is noted here. Namely, the perception that home (i.e., non-work) factors triggered burnout for some participants suggests that interventions for burnout should not be solely work-related if they are to be effective. Two recent meta-analyses have reported that interventions most often prescribed for burnout are psychotherapy (e.g., cognitive behavioural therapy) or occupation-based ones (e.g., meetings with a career counsellor or work supervisor) and that such interventions have not been successful in lessening burnout symptoms (Ahola et al., 2017; Perski et al., 2017). The contribution of non-work factors to burnout identified in Study 5 and in other studies (e.g., Bianchi & Brisson, 2019; Verweij et al., 2017) raises the possibility that interventions would be more effective if they considered and sought to alleviate contributing stressors experienced outside of the workplace. Studies examining the differential efficacy of interventions inside and outside of the work environment would be best positioned to test such a hypothesis.

In considering the depressive subtypes, Study 5 results **provided preliminary evidence that burnout overlaps to a greater degree with non-melancholic as opposed to melancholic depression**, both in terms of shared symptoms and causal factors. This finding has both theoretical and practical implications. For the former, the finding indicates that pursuing whether burnout is or is not synonymous with ‘depression’ as a catch-all diagnosis is too simplistic, as such an analytic strategy will mask nuanced differences and similarities

between burnout and each of the depressive subtypes. In other words, the inconclusive findings of previous studies examining the burnout-depression overlap is likely due to such studies having compared burnout to a single ‘depression’ category, rather than considering burnout’s overlap with each of the depressive subtypes in turn. As for practical implications, burnout’s overlap with non-melancholic depression allows an argument that those with burnout would potentially benefit from the implementation of treatment strategies that have been found to be particularly efficacious for non-melancholic (rather than melancholic) depression, such as prioritising non-biological interventions like psychotherapy above antidepressant medication (Parker & Manicavasagar, 2005; Parker et al., 2013). More adequately powered studies are therefore needed to confirm the greater degree of overlap of burnout with non-melancholic depression, and by extension, to evaluate whether disorder-specific treatments for non-melancholic depression (as opposed to treatments for melancholic depression) are effective in treating burnout.

Overall, however, the nuanced differences between burnout and depression identified across the thesis studies suggest that the two states are not synonymous, having several differing primary symptoms (e.g., depression weighted to hopelessness, burnout to helplessness; quite varying rates of gravid features such as suicidality) and somewhat differing causes (e.g., specific work and home stressors for burnout, stressors compromising self-worth and self-esteem for depression). The view by some that the two conditions are synonymous is likely to reflect the compromised specificity of extant measures of burnout (due to the potential influence of NSPD symptoms, as will shortly be discussed) used in previous studies, as well as the lack of consideration of the differential overlap of burnout with each of the depressive subtypes.

11.2.3. Considering nonspecific psychological distress.

It was suggested in Chapter 10 that **the equivalent SBM total scores for the burnout and depression groups may have been due to both states sharing nonspecific psychological distress (NSPD) symptoms.** Shared, non-specific symptomatology is not unique to burnout and depression. Depression also overlaps substantially with anxiety, with major depressive disorder and generalised anxiety disorder sharing NSPD symptoms, aetiological factors (i.e., genetic overlap and common environmental triggers) and treatment outcomes (i.e., similar response to certain antidepressant drugs and psychotherapies) (Joyce, 2008). Indeed, scores on depression and anxiety measures are highly correlated (Schonfeld et al., 2019a; Stulz & Crits-Christoph, 2010). Evidence of syndromal overlap across many mental disorders has led some to argue that a single construct, labelled negative affect (NA), underlies experiences of stress, depression and anxiety as they all share a core component of negative or aversive affect (Barlow et al., 2014; Stulz & Crits-Christoph, 2010). Recently, a meta-regression analysis (Meier & Kim, 2022) quantified that scores on burnout measures were highly correlated not just with scores on depression measures, but also equivalently with scores on other measures of NA (such as anxiety and stress measures), leading the authors to conclude that all such states may be considered NA constructs. Such conceptual overlap has led some to argue that no mental health condition has been established empirically as a discrete nosological entity, and that instead all psychopathology exists on a single continuum (Kotov et al., 2017), a view which goes against the categorical diagnostic model of DSM-5. A less extreme position that nonetheless acknowledges syndromal overlap suggests it might be more appropriate to conceptualise disorders as groups of overlapping “fuzzy sets” (Joyce, 2008), which, like in the case of depression and anxiety, may be the case for depression and burnout. Indeed, in their meta-regression analysis, Meier and Kim (2022) noted that while burnout, depression and anxiety may all be NA constructs, different NA domains should be

expected to show empirical overlap as well as independence, and likely have sequential relationships (whereby by one NA domain may contribute to the development of another type of NA in a different context).

Irrespective of such nuances, if many of burnout's cardinal symptoms are NSPD symptoms, this creates a problem for the discriminant validity of any tool developed to measure the syndrome, a problem from which the SBM is evidently not immune. All existing measures of burnout would then likely have this same low-specificity limitation. This supposition has been supported in a previous study evaluating the specificity of the MBI (Kleijweg et al., 2013), in which the authors stated that, when using the measure as a diagnostic tool, "far too many false cases of burnout will be detected in those who actually should be classified in terms of DSM–IV with a depression or anxiety disorder." Consequently, all previously reported prevalence rates of burnout that have been calculated based on the use of measures such as the MBI must be interpreted with extreme caution (Bianchi et al., 2015b), as it is likely that such rates have been inflated by false positive scenarios.

Such a reality argues both for superior definitions and measures of burnout to be developed, but also for the need to avoid simply relying on a single burnout measure to make a burnout diagnosis. Indeed, in considering the overlap between depression and anxiety, Bjelland et al. (2009) have argued that "it takes more information than a symptom score from a questionnaire to establish a diagnosis of a mental disorder" (p. 135) and that additional information on factors such as aetiology, onset, and level of impairment are needed before valid and reliable diagnoses can be made. Several other 'medically unexplained' syndromes have this same low-specificity problem, with conditions such as chronic fatigue syndrome, fibromyalgia and irritable bowel syndrome lacking specific biomarkers or symptoms that pinpoint the underlying condition. Such cases require clinicians to employ a clinical

reasoning approach that weights contextual factors to come to an appropriate diagnosis. The existence of differing causal factors may better differentiate burnout and depression, as indicated in Studies 4 and 5, may therefore be useful for clinicians attempting to differentially diagnose and treat cases of either state.

11.2.4. The importance of lay community perspectives and phenomenological research.

Evidently, the studies in the current thesis showed that those with self-identified burnout share many of the symptoms reported by individuals with clinical depression. While such findings may point to a shared underlying psychopathology (i.e., NA), as just discussed, it is conceded that the findings of the current thesis may also be interpreted as indicating that burnout should not be considered an entity distinct from depression. If not distinct, then the finding of several causal attribution differences in Analysis 5B would suggest that the ‘differences’ between burnout and depression are largely socially constructed, with burnout having been historically positioned as caused by a trigger that is usually work-related, while depression does not always require an external cause (i.e., being ‘endogenous’ or occurring ‘out of the blue’) or is triggered by a ‘loss’ event (e.g., divorce/separation from a partner) or one which adversely affects the individual’s self-esteem (e.g., being rejected in a relationship) as against a work stress precipitant.

If a valid interpretation, a reasonable question is then why do individuals use the term ‘burnout’ to label their experiences? One potential explanation is that the burnout label carries “minimum stigma” (Schaufeli et al., 2009) and is not associated with the negative connotations commonly carried by formal psychiatric labels (Leone et al., 2011). When contrasted with the label of depression, which is commonly stigmatised (Beck et al., 2009), this might explain why the general public (and participants in the studies in the current thesis) is often quick to assign a label of burnout to a condition that may in fact be depression.

Supporting this assertion, Epstein and Privitera (2017) argued that individuals are more willing to label themselves as experiencing burnout and seek help for that issue than to be forthcoming with a potential depressive condition because of the associated stigma of the latter. This is especially likely in workplaces where there is a (perceived or actual) requirement for workers to report their mental illness history to relevant professional registration boards for safe practice, such as in the medical profession.

It should be acknowledged, however, that even if ‘burnout’ is indeed a conceptual chimera, many of those so self-identifying nonetheless experience an array of psychological symptoms (as evidenced by the results of Studies 1 through 3 of this thesis) that can be debilitating (as is the case for those with depression) and which may require psychological or medical intervention. Indeed, Study 3 revealed that many participants with self-diagnosed burnout (especially those in Class 2 of the bimodal distribution) reported that they required assistance from medical and/or mental health professionals to manage their burnout symptoms. It is possible that alternative mental health concerns (other than burnout) may have contributed to the more ‘severe’ burnout phenotype observed in the Class 2 participants, as was suggested in Study 3. Nonetheless, the participants themselves attributed their current symptoms to burnout, with such self-diagnosed burnout distressing enough to prompt them to seek professional assistance and/or take time off work. Thus, while the prevalence of burnout self-identification does not inherently validate the syndrome as a nosological entity, listening to the perspectives of those self-identifying as burnt out and paying credence to burnout self-diagnosis by medical professionals is likely wise. Bianchi et al. (2016) acknowledged such a position, stating that even if burnout is not a nosologically distinct condition, “it might be useful to keep the burnout label in medical settings should the burnout label be less stigmatising than the depression label” (p. 92).

On the other hand, some individuals experiencing similar symptom constellations as those captured by the SBM may not label themselves as burnt out. This could be due to several factors, such as low mental health literacy, or, alternatively, such individuals could instead be identifying with an alternative psychological condition that shows overlap with burnout, such as those detailed in Chapter 3. Another potential explanation is that the burnout label, although being less stigmatising than depression, also carries its own stigma (May et al., 2020), and many individuals with putative burnout may not seek help as a consequence (Dyrbye et al., 2015). Pursuing the motivation behind those with burnout symptoms who do and do not self-identify as burnt out, and how this impacts on help-seeking behaviours, is therefore an important avenue for future research.

Regardless of whether one self-identifies, evidence indicates that burnout and its associated symptoms are keenly associated with experiences of psychological distress. For instance, in another recent study co-authored by the PhD candidate (Parker et al., submitted), scores on both the SBM and the MBI in a sample of dentists were found to be moderately to highly correlated (r ranging from 0.58 to 0.78) with two measures of psychological distress, the General Health Questionnaire (Goldberg, 1978; Goldberg & Hillier, 1979; Goldberg & Williams, 1988) and the Kessler Psychological Distress Scale (Kessler et al., 2003). The identification of burnout symptoms in patients or employees, regardless of whether they do or do not self-identify as burnt out, should therefore not be ignored (Zisook et al., 2022).

Importantly, a key finding of Study 4 was that most of the sample were able to nominate several qualitative differences between burnout and depression, with only one-fifth noting substantial overlap between the two states. Thus, despite findings from some past studies (overviewed in Chapter 3) suggesting that the two states are synonymous, **most individuals who resonate with the burnout label experience burnout as phenomenologically distinct from depression.** Evidently, differences between the two

states may be difficult to ascertain by solely examining symptomatology and using only quantitative, positivist research methods, as have been used in most previous studies evaluating the burnout-depression overlap. Instead, qualitative studies (like Study 4 of the current thesis) that weight the perspectives and phenomenological experiences of patients may be better equipped to delineate differences between burnout and depression. For example, a recent series of studies (Engebretsen & Bjorbækmo, 2019, 2020a, 2020b) utilising interpretative phenomenological analysis (IPA), a qualitative research method which focuses on the subjective lived experiences of participants (Smith & Osborn, 2015), examined individuals' experiences of burnout, and particularly the interactions of these individuals within the health care system. Findings from the studies indicated that treating probable cases of burnout as depression had many negative emotional and treatment outcomes for patients, including an overall worsening of symptoms experienced. Further examination as to how individuals distinguish experiences of burnout and depression using IPA may therefore be beneficial in elucidating points of difference not discernible through quantitative research.

11.3. Limitations and directions for future research.

Limitations specific to each study were discussed in their relevant chapters, however there are some points that deserve further consideration. In terms of participant recruitment, it is reiterated that although including individuals with self-diagnosed burnout was intentional so to construct a 'bottom-up' definition of burnout based on their experiences, such a strategy allows for the potential that some participants had other primary diagnoses that influenced their symptom reporting. In light of the lack of an agreed-upon definition and/or diagnostic criteria for burnout, the syndrome's debated overlap with several conditions (see Chapter 3), especially depression, and the potential for NSPD symptoms to characterise many of these entities, future studies utilising burnout self-diagnosis would benefit from the administration of a standardised diagnostic measure, such as the Structured Clinical Interview for DSM-5

(SCID-5; First, 2015; First et al., 2016), to all participants to assess for the presence of comorbid disorders, and then evaluating the effect of such comorbidities on study results. Measures like the SCID-5 could also be used to assign participants to any clinical depression group (being used for comparison against a burnout group), rather than relying on clinician diagnoses as was done in Studies 3 and 5.

Additional limitations include the absence of a ‘healthy’ control group (made up of participants without self-diagnosed burnout or clinically-diagnosed depression) across the studies. While the studies (especially those in Part III) sought only to compare experiences of self-diagnosed burnout against experiences of clinical depression, an additional comparison against the experiences of individuals exposed to similar environmental stressors but without burnout or depression may have provided greater insight into defining features of a burnout syndrome.

In addition, the studies in this thesis relied on self-report, not just in relation to self-diagnosis of burnout, but also in relation to the collection of symptom data for both the burnout and depression groups. Symptom self-report is subjective and can be influenced by response biases like acquiescence bias, where respondents mark symptoms as present merely because they are listed as potential features of a syndrome (Ross & Mirowsky, 1984). Indeed, clinician- or observer-rated scales are traditionally considered more reliable in mental health research (Lin et al., 2014). However, clinician-rated scales can also be impacted by biases of the administering clinician (Wolfson et al., 2000), while some argue that, as patients are the ones experiencing the effects of a particular syndrome or condition, they are better suited to be reporting on such experiences than an observer (Justice et al., 1999). Thus, future studies examining burnout and depression symptomatology would benefit from including both self-report and clinician-rated measures and evaluating the level of agreement and/or discordance between the measures. In addition, more objective, laboratory-based tests would be of benefit

where possible, such as the Multifaceted Empathy Test (Dziobek et al., 2008) mentioned in Chapter 10 to assess state empathy levels, and cognitive tests such as the Wechsler Adult Intelligence Scale (Wechsler, 1955; Wechsler, 2008) to assess changes in different domains of cognitive functioning (e.g., divided attention, processing speed, working memory).

Furthermore, the studies in this thesis were all cross-sectional in design, and therefore changes in symptoms across time could not be examined. This issue is of particular relevance when examining both the possibility of discrete ‘burning out’ versus ‘burnt out’ stages (as in Study 3), as well as the burnout-depression overlap (as in Studies 4 and 5). For the former, longitudinal studies would be best equipped to evaluate markers of and transitional points between the differing burnout stages. In relation to the latter, while burnout and depression show considerable symptom overlap (as evident in Study 5), it is possible that burnout is more of an independent state initially that then generates depressive symptoms as a consequence, resulting in eventual interdependence between burnout and depression. Such a hypothesis requires future evaluation, and the discrepancies in existing longitudinal studies reporting that burnout does (Armon et al., 2014; Hakanen & Schaufeli, 2012) and does not (Bianchi et al., 2015d) predict later depression also require future clarification. If both these issues are resolved, further research could then tackle the intriguing question as whether burnout should be afforded clinical status once it transitions into the end/burnt out stage, either as its own ‘burnout disorder’ or as depression.

While the studies in Part I allowed for the derivation of a new definitional model of burnout, as captured by the SBM, the research described in this thesis was exploratory and thus the model is yet to be validated. As a first step in this direction, recent research involving the PhD candidate (Parker et al., submitted) supported the convergent validity of the SBM in that SBM and MBI scores were strongly correlated ($r = 0.76$). Such a finding is not surprising as both measures include symptom constructs capturing exhaustion, empathy loss and

reduced professional accomplishment. That the SBM covers additional symptom sets also captured by the BAT (Schaufeli et al., 2020) allows for the hypothesis that its convergent validity would be further supported through comparison with the BAT. Future studies comparing the psychometric properties of the SBM and BAT measures would therefore be informative. The discriminant validity of all such measures (i.e., the MBI, SBM and BAT) should also be evaluated and compared to examine which measure, if any, is best at discriminating between burnout and other psychological syndromes or conditions with evidence of symptom overlap (as reviewed in Chapter 3), especially depression.

Clarification of burnout's definition, how it is best measured, and whether and how it should be afforded disorder status is imperative before rigorous treatment efficacy studies can be undertaken. While a close examination of treatment efficacy studies for burnout is beyond the scope of this thesis, the authors of two systematic reviews evaluating treatment efficacy studies for burnout (mentioned earlier) both noted that their reviews were limited by the lack of consensus relating to how burnout was defined and measured across the studies evaluated (Ahola et al., 2017; Perski et al., 2017). Ahola et al. (2017) concluded that "it is impossible to draw guidelines regarding how to treat burnout" (p. 9) as a result of such definitional heterogeneity. Another important finding in that review was that most intervention studies have focused on treating individuals in the 'burning out' stage (by attempting to address antecedents at work), rather than focusing on the process of recovering from end-stage burnout, which the authors identified as a potentially important distinction from a treatment perspective (with each burnout stage expected to have differing prognoses and likely requiring different intervention strategies). Evidently, further research prioritising clarification of burnout's definition and measurement is required before more rigorous treatment efficacy studies for burnout can be designed. A focus on delineating between

burning out and burnt out stages through longitudinal research, as previously suggested, would be a useful step in this endeavour.

A related issue that requires attention in future research is the appropriateness of antidepressants to treat burnout. There have been several reports of burnout cases being treated with antidepressants (Ahola et al., 2007; Bianchi et al., 2014; Martos Martínez et al., 2021), despite there being no clinical trials published (to the candidate's knowledge) that have evaluated antidepressant efficacy specifically for treating burnout. It is possible that the anxiolytic/anti-worrying propensities of some antidepressant classes may be beneficial in reducing the psychological impact of external stressors associated with burnout. However, the prescribing of antidepressants for burnout presumably also reflects, in some cases, a view amongst clinicians that burnout overlaps considerably with depression, rather than being based on empirical evidence of antidepressant effectiveness specifically for burnout. On the contrary, there have been reports that antidepressant use can lead to a worsening of burnout symptoms (Engebretsen, 2018), with this effect potentially due to burnout being associated with hypercortisolism and antidepressants further lowering an individual's cortisol levels (Juster et al., 2011). Thus, further pursuing clarification of burnout's overlap with depression in future studies will help to elucidate whether interventions for depression are appropriate to use in treating burnout. Furthermore, and as suggested earlier in this chapter, more adequately powered studies supporting burnout's greater overlap with non-melancholic as opposed to melancholic depression (as indicated by the results of Study 5) would support the need to design studies evaluating whether interventions that are effective for non-melancholic depression (e.g., prioritising psychotherapy above antidepressant medication) also have syndrome-specific treatment benefits for burnout.

11.4. Conclusion.

The lack of consensus regarding burnout's precise definition and clinical status has led some to believe that burnout is less debilitating than other psychological states. On the contrary, burnout's associated personal, professional and financial consequences for individuals indicate that the syndrome should not be regarded as trivial (Zisook et al., 2022). In recognising the weight of burnout on individuals and the wider community, the studies reported in this thesis contribute new information to the ongoing debates as to how burnout should best be defined and conceptualised, and relatedly, if and how it should be distinguished from depression. Specifically, results indicated that burnout as experienced by the lay population is comprised of symptoms beyond those captured by the MBI. Furthermore, while those self-identifying as burnt out experience many of the same symptoms as those with clinical depression, there are some nuanced differences between the two states that may assist in differentiation. These findings should encourage further research into whether the symptoms captured by the SBM should be considered definitional to the syndrome, and to clarify the differential overlap between burnout and each of the principal depressive subtypes.

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