The Interplay of Incivility, Person Factors and Organisation Factors in Medical Student and Junior Doctor Wellbeing

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Abstract Summary

This thesis studied the effect of incivility on the physical, psychological and occupational wellbeing of medical students and junior doctors, and the role of person and organisation factors in mitigating/exacerbating any negative effects. A hypothesised moderated mediation model, theoretically underpinned by the Jobs Demands-Resources Model (Demerouti et al., 2001) informed the design of the studies. The research was conducted on first year postgraduate medical students, final year undergraduate medical students and junior doctors/Junior Medical Officers (JMOs) undertaking hospital-based postgraduate training.

This thesis is a thesis by publication, encompassing a review paper and four studies. Following a systematic review of 113 peer-reviewed articles published over a period of 18 years, the review paper explains the factors related to burnout in the early-career stage of medicine. According to the principles of the JD-R model, identified factors were classified as demands or resources to explain the nature of the relationship with wellbeing. This review justified the use of the JD-R model as a theoretical framework to explain wellbeing in medical students and junior medical officers.

Focusing on first year postgraduate medical students, the first study demonstrates the moderating role of Emotional Intelligence (EI) and resilience. Good emotional management (EI facet 1) buffered the negative effects of incivility on wellbeing, whilst good emotional understanding worsened these negative effects. A strong ability to actively cope with uncivil behaviours, and treat the experience as a positive learning opportunity protected against the negative effects of incivility.

Extending on the above findings, the second study conducted on final year undergraduate medical students found experiences of incivility were related to a reduced sense of identification as a doctor, which in turn was associated with higher level of

burnout. Resilience buffered the negative effects of incivility on professional identity, signifying a moderated mediation relationship to explain the effect of incivility on wellbeing. This study also looked at the moderating role of career entrapment, however no significant effects were found.

Study 3 explains the role of resilience and fatigue in moderating the negative effects of incivility on JMO wellbeing. Consistent with the observations in Studies 1 and 2, junior medical officers with a strong perceived capacity for resilience presented with better wellbeing following experiences of uncivil behaviours. However, fatigued JMOs presented with poorer wellbeing compared to their less fatigued peers having experienced incivility. Whilst an attempt was made to assess the protective role of social support, no significant findings were found.

The fourth study looks at the within-person effects of incivility and the moderating role of organisation factors (hospital culture and supervisor recognition). Incivility returned shift-based effects on JMO wellbeing, with these effects varying relative to the source of incivility. Although no significant cross-level moderation effects were observed, both hospital culture and supervisor recognition were related to wellbeing across a single shift.

The final discussion chapter outlines the contributions, implications and limitations of my thesis, and highlights considerations for future studies based on the both the findings and learnings identified across this research project.

Candidate Statement

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself. Ethics approval was obtained from both the Macquarie University (Reference: 5201924817249; 5201953689278) and Western Sydney University (Reference: H10434) HREC for this thesis. Three chapters within this thesis have been submitted for publication.

The review paper (Chapter 2) has been published in the journal Medical Teacher. I am the first author and my supervisor, Professor Barbara Griffin is the co-author of this paper. My contribution to this paper was: conception = 50%; data collection = 95%; analysis = 80%; writing = 70%.

Study 3 (Chapter 5) is currently undergoing a second round of review in the Advances in Health Sciences Education (AHSE) journal following the first round of reviewer comments suggesting minor revisions. I am the first author, with my associate supervisor, Associate Professor Monique Crane as the second author, Associate Professor Paul Dugdale (ANU Medical School) as the third author and my supervisor, Professor Barbara Griffin as the fourth author. My contribution to this paper was: concept = 50%; data collection = 85%; data analysis = 100%; writing = 70%.

Study 4 (Chapter 6) is undergoing review in the journal Medical Education. I am the first author, Associate Professor Paul Dugdale is the second author and my supervisor, Professor Barbara Griffin is the third author. My contribution to this paper was: concept = 50%; data collection = 100%; data analysis = 100%; writing = 70%.

Candidate Signature: Thripura Hariharan Date: 06/12/2020

Publications Arising From this Thesis

Journal Articles

Hariharan, T. S., & Griffin, B. (2019). A review of the factors related to burnout at the early-career stage of medicine. *Medical Teacher, 41*(12), 1380-1391. https://doi.org/10.1080/0142159X.2019.1641189

Hariharan, T. S., Crane, M. F., Dugdale, P., & Griffin, B. Assessing the impact of incivility on junior doctors: the moderating role of resilience and fatigue. *Advances in Health Sciences Education* (Under Review).

Hariharan, T. S., Dugdale, P., Griffin B. A shift makes a difference: within-person effects of incivility on junior doctor wellbeing. *Medical Education* (Under Review).

Conference Papers and Posters

Hariharan, T.S., & Griffin, B. (2019, July 22). *Incivility and medical student burnout: it depends on motivation*. Paper presented at the APS 13th Industrial and Organisational Psychology Conference, Adelaide, Australia.

Hariharan, T. S., & Griffin, B. (2019, August 27). *Workplace incivility, self-efficacy, and medical student burnout: a JD-R perspective*. Paper presented at AMEE (An International Association for Medical Education in Europe) Conference, Vienna, Austria.

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I would also like to thank my associate supervisor, Associate Professor Monique Crane. Your feedback and guidance was instrumental to the design of my studies on resilience. Thank you so much for always being available (even on short notice) to share your perspectives and thoughts around how the studies and manuscripts could be improved. I appreciate all the support.

A special thank you to Associate Professor Paul Dugdale and Janelle Corey. Your support and involvement made it possible to conduct the studies with JMOs and helped me collect the data that I needed to complete this thesis. Likewise, to the wonderful team at Macquarie University and Western Sydney University, thank you for your help and support with coordinating the medical student data collection.

Most importantly, thank you to all the medical students and junior medical officers who participated in the studies. Your involvement and engagement made this possible.

To Avril Moss, Robyn Hitchcock and the amazing HDR team at Macquarie University, thank you so much for supporting the administrative aspects of finishing this thesis. Without your diligence and care, it would have been a lot more challenging to manage the expectations that came with completing my research.

My fellow PhD friends (Alana, Sam and Madi), thank you so much for always being there for me and sharing your experiences with me. I have enjoyed completing this thesis having you three by my side. Thank you as well to my special work team, the ‘BIG

girls', for always checking-in on me and being so flexible with my thesis commitments. I am so very appreciative.

Saving the best for last, to my amazing family, words cannot describe how grateful I am to have your love, support and care in my life. To my parents and my sister, I dedicate this thesis to you. Thank you for everything.

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CHAPTER 1: Introduction and Thesis Overview

Wellbeing is a serious concern in the medical profession, with young medical trainees in particular at greater risk of poor wellbeing in comparison to their senior peers/colleagues and the wider working population (Brennan et al., 2010; Tallentire et al., 2011). In the Australian Medical Association's 2008 national survey assessing the health and wellbeing of junior doctors (AMA, 2008), more than two thirds of the 914 respondents reported high stress at work. Likewise, Beyond Blue's National Mental Health Survey of Doctors and Medical Students (2013, updated in 2019) reported that young doctors in their early career period had higher rates of burnout in comparison to senior doctors across all three domains of burnout: emotional exhaustion (47.5% vs. 29.1%), low professional efficacy (17.6% vs. 12.8%), and cynicism (45.8% vs. 33.8%). Recently, a summary of 195 studies from 47 countries (Rotenstein et al. 2016) found approximately a quarter of the medical students sampled screened positive for depression, with 1 in 10 disclosing suicidal ideations (which is 2 to 5 times higher than the general working population). Similarly, the Beyond Blue survey (2019) showed that junior doctors experienced twice the likelihood of having thoughts of suicide compared to the Australian working population.

Although poor wellbeing in medical students and junior doctors (i.e., collectively medical trainees in the 'early-career stage' of medicine, acknowledging that this term is defined differently across countries) is a widespread global problem (Brazeau et al., 2014; Rotenstein et al., 2016; Schaufeli et al., 2009), the extant literature has not only been largely atheoretical but has placed more emphasis on studying the prevalence of the problem as opposed to understanding the individual and organisational factors that contribute to it. In light of these limitations, the purpose of my thesis is to better inform the factors associated with poor wellbeing amongst those in the early-career stage of medicine.

Drawing on the current literature, I developed a theory-based model underpinned by characteristics of the Job Demands-Resourced (JD-R) Model (Demerouti et al., 2001) that hypothesise factors related to poor wellbeing and factors that protect against it. Given the increasing reports of medical student and junior doctor suicides coupled with multiple hospital units being stripped of their training accreditations following allegations of bullying, harassment and systematic dysfunction (Aubusson, 2019; Markwell & Wainer, 2009), I specifically chose to treat workplace incivility as the key job demand leading to poor wellbeing in my model. With wellbeing being the overarching outcome of interest, I operationalised it as psychological wellbeing (burnout, depression, anxiety, stress), physical wellbeing (fatigue) and occupational wellbeing (work engagement).

This thesis is bookended with this introductory chapter and an overall discussion chapter. Apart from the introduction and discussion, the body of this thesis consists of one systematic review (published) and four empirical studies (two of which have been submitted for publication to journals, one published as a conference paper and one [Chapter 3] analysing a unique dataset that has not been submitted for publication). Together they seek to validate different aspect of my model using participants across the early-career stage of medicine (two with medical students and two with junior doctors). An additional conference paper was presented at *The Association for Medical Education in Europe* (AMEE) Conference in 2019 on how physician values (e.g., value for professional status) buffered the negative effects of incivility on medical student burnout. As this publication is beyond the scope of my hypothesised moderated mediation model (detailed later), it is instead being treated as a supplementary study in my research journey and presented in Appendix B.

The sections below provide a detailed summary of the thesis objective, the theoretical foundation for the studies undertaken, the hypothesised moderated mediation

model developed to explain the issue, and an overview of the thesis structure and methodology.

Thesis Objective

The thesis aims to understand the effects of incivility on the wellbeing of those in the early stage of their medical career. It draws primarily on the JD-R model (Demerouti et al., 2001) as a theoretical framework. Importantly, the research assesses both between-person effects (differences across groups of medical trainees who experience varied amounts of incivility) and within-person effects (changes within an individual based on their own experiences of incivility) with the aim of providing a more comprehensive perspective on how these individuals are impacted by incivility.

I define the early-career period to include both medical students and junior doctors. In Australia, medical students are those undertaking either an undergraduate or graduate tertiary medical program, both of which end with the same qualification. On completing their medical degree, students receive provisional registration to practice as a doctor, but must then complete hospital-based practice as an intern during their first year (postgraduate year 1; PGY1) and as a resident during their second year (PGY2). Most then undertake specialist registrar training programs from their third year (PGY3) that vary in length from three to seven years. Junior doctor/Junior Medical Officer (JMO) are the common terms used to refer to interns, residents and registrars collectively. This thesis presents data from first year medical students, final year medical students, and JMOs from PGY 1 to PGY3+.

Theoretical Background

The basic foundation for developing my model is the JD-R model (Demerouti et al., 2001), a renowned framework that classifies job characteristics into two categories, namely demands and resources. It is described in more detail in the first publication (next

chapter), but briefly, demands include the physical (e.g. long hours), social (e.g., interpersonal conflict) and organisational (e.g. culture) aspects of a job that require ongoing effort to cope, in turn draining an individual's cognitive, physical and emotional capacities (Bakker, 2015). Job resources are qualities of the person (e.g. physical health, resilience) or the working environment (e.g., supervisor support, development opportunities) that support work goals, professional growth, and coping in response to demands (Bakker & Demerouti, 2008; Schaufeli & Taris, 2014; Xanthopoulou et al., 2007). When demands are high, workers are likely to develop mental and physical health impairments and be less engaged at work in the absence of sufficient resources to support them (Bakker et al., 2014; Schaufeli & Taris, 2014). When adequate resources are available, they can buffer or protect against the depletion caused by demands, mitigating the negative impact on wellbeing and performance (Bakker, 2011; Bakker & Demerouti, 2007).

In an attempt to align the JD-R theory to medicine's nature of work, I reviewed 18 years (2000 – 2018) of literature on burnout in medical students and junior doctors. Burnout was chosen as the primary outcome measure given that the available research on the topic predominantly used this construct to operationalise wellbeing. The review (Hariharan & Griffin, 2019) was published in the journal Medical Teacher and is presented in the next chapter. It provided an opportunity to identify characteristics of the individual (person factors) and features of the working environment (organisation factors) that have previously been associated with positive and negative wellbeing and work outcomes based on the JD-R model's definitions of demands and resources.

Workplace Incivility: A Demand

Although much discussed in the popular press and in opinion pieces published in medical journals, my review found scant empirical literature on the effect of workplace

incivility on burnout or wellbeing in the early-career stage of medicine. Nevertheless, a growing body of work outside the medical context shows that incivility experienced at work is directly associated with higher stress levels (Cortina et al., 2001), increased absenteeism (Sliter et al., 2012), reduced performance on tasks (Chen et al., 2013) and turnover (Lim et al., 2008), all of which appear to be increasingly experienced by medical students and junior doctors (Fnais et al, 2014).

According to the categorisation of emotional conflicts and demands developed by Crawford et al. (2010), workplace incivility is a psychosocial job demand that can surface as part of the interpersonal relationships integral to tasks performed by two or more people. Defined as low-intensity rude, dismissive or undermining behaviour (e.g., being interrupted by a co-worker, humiliation, being insulted or excluded by others; Cortina et al., 2013), workplace incivility is considered to violate the norms for mutual respect but the intent to inflict harm is ambiguous (Andersson & Pearson, 1999).

With a large body of the general literature on workplace incivility researching the between-person effects of incivility, the issue of whether the relative position of the perpetrator compared to the target has any differential effects has been left understudied. In this thesis, I examine both between-person and within-person effects of incivility, with a specific focus on understanding the differential effects of the common sources of incivility amongst junior doctors (i.e., senior doctors; Faruqui & Ikkos, 2007, nurses/allied health staff; Bradley et al., 2015, patients/relatives; Crutchet et al., 2011; Fnais et al., 2014).

Resources (or Lack of) and their Protective Role Against Incivility

As indicated above, classification of demands under the JD-R model entails the need to identify resources that theoretically protect against any negative effects associated with demands (Demerouti et al., 2001). Job resources are thought to intrinsically motivate individuals and drive high work engagement, low cynicism and good performance fostered

by learning, growth and development (Deci & Ryan, 1985). In developing my model for this thesis, I considered both *person* and *organisation* resources that might be associated with more positive wellbeing outcomes. My systematic review of the literature identified resources at these two levels that are considered key within the medical profession. At the *person level*, emotional intelligence and resilience are two trait-like characteristics that are of interest in the medical literature. Emotional intelligence is defined by the "ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990), whilst resilience refers to the ability to cope and respond well when facing stressors (Crane et al., 2019). Although both are related to reduced risks of burnout in junior doctors (Olson et al., 2015; Lin et al., 2016), the research has not expanded to understand if these constructs buffer the negative effects of workplace demands.

In addition to studying these positive personal resources, I included two further factors (fatigue and career entrapment) that represent a 'lack of' resources to examine how these may exacerbate any negative effects of demands (i.e. incivility). Fatigue is treated as both a physical wellbeing outcome and a resource (or lack thereof) in the thesis. It reflects a state of depleted energy with dangerous consequences for patient care (West et al., 2009) and junior doctor physical and mental health (McClelland et al., 2017). Career entrapment is anecdotally recognised as a potential issue for the medical profession yet not often studied. It represents a depleted state of resources following the monetary, emotional and time-based investments made in attaining medical qualifications, paired with the perception that there are limited career alternatives availabilities should one decide to change professions. Significantly associated with burnout (Zacher et al., 2015; Goodler et al., 2007), career entrapment is essentially the perception that an individual is unwilling or unable to pursue new career interests (Carson et al., 1996). In a profession like medicine

that requires significant financial investments, years of education and practical training, and emotional challenges, doctors are likely to feel pressured to commit to the profession so as to not undermine the value of investments made. At the same time, in circumstances where they do feel comfortable considering alternative career pathways, options are limited unless they reinvest time and money into up-skilling for a different line of work.

Hospital culture and supervisor recognition were tested as *organisational* resources. The Australian media has recently drawn significant attention to the 'toxic culture' of hospitals fuelled by bullying, harassment and discrimination experienced by junior doctors (White, 2020). When hospital culture is poor, comfort around speaking up and raising issues, and transparency in patient outcomes is limited (Bigham & Kalaichandran, 2019). With workplace incivility assessed as the demand of interest in this thesis, further understanding how the perceived hospital culture may influence the negative effects of incivility can help inform broader contextual factors that need to be considered when addressing this problem.

Good supervision is a vital part of how young doctors effectively learn and maintain quality patient care (Hore et al., 2009). Outside a medical context, good recognition from supervisors is particularly associated with better psychological functioning and wellbeing and is recommended to be embedded within an organisation's policies and work structure (Merino et al., 2015). Amongst young doctors, evidence supporting the importance of supervisor recognition is limited. Therefore, I sought to assess if supervisor recognition protected against the negative effects of workplace incivility.

Mediating the Relationship Between Workplace Incivility and Wellbeing

Although the JD-R model solely encompasses demands and resources, my review of the literature underlined the importance of considering the strength of one's professional

identity and how this impacts wellbeing. Therefore, in developing my model, I integrated professional identity as a potential mediator between workplace incivility and wellbeing. Workplace incivility was conceived as an identity violation that could cause a drop in one's positive identity as a doctor, which might explain the link to poor wellbeing and work attitudes.

In medical school, students are exposed to a range of academic pressures (e.g., competitive training environment, educational workload, confronting facts) and faculty/curriculum related challenges (e.g., lack of constructive support, verbal and emotional abuse from senior staff) all of which can collectively be stressful (Deepa & Panickar, 2016). At this stage, their identity is influenced by progressively increasing clinical experiences and interactions with their lecturers and peers that give them a sense of being 'brought into the profession' and treated as future medical professionals (Weaver et al., 2011). Furthermore, the underlying concept of 'social exclusivity' that stems from being a medical student (i.e., being perceived as a high achiever and accepted into a competitive medical program) paired with a course structure that typically separates medical students from the rest of the institution both physically and socially, influences their professional identity (Weaver et al., 2011).

Transitioning from medical school, young doctors need to adjust to variety of expectations and responsibilities that are very demanding (Markwell & Zainer, 2009). The need to adopt a dual role as both an ongoing learner and a health practitioner is defined by a growth in professional identity to one that is associated with higher prestige, a sense of 'membership' to a group that is integrated into one's social identity, and acting in accordance with new norms and concepts (Kilminster et al., 2011). This transition triggers awareness of being a doctor following an increase in clinical work, patient care and

responsibility, and novel relationships with colleagues and supervisors, all of which are integral to the development of one's professional identity (van den Broek et al., 2020).

According to social identity theory (Ellemers & Haslam, 2011), career identity occurs when individuals describe themselves and are described by others based upon their profession. An individual's identity is also influenced by the day-to-day interactions they have with the people around them. Those in the early-career stage of medicine typically perceive their supervisors and colleagues as role models and use them as a comparative benchmark when gauging their fit within the professional group (van den Broek et al., 2020). Moreover, important to identifying oneself as a doctor is the feeling of being treated as a colleague and considered as part of the 'in-group' by all members of the interprofessional group (van den Broek et al., 2020). Therefore, when one experiences workplace incivility the individual is likely to feel a reduced sense of professional belonging, particularly when this is experienced in front of coworkers or when the supervisor is the source (Ouyang et al., 2015). Although not extensively researched amongst early-career doctors, a weaker professional identity is associated with burnout (Monrouxe et al., 2007), depression and anxiety (Wang & Zhang, 2017) in healthcare professionals.

The Hypothesised Moderated Mediation Model

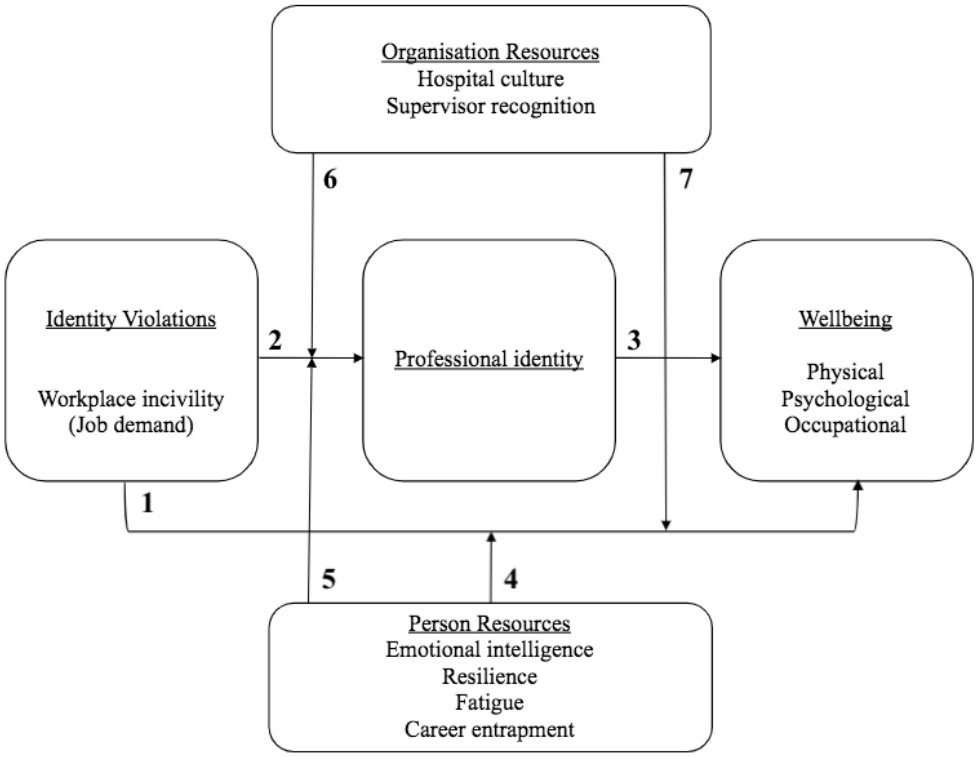

Figure 1. Hypothesised moderated mediation model

The model hypothesises that workplace incivility (a job demand) is an experience that directly affects wellbeing, but also indirectly affects it by violating a medical student/junior doctor's professional identity, which in turn affects wellbeing. In other words, the medical trainee's strength of professional identity mediates (at least partially) the relationship between incivility and wellbeing. The proposed model is a moderated mediation in that resources (or a lack of) will buffer the direct and indirect relationship between workplace incivility and wellbeing.

Thesis Overview

As indicated previously, my thesis presents one systematic review (Chapter 2) and four empirical studies (Chapter 3-6). Each of Chapters 2 to 6 include a short explanatory note at the beginning of the chapter to provide context. Chapter 7 is the final discussion

chapter that summarises the key findings and their implications, including an outline of the limitations and identifying focus areas for future research.

Systematic Review (Chapter 2)

I reviewed 113 peer-reviewed articles published internationally between January 2000 and November 2018 on the factors related to burnout in the early-career stage of medicine. The JD-R model was used to classify previously identified factors as demands and resources to explain their relationships to the wellbeing of medical students and junior doctors. This review validated the applicability of the JD-R model to the medical profession and its ability to guide future research. Already cited four times, the reference is:

> Hariharan, T.S., & Griffin, B. (2019). A review of the factors related to burnout at the early-career stage of medicine. *Medical Teacher, 41*(12), 1380-1391.

Study 1 (Chapter 3)

This study examines the effects of workplace incivility on wellbeing (i.e., Paths 1 and 4 in Figure 1), investigating the role of emotional intelligence (through the facets of emotion management and emotional understanding) and resilience (through the facets of active coping and positive growth) in moderating the negative effects of incivility. Participants were 66 postgraduate medical students undertaking their first year of medical training. The data were collected as part of a larger study being conducted assessing emotional intelligence, stress and educational performance in medical and health students. As expected, good emotional management protected against the negative effects of incivility on wellbeing. Good emotional understanding however, exacerbated these negative effects. Being able to actively cope with incivility and treating the situation as a positive learning experience protected against its negative impact on wellbeing.

Study 2 (Chapter 4)

Study 2 investigates the pathway from incivility to burnout via professional identity, and the moderating effects of resilience and career entrapment (i.e. Paths 1, 2, 3, 4, 5 in Figure 1). Participants were 115 final year students of a 5-year undergraduate medical degree who were part of a larger study assessing medical students' career goals and interests across the length of this tertiary program. The results showed that experiencing incivility was associated with more doubts about being a doctor, with this effect being stronger amongst medical students with lower resilience. In turn, more doubt was associated with higher burnout. Career entrapment showed no moderating effect. Incivility also had a direct effect on increasing burnout. Results were presented at a national conference:

> Hariharan, T.S., & Griffin, B. (2019, July 22). *Incivility and medical student burnout: it depends on motivation*. Paper presented at APS 13th Industrial and Organisational Psychology Conference. Adelaide, Australia.

Study 3 (Chapter 5)

This study aimed to expand on the limited evidence available on the effects of workplace incivility on the wellbeing and work attitudes of junior doctors in hospital-based practice. It is also the first attempt in the literature to investigate factors (i.e., resilience and fatigue) that may mitigate or exacerbate the negative outcomes associated with incivility amongst this cohort (i.e. Paths 1 and 4 in Figure 1). Although the intention was to examine the moderated mediation of Path 5, a non-significant mediation of professional identity from this dataset meant that this paper only presents the direct effect of incivility on wellbeing and the moderating effect of resilience and fatigue on this direct relationship. Participants were 128 junior doctors in PGY1, PGY2 and PGY3+ from one Australian local health district. Results showed incivility was associated with higher

depression, anxiety and stress symptoms. Perceived capacity for resilience acted as a protective factor against the negative impacts of incivility, whilst fatigue exacerbated it. This paper has been submitted for review in the *Advances in Health Sciences Education* journal. It is currently undergoing a second round of review following minor feedback from reviewers.

Study 4 (Chapter 6)

Unlike the first three studies that focus on the between-person effects of incivility and look at the longer-term effects of the problem, this final study was designed as a "diary study" and, as far as I am aware, is the first attempt to assess the within-person short-term effects of incivility on junior doctors (i.e., whether the amount of incivility experienced during a shift relates to the individual's wellbeing and work engagement that day). In addition, this study investigates how the nature of outcomes vary with respect to the source of incivility (senior doctors vs. nurses/other allied health workers vs. patients) and examines cross-level effects of hospital culture and supervisor recognition on the effects of incivility experienced during a single shift (Paths 1 and 7 in Figure 1). As in Study 3, a non-significant mediation of professional identity meant that this paper only reports the direct effect of incivility on wellbeing and the cross-level moderating effects of hospital culture and supervisor recognition on this direct relationship (Path 6 could not be tested). Participants were 54 of the 128 junior doctors from Study 3. Incivility from three different sources during work shifts was differentially related to fluctuations in junior doctor anxiety, fatigue and engagement. Although no significant cross level moderating effects were identified, hospital culture and supervisor recognition both had a significant main effect on the three outcomes. This paper has been submitted for review to the *Medical Education* journal.

Methodology

The studies described above included a systematic review, three cross-sectional studies and a diary study. All four studies collected quantitative data through self-report surveys (see Appendix D for full list of items used in each study). Long working hours, the need to balance work/ education/family responsibilities, and the natural tendency to ensure support is always available for patients meant that accessibility and ongoing availability of medical students and junior doctors was a challenge. As a result, it was not possible to test the full model across all stages of the early medical career pathway. Instead, each of the four studies addresses a different aspect of the model, but nonetheless, together seek to provide a comprehensive test of the model and its relevance for the early-career period.

Assessing different aspects of the model in each study entailed a different approach to analysing each dataset. Linear regression analyses (using SPSS Version 25) examined the effects of incivility across all cross-sectional studies (Chapters 3, 4 and 5). The Hayes Process Software was also used for analyse the hypothesised moderated mediation effects in Chapter 4. For the diary study, a dataset compiling between-person and within-person data deemed multilevel modeling using the Mplus software (Muthen & Muthen, 2013) most suitable for analysis. An alpha of .05 was used for significance across all four studies.

The research received ethics approval from both the relevant university Human Research Ethics Committees (HRECs) and local health district involved. For Study 1, ethics approval was obtained from Macquarie University HREC (no. 5201924817249). For Study 2, ethics approval was obtained from Western Sydney University HREC (no. H10434). Ethics approval was obtained from Macquarie University HREC (no. 5201953689278) and the ethics board of the local health district involved for Studies 3 and 4.

Note, reference styles vary for the different journals that papers were submitted to. For this thesis, I have presented the references in Chapter 2, Chapter 5 and Chapter 6 as submitted to the journal. For the sections of the thesis not published in a journal (Chapter 1, 3, 4, and 7), I have followed the Publication Manual of the American Psychological Association (APA), *Seventh Edition* (2020). The compiled reference list for Chapters 1, 3, 4 and 7 are presented at the end of this thesis before the Appendix section.

CHAPTER 2: A Review of the Factors Related to Burnout at the Early-career Stage of Medicine

This review paper explains the factors related to burnout in medical students and junior doctors, using the Jobs Demands-Resources (JD-R) model to explain the different relationships. This paper was published in the journal *Medical Teacher* in 2019 and has been cited four times. I am the first author and my supervisor Professor Barbara Griffin is the second author. My contribution to the paper was: conception = 50%; data collection = 95%; analysis = 80%; writing = 70%. Contribution from Professor Barbara Griffin was: conception = 50%; data collection = 5%; analysis = 20%; writing = 30%. In order to minimise repetition of information in this chapter, the abstract has been presented in Appendix C (with abstracts of all published/under review papers).

A Review of the Factors Related to Burnout at the Early-career Stage of Medicine

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Burnout has been identified as a widespread problem in the medical profession. Studies show high incidence rates ranging from 7% to 75% (Bingemann et al. 2017; Erschens et al. 2018; Konopasek and Slavin 2015) with evidence of prevalence increasing from 28% six months prior to graduation, to 75% 11 months post-graduation (Monrouxe et al. 2017). This issue is prominent globally, with high rates of burnout found in countries such as Australia (Willcock et al. 2004), New Zealand (Henning et al. 2009), India (Ratnakaran et al. 2016), China (Fan et al. 2017), the UAE (Abdulrahman et al. 2018), Saudi Arabia (Jamjoom and Park 2018), Iran (Sepehrmanesh et al. 2010), Africa (Stodel and Stewart Smith 2011), Brazil (Almeida et al. 2016), the USA (Brazeau et al. 2014; Dyrbye et al. 2014), France (Tavolacci and Veber 2015) and wider Europe (Joaquim et al. 2018; Nason et al. 2013). This current paper aims to review the factors related to burnout in the early-career stage of medicine.

Whilst there have been several reviews of burnout in the medical profession (Busireddy et al. 2017; Chumming et al. 2017; Dewa et al. 2014; Dyrbye et al. 2006; Dyrbye and Shanafelt 2016; Erschens et al. 2018; Ishak et al. 2013; Prins et al. 2007; Rothenberger 2017), these focus almost solely on summarising reports of prevalence. However, critical to the design and implementation of effective interventions is the need for a more comprehensive understanding of the factors related to burnout, including its antecedents and outcomes. We therefore review these factors, summarising the current evidence and also identifying gaps in the literature that require attention to better address the problem. However, given the substantial context changes across the medical career and because those in the early-career period (i.e., medical students and junior medical officers)

appear to be particularly prone to burnout (Byrne et al. 2016; Wilson 2015), our review is deliberately limited to the early-career period.

Importantly, this review is structured in line with the widely accepted Job Demands-Resources Model (JD-R) (Bakker and Demerouti 2007; Demerouti et al. 2001) as a means of providing a strong theoretical framework to understand the existing empirical research and to provide a guide for future work.

Burnout and the Job Demands-Resources Model (Figure 2, Box 3)

The JD-R (see Figure 2) is a dual-process model, including a 'health-impairment' pathway that explains burnout and a 'motivational' pathway that explains engagement. Burnout, a work-related hazard (Lemaire and Wallace 2017), is defined as a multifaceted construct based on Maslach's (1998) theory of burnout. It is characterised by emotional exhaustion, cynicism about the value of one's occupation, and diminished perspectives around one's personal accomplishments and capabilities to perform well in the role (Maslach et al. 1997). In contrast, engagement is characterised by the positive motivational states of vigor, dedication, and absorption (Schaufeli et al. 2002). Whilst originally believed to exist along a single continuum, burnout and engagement are presently viewed as independent, yet inter-related constructs, both of which predict important workplace outcomes (Trépanier et al. 2015). To consider one without the other risks missing important processes (Leon et al. 2015). Indeed, Prins et al. (2010) demonstrated that both are independent constructs among hospital-based medical residents, with levels of burnout and engagement found to differ based upon the area of specialisation and factors in the work environment.

The JD-R classifies aspects or qualities of the work and the person into demands (parts that require effort and may be associated with personal costs) and resources (parts of the role together with qualities of the person that support development and coping

mechanisms in response to demands) (Demerouti et al. 2001). High demands result in health impairment if not supported by sufficient resources (Bakker et al. 2014). The flexibility of the JD-R model enables it be considered in the context of hospitals and medical training environments, supporting its adaption to those in the early-career phase of medicine (Bakker et al. 2014). Using the JD-R model as a theoretical framework to categorise factors that have been empirically associated with burnout in medical students and junior medical officers, this current review sought to answer the question, "What are the outcomes of burnout in this cohort and what specific demands and resources are related to their burnout?

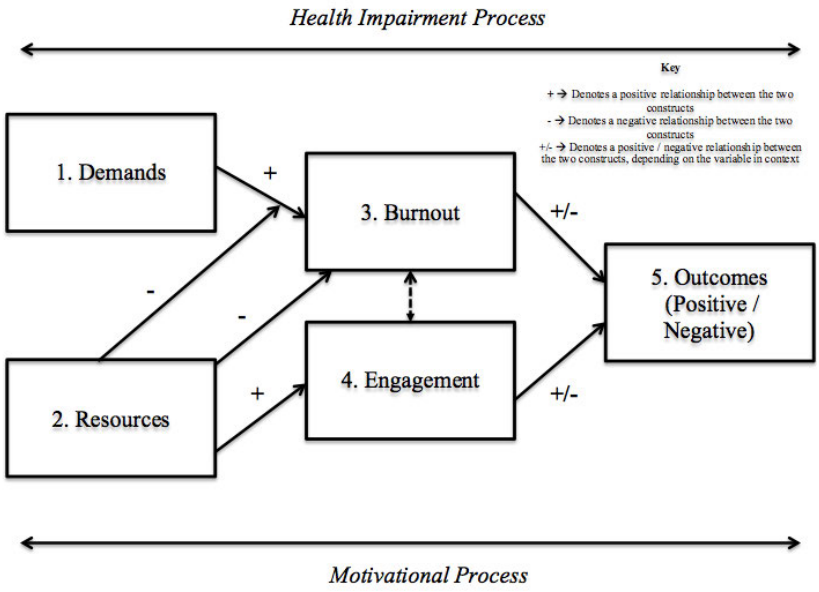

Figure 2. The Job Demands-Resources model adapted from Hu et al. (2017)

Methodology

The PRISMA statement (Moher et al. 2009) informed this review of the relevant peer-reviewed literature. Eligibility criteria included: (1) the *population* should comprise early-career medical professionals (i.e., medical students and junior medical officers, such as interns and residents, noting that the number of years of specialist training after medical school varies between countries and specialisations); (2) burnout had to be *measured*

through validated instruments; (3) the *assessment* of factors related to burnout, not just prevalence statistics; and (4) *empirical* analysis of data.

A systematic review of medical student psychological wellbeing conducted between 1980 and 2005 (Dyrbye et al. 2006) identified an absence of literature on burnout. Consequently, when recently reviewing burnout prevalence, Erschens et al. (2018) did not consider research prior to 2000, but recommended the 5-year overlap to validate Dyrbye et al.'s (2006) findings. We adopted a similar approach, restricting this review to international literature published between January 2000 and November 2018.

In light of the very limited number of longitudinal studies to support the direction of causality, we drew on the broad JD-R literature to categorise factors as either outcomes, demands or resources. In cases where a factor had not previously been categorised in this body of work (e.g., area of medical specialization), we based decisions on the accepted construct definitions used within the theory (Demerouti et al. 2001).

Data Sources and Search Strategy

Medical and psychological databases, including PsycINFO, Medline, Ovid, SAGE Research Methods, Wiley Online Library, ScienceDirect and Scopus were systematically searched using the search terms: (medical student OR medical residents OR medical interns OR doctors) AND (burnout OR stress OR wellbeing); (burnout) IN or AMONGST (medical students OR medical interns OR medical residents). Additional studies were obtained from the reference lists of identified articles.

Quality Assessment

A quality assessment of the included studies was conducted with reference to sample size, study design (e.g. cross-sectional, longitudinal study etc.), journal quality and assessment tools. Small sample size can indicate insufficient power to identify significant relationships (VanVoorhis and Morgan 2007), therefore given Green's (1991) rule of

thumb that regression studies with as many as five variables need 109 participants we used a cut-off of 100 participants as a general indicator of quality regarding sample size. Findings were interpreted in line with the nature of the study type (e.g., ensuring causal relationships are not inferred from studies that adopted a cross-sectional design). Results were interpreted with caution from studies published in lower quality journals (impact factor < 1.0) however they were included to ensure international coverage (see Table 1 for list of study locations). Finally, with the inclusion criteria specifying the need for empirical data we also assessed the types of validated tools used to measure burnout. A descriptive summary of this quality assessment is shown in Table 1.

Table 1

Quantitative summary of the descriptive data

Studies	**Only Overview (n)**	**113**
Sample size	Total (*n*)	65,830
	Minimum sample size (*n*)	23
	Maximum sample size (*n*)	5140
Study design	Cross-sectional studies (*n*)	105
	Longitudinal studies (*n*)	8
Burnout Instrument	Maslach Burnout Inventory (*n*)	95
	The Copenhagen Burnout Inventory (*n*)	3
	OLBI (*n*)	4
	Others (e.g. Burnout syndrome inventory, SBS-HP, UBOS etc.) (*n*)	11
Country-context	Australia (*n*)	3
	North America (*n*)	46
	South America (*n*)	9
	UK (*n*)	2
	Europe (*n*)	23
	Africa	3
	Asia (*n*)	27
Journal impact factor	Impact factor > 1	15
	Impact factor < 1	98

Results

Selection of Relevant Research Papers

The PRISMA flowchart of the study selection procedure is depicted in Figure 3. The identified articles (*n*=3796) underwent multiple screenings to determine eligibility. Two independent reviewers [TH & BG] assessed the titles and abstracts, categorising them as "included" or "excluded". Agreement rate was 96%. Disagreements in the categorisation were resolved by face-to-face discussions between raters where abstracts and full texts were jointly examined. This initial screen excluded 3211 articles, including duplicates. The remaining 585 were assessed against the eligibility criteria identified above, leaving 113 studies for review.

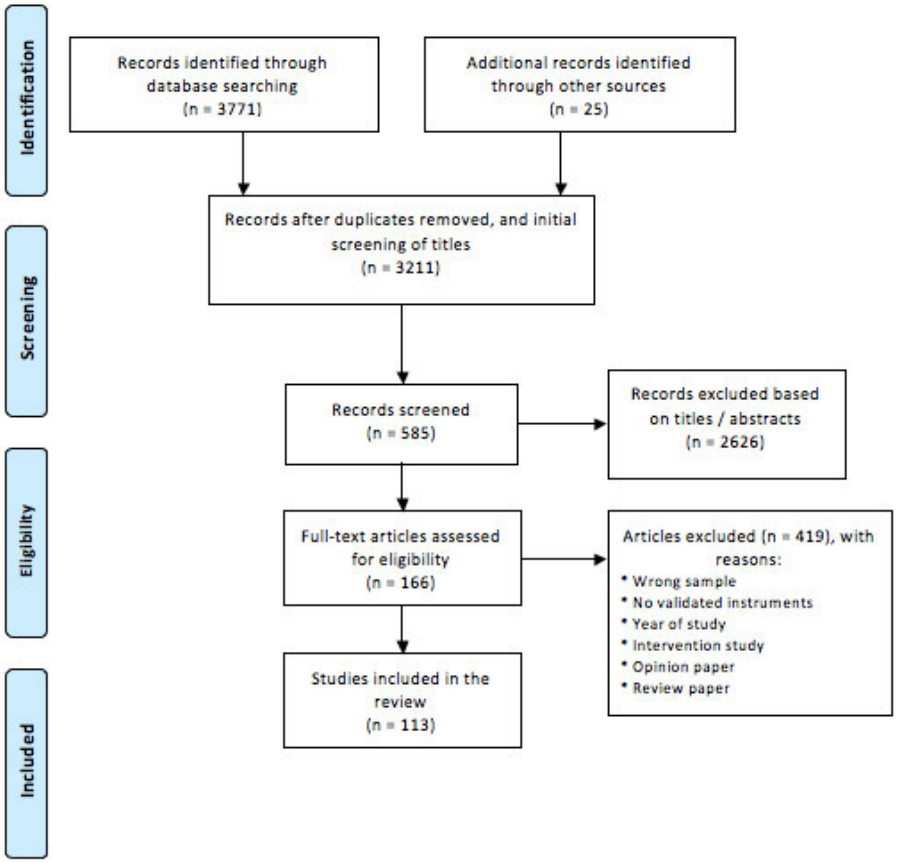

Figure 3. PRISMA flowchart of study inclusion and exclusion

Research Quality

Although restricted to peer-reviewed published research, limitations in the quality of studies were clear. First, in relation to study design, approximately 93% of the articles reported studies with a cross-sectional design, a fundamental problem when trying to assess causal relationships and identify predictors and outcomes of burnout and/or engagement. Furthermore, studies were typically limited to data from a single institution, challenging generalisability. Second, a number of studies reported relatively small sample sizes (e.g., around 19% of the included studies had $n < 100$). Third, as recently highlighted by Eckleberry-Hunt et al. (2018), burnout was inconsistently defined and measured, making comparisons across studies difficult. Fourth, only around 13% of the final articles were published in higher quality journals (impact factor over one). Nevertheless, we included all articles to capture the global picture. Finally, whilst validated measures of burnout were used, measures were primarily based on self-reported data risking common method bias (Conway 2002)

The findings are presented below in relation to each element of the JD-R model.

Outcomes of Burnout (Figure 2, Box 5)

According to the research reviewed, burnout appears to have both job-specific and person-specific implications for medical students and residents, which may well further impact on how the overall health-care system operates (Bingemann et al. 2017). However, we note that unless specified, the results below relate to cross-sectional studies.

Job-related Outcomes

Job-related outcomes studied included withdrawal (e.g., absenteeism and quitting), poor job attitudes (e.g., lowered job satisfaction and self-efficacy), and negative job behaviours (e.g., errors and malpractices), all of which have likely consequences for

patients and the health system more broadly (Dyrbye and Shanafelt 2016; Kalliath et al. 2000).

Withdrawal. In one study of medical students (Dyrbye, Thomas, et al. 2010), burnout was associated with a threefold increased risk of thoughts of dropping out of medical school. Amongst practising physicians, burnout resulted in high turnover, increased absenteeism and decreased productivity (Hoff et al. 2002; Soler et al. 2008). Some researchers (e.g., Kalliath et al. 2000; Stodel and Stewart Smith 2011) argued that such withdrawal behaviours and cognitions potentially fosters patients' mistrust of the health care system and might also discourage both current and future health care practitioners from engaging in the profession. Furthermore, managing an irregularly present workforce presents a significant challenge for skill retention (Stodel and Stewart Smith 2011).

Job Attitudes. Several studies showed that burnout was associated with poor job attitudes in medical students, including low self-efficacy (Boni et al. 2018; Mazurkiewicz et al. 2011), reduced engagement and low job satisfaction (Dyrbye, Massie, et al. 2010; Kroska et al. 2017). Likewise, burnt out interns also demonstrated lower job satisfaction and engagement (Becker et al. 2006).

Job-relevant Behaviour. Medical students with burnout appear prone to adopt a poor professional working ethic. For example, Dyrbye, Massie, et al. (2010) showed how they were more likely to report a physical examination as normal despite not actually having done the examination, while Brazeau et al. (2010) found them more likely to engage in dishonest clinical behaviour.

Similar poor professional behaviour was seen among junior doctors who were burnt out. Examples included sub-optimal patient care, including a lack of patient-centred communication, early patient discharge, forgetting mandatory routine assessments, and

general misconduct (Dyrbye, Massie, et al. 2010; Passalacqua and Segrin 2012; Dewa et al. 2017; Shanafelt et al. 2002). Self-reported medical errors were also more frequent (Prins et al. 2009; Shanafelt et al. 2002; West et al. 2009). Although many of these studies were cross-sectional, the longitudinal study by West et al. (2009) supports a cause-and-effect relationship between burnout and poor professional behaviour. Not surprisingly, patients reported lower satisfaction with healthcare services provided by practitioners who were burnt out (Kalliath et al. 2000).

Despite the above, not all studies found an association between burnout and professionalism (e.g., Kwah et al. 2016). However, until better measures of professionalism are utilised and longitudinal studies with larger sample sizes are conducted, findings need to be interpreted cautiously.

Person-related Outcomes

The broader literature on burnout indicates that it has negative effects on employees' interpersonal or social functioning as well as on their health and wellbeing (Ruddock et al. 2017; Wang et al. 2017). Such outcomes were also found in this review of the early medical career period.

Social. One of the most common outcomes of burnout identified in this review was a decrease in empathy), evident in both medical students (Brazeau et al. 2010; Fan et al. 2017; Park et al. 2016) and residents (Fan et al. 2017; Hicks and Hanes 2018; Passalacqua and Segrin 2012). This may be due to a decrease in social skills, such as communication and assertiveness, attributable to symptoms of burnout (Pereira-Lima and Loureiro 2015). Dyrbye, Massie et al. (2010) also suggested students suffering from burnout may be less inclined to practice medicine among underserviced populations, given their less altruistic views regarding their professional responsibility to society.

Health. Studies indicated that both psychological and physical health can be impacted by burnout. For example, Tereszko et al. (2016) found it contributed to the development of neurotic symptoms amongst medical students at both the start and end of their training. High blood pressure, increased heart rate variability (May et al. 2016), higher alcohol consumption (Jackson et al. 2016; Lebensohn et al. 2013) and sleep deprivation (Mazurkiewicz et al. 2011) were also reported. Of particular concern, suicidal ideation was identified as an outcome of burnout in medical students (Blacker et al. 2018; Dyrbye et al. 2008) and residents (Chati et al. 2017; Van Der Heijden et al. 2008).

Antecedents of Burnout: Demands (Figure 2, Box 1)

The JD-R model proposes that symptoms of burnout develop when individuals experience high demands that are insufficiently supported by the available resources (Demerouti et al. 2001). A wide range of demands were identified as specific predictors of burnout in medical students and junior medical officers, classified as features either of the work or the person.

Work-related Demands

Role Demands. Early-career medical practitioners tend to experience low job control and a lack of autonomy over different aspects of their role (Fabichak et al. 2013; Ringrose et al. 2009), particularly evident when facing excessive workload expectations (Ogundipe et al. 2014). A number of studies demonstrated an association between increased symptoms of burnout and long working hours (Boudreau et al. 2004; Elmore et al. 2016; Ro et al. 2008; Zis et al. 2014), high patient-load (Castelo-Branco et al. 2007), being on call (Ogundipe et al. 2014), working overtime (Ringrose et al. 2009), and experiencing time pressures (Panagopoulou et al. 2006). Moreover, several studies (Al-Dubai and Rampal 2010; Anagnostopoulos et al. 2015; Ogundipe et al. 2014; Prins et al. 2007; Verweij et al. 2017; Yao and Wright 2003; Yussuf et al. 2006) reported that high

workload exacerbated by training demands, research requirements, and off-work study, increased work-family conflict, which was in turn related to higher burnout (Ringrose et al. 2009).

Another role demand associated with burnout in junior doctors identified by Rogers et al. (2014) is the requirement for surface acting - that is, acting and communicating in a manner contrary to what one may actually want to do or say. For example, acting in an empathic manner when no empathy is felt.

Other stressful working conditions identified as precursors to burnout included a lack of clarity regarding the outcomes of a task, the potential for a bad outcome or death (Simpkin et al. 2018), and uncooperative colleagues (Afana et al., 2017; Al-Dubai, Ganasegeran, Perianayagam, and Rampal 2013; Prins et al. 2007). Panagopoulou et al. (2006) suggested these demands had more negative effects in medical students and residents relative to medical specialists.

Area of medical specialisation might also be a factor in the health-impairment pathway (Panagopoulou et al. 2006; Zid et al. 2015). Dyrbye et al. (2018) showed that residents in urology, emergency medicine, surgery and neurology presented with a higher risk of burnout relative to residents training in internal medicine. Similarly, Mason et al.'s (2016) longitudinal study found that compared to other specialties, junior doctors within Emergency Departments reported increased anxiety and decreased job satisfaction. Oancia et al. (2000) suggested these differences exist due to varying working conditions within different specialisations. For example, surgery, cardiology and oncology were identified as more stressful (Antoniou et al. 2008). In contrast, Enoch et al. (2013) argued that specialty choice was instead influenced by a medical student's burnout, demonstrating the need to clarify reverse causation and cross-lagged relationships between these constructs.

Culture. Medical 'culture' has been described as hierarchical and competitive, fostering an environment where the disclosure of feelings of vulnerability and stress are not positively received (Verdonk et al. 2014). Several studies (Cook et al. 2014; Houpy et al. 2017; Pololi et al. 2018) identified elements of poor medical workplace culture (e.g., poor team dynamics, unapproachable supervisors, and mistreatment from supervisors) associated with burnout. Poor culture might also contribute to burnout when residents experience a need to 'prove themselves', feel the expectation to maintain excessive workloads (Schaufeli et al. 2009), or fail to set workload boundaries (Ringrose et al. 2009).

Person Demands

Stress. Stressful life events (including major illness) were related to burnout in several studies (Cohen et al. 2008; Dyrbye, Matthew, et al. 2010; Gouveia et al. 2017; Singh et al. 2017; Zid et al. 2015). Other stress-related demands identified as relating to burnout were worrying about the future (Dahlin et al. 2010), an increase in general perceived stress (Hillhouse et al. 2000), and training stress (Rogers et al. 2014).

Mental Health. Poor mental health was seen as one of the stronger predictors of burnout in the early-career period (Dyrbye et al. 2012). For example, according to Jackson et al. (2017), residents with Post Traumatic Stress Disorder were more likely to present with burnout symptomatology. Villwock et al. (2016) showed the same relationship with Imposter Syndrome in medical students. Also related to a higher burnout was self-reported anxiety (Ripp et al. 2010), perfectionism (Yu et al. 2016), and a lack of confidence in one's skills and knowledge (Ripp et al. 2010).

Maladaptive Coping Behaviour. Self-blame in response to negative events was identified as a driver of burnout in residents, especially women (Spataro et al. 2016). Likewise, lower levels of values-based behaviour and high avoidance behaviour were associated with burnout (Kroska et al. 2017).

Antecedents of Burnout: Resources (Figure 2, Box 2)

According to the JD-R model, resources are features of the work environment or the individual that act not only as direct protective factors against burnout (Gorgievski and Hobfoll 2008) but are also thought to have a moderating effect, reducing the impact of certain demands (Bakker et al. 2005; Xanthopoulou et al. 2007). The literature was reviewed for evidence of both the direct and moderation effects in the context of the early-career period in medicine, with the results summarised as work-related resources or personal resources

Work-related Resources

Supervision and Support. Emotional and instrumental support (including adequate performance feedback) provided by supervisors was identified as important protectors against burnout in medical students and residents (Al-Dubai et al. 2013; Prins et al. 2008; Ritcher et al. 2014; Zis et al. 2014). There was also evidence for the moderating effect of supportive supervision. Hurst et al. (2013) found that the impact of demands on resident wellbeing varied with the quality of supervision received. Likewise, adequate resident-to-specialist ratio decreased the odds of residents burning out in the context of high patient load (Zis et al. 2014).

Peers. A number of studies indicated that a nurturing peer community is associated with a lower risk of burnout (Arnold and Dupre 2012; Baruch-Feldman et al. 2002; Bore et al. 2016; Popa-Velea et al. 2017; Prins et al. 2007; Satterfield and Becerra 2010; Seo et al. 2015; Tackett et al. 2017). Teamwork (Doulougeri et al. 2013) and increased team learning behaviours (Myers, et al. 2018) also appeared to reduce the impact of demands on resident burnout.

Structure of Work. There was mixed evidence that time in training impacts burnout. Some studies (Cecil et al. 2014; El-masry et al. 2013; Fares et al. 2016; Liu et al.

2018; Paro et al. 2014) found medical students experienced more burnout and less engagement later rather than earlier in their studies. A similar effect was observed with respect to residents' year of practical training (Gyorffy et al. 2016; Seo et al. 2015). However, others found burnout to be highest in the earlier stages of training amongst residents (Satterfield and Becerra 2010). Regardless, it appeared that having adequate learning and development opportunities reduced burnout, with a slightly stronger effect observed amongst males (Verweij et al. 2017; Zis et al. 2014). Such opportunities were also found to buffer the negative effect of demands (Hurst et al. 2013). One study (Reed et al. 2011) demonstrated that a pass/fail grading system for medical students was associated with lower burnout relative to a quantitative grading system.

Personal Resources

Traits. The possibility that personality acts as a resource, making individuals less susceptible to burnout has attracted a growing body of research within the field of medicine (Chae and Lee 2017), perhaps because of its potential as selection criteria. Whilst Goel et al.'s (2016) longitudinal study found no association between personality and burnout in medical students, Lee et al. (2017) identified a set of positive qualities (being purposeful, responsible, self-accepting, empathic, helpful, and forgiving) that were associated with a decreased likelihood of burnout. Similarly, impulsivity was associated with higher burnout (Dahlin and Runeson 2007), and introversion with poorer wellbeing (Bughi et al. 2017).

Pereira-Lima and Loureiro (2017) showed that residents with stronger social skills were less likely to present with burnout symptomatology, with this effect consistent across gender and stage of training. A similar association was observed between performance-based self-esteem and medical student burnout (Dahlin and Runeson, 2007). Being confident in skill acquisition, perceiving value in the coursework, being comfortable with

academic activities, and experiencing consistency in role expectations were also shown to protect early-career medical practitioners from the effect of demands that drive burnout (de Abreu Santos et al. 2011; Lee and Jeon 2015). Interestingly, two studies (Fares et al. 2016; Mangione et al. 2018) found that a preference for and exposure to the humanities (e.g., music, literature etc.) had a similar effect.

Resilience and empathy were of particular interest to researchers. Resilience not only had a direct effect on lowering the risks of burnout (Houpy et al. 2017; Olson et al. 2015), but resilient individuals appeared more likely to possess skills to better manage stressful demands, burnout symptomatology and feelings of inferiority (Bird and Pincavage 2016; Bore et al. 2016).

Higher levels of empathy led to lower burnout in von Harscher et al.'s (2018) longitudinal study, but this relationship may be mediated by a resident's sense of calling towards the profession (Chae et al. 2017). As noted earlier, some researchers viewed empathy as an outcome of burnout, highlighting the need for more longitudinal research.

Emotional intelligence was also related to reduced risks of burnout (Lin et al. 2016), possibly via perceived stress (Swami et al. 2013). However, no studies examined its potential moderating effect. In contrast, one study (Estupinan and Kibble 2017) demonstrated the buffering effect of spirituality, which seemed to enable medical students to cope through meaning, purpose and hope.

Gender. Several studies highlighted gender differences in the prevalence of burnout. Although not consistently found, burnout appears to be more prevalent amongst female medical students and doctors (Choi et al. 2015; Fares et al. 2016; Gunasingam et al. 2014; Nomura et al. 2015; Pagnin et al. 2013; Seo et al. 2015; Paro et al. 2014; Popa-Velea et al. 2017; Verweij et al. 2017), with the effect of demands on burnout less strong for males (Pagnin et al. 2013). Furthermore, Salles et al. (2018) found female residents who

felt they were being stereotyped based on their gender, presented with higher emotional exhaustion and reduced wellbeing relative to males.

Family. A few studies investigated the influence of family structure as a protective resource. Married junior doctors appeared less likely to present with burnout (Prins et al. 2010; Thompson et al. 2016) as were those with children (Ritcher et al. 2014). However, Abdulaziz, Baharoon, and Sayyari (2009) found no impact of marital status or number of children on resident burnout.

Verweij et al. (2017) showed that positive work-home interference was associated with lower risk of symptom development, with social support from a partner or family member acting as a protective factor, especially amongst females. For males, mental demands at home and support from colleagues appeared to be more important (Verweij et al. 2017). Dyrbye and colleagues (Banerjee et al. 2017; Dyrbye and Shanafelt 2012) suggested that those who see meaning in their medical work attempt to maintain a work-life balance, and thus may present with a lower risk of burnout.

Health. Sleep and physical activity reduced symptoms of burnout (Bore et al. 2016; Lebensohn et al. 2013; Shanafelt et al. 2002; Rajan and Bellare 2011; Wolf 2017). Good self-rated health was likewise associated, especially in the context of lower professional demands (Dyrbye et al. 2012; Seo et al. 2015). Cedfeldt et al. (2010) found that having time for personal needs improved perceptions of wellbeing.

Engagement (Figure 2, Box 4)

As noted earlier, a large body of research on the JD-R model supports the value of simultaneously and systematically assessing the cross links between burnout and engagement for a better understanding of the interrelations between job demands, resources, burnout, engagement and their outcomes (Trépanier et al. 2015). Although very

limited, some recent research on medical students and residents attempted to validate these interrelations.

Amongst students for example, high academic achievement (Gomez et al. 2015) and being in the early stages of training (Liu et al. 2018) were associated with greater engagement and in turn, better wellbeing. For residents, opportunity for professional development, challenging work, and autonomy appeared to improve work engagement regardless of gender, personality, or level of emotional exhaustion (Verweij et al. 2017; Zis et al. 2016). Similarly, engagement was higher in response to better teamwork (Doulougeri et al. 2013) and less emotional burnout (Al-Dubai et al. 2013).

Discussion

Most reviews of burnout in medicine have focused predominantly on prevalence, leaving little doubt as to its widespread incidence. Consequently, attention has turned to the need for interventions (e.g., Chung et al.,2018; Goldhagen et al. 2015; Harwani et al. 2013). However, effective intervention is predicated on there being a body of evidence providing both theoretical and empirical evidence for factors likely to be associated with burnout that can either be removed or strengthened. We therefore present a review of these factors using the Job Demands-Resources Model (JD-R; Bakker and Demerouti 2007; Demerout et al. 2001) to both structure the existing evidence and to offer a guide for future research. Overall, the results confirm the applicability of the JD-R model in terms of its components, but more research is needed to support the direction of relationships.

The results reiterate that burnout is likely to have serious consequences at the early-career stage of medicine, including withdrawal and other negative work attitudes and behavior, together with poor social and health outcomes. Although the reviewed literature made little reference to theoretical models of burnout, a broad range of antecedents of

burnout were identified. We found that these could be categorised as either demands or resources, supporting the JD-R model.

The demands thought to increase burnout included aspects of the role (e.g., low control, high workload), of the organisation (e.g., poor culture), and of the person (e.g., stress, mental health, and maladaptive coping). However, these may not represent an exhaustive list. For example, in the non-medical literature, Goodger et al. (2007) showed that 'career entrenchment' (the perception that one is unable or unwilling to pursue new career interests) (Zacher et al. 2015) is a significant predictor of burnout. Given the time and effort involved in medical training, we suggest the sense of entrenchment might be an important stressor for medical practitioners. Furthermore, the reviewed literature did not consider recent theoretical developments indicating that individuals appraise demands differently, which can alter their effect (Schaufeli and Toon 2014). For example, the same demand can be viewed as a threat or hindrance by some but a challenge by others (Searle and Auton 2014). When appraised as a challenge, demands have less negative outcomes (Schaufeli and Toon 2014) and at times positive outcomes (Searle and Auton, 2014). Some of the demands identified in this review may therefore not act as a negative factor for those who can interpret them as a challenge.

As with demands, the resources associated with burnout could be categorised as work-related (e.g., supervision, support, peers and work structure), or person-specific (e.g., gender, marital status, parental status and good health). Despite the evidence that resources act as direct (negative) predictors of burnout, few studies examined the JD-R proposition that they may also have a moderating effect. The presence of moderation or buffering effects represent important opportunities for intervention (Fairchild and McQuillin 2010).

Practical Implications

The findings of this review have important implications for the design of interventions to reduce burnout. First, it is clear that not all demands and resources that predict burnout in the early medical career are qualities of the individual nor under control of the individual. Interventions must therefore focus on the appropriate target, which includes leaders, educators, organisations, as well as the individual medical students or junior medical officers.

Second, intervening to remove demands might not always be possible. Whilst some could be reduced by those responsible (e.g., mistreatment from supervisors, excessive workload, anxiety), other demands appear to be more intrinsic to the job (e.g., surface acting, patient death) and not likely amenable to intervention. In this case, realistic job previews might be of assistance to those choosing a medical career or specialisation (Silber 2010). More importantly, the JD-R model points to the usefulness of understanding how resources can buffer the impact of such demands. For example, our review found that good supervision reduced the effect of demands on burnout. However, we emphasise that building individual and organisational resources should not be done at the expense of efforts to remove the demand itself where possible.

Third, the results of the review raise potential implications for selection. While some of the person-related resources could be improved through training or coaching (e.g., resilience), others might be considered as more stable individual differences (e.g., personality traits) that could be assessed at the point of selection into medical school or specialist training programs.

Limitations and Future Research

A key limitation is that this was a qualitative review, and therefore risks some degree of subjectivity in interpreting the data. A statistical meta-analysis would be difficult given the wide variety of factors studied but should be an aim of future research.

This review highlighted a number of problems with the quality of the current literature that need addressing to provide more robust evidence. First, there was inconsistent definition and measurement of burnout. Recently, Eckleberry-Hunt et al. (2018) recommended that effort be made to more clearly define burnout and consistently measure its components across studies.

Second, the majority of studies relied on cross-sectional designs, making it impossible to draw conclusions about causality. Researchers' approach to empathy illustrates this problem, with some (e.g., von Harshcer et al. 2010) suggesting that it was a predictor of burnout, whereas others (Fan et al. 2017; Passalacqua and Segrin 2012) treated empathy as an outcome of burnout. Longitudinal data is needed to understand the causal pathways, which is essential for the design of effective interventions.

Third, other design factors evident in the reviewed papers, such as small sample size, analysis limited to data from a single institution, and reliance on self-report measures, impacted research quality. These need to be addressed in future research.

Fourth, many of the papers initially identified had to be excluded due to being "opinion" articles, presenting no empirical analysis of data to validate the authors' ideas and hypotheses. To advance the field and provide a basis for intervention, strong theory and carefully designed studies are needed to add evidence-based value to these perspectives.

Lastly, literature on engagement in early-career medical professionals was minimal. Understanding both burnout and engagement will provide scope for better

informing efforts to sustain good workplace performance and positive employee wellbeing (Demerouti and Cropanzano 2010; Halbesleben & Wheeler, 200). For example, outside the medical literature, higher engagement has been associated with better health, greater devotion of energy, receptiveness to feedback, resource building, and performance (Demerouti and Cropanzano 2010; Halbesleben and Wheeler 2008).

It is recommended that future research primarily focus on conducting more studies that clearly define and longitudinally assess antecedents, outcomes and moderators of burnout. More sophisticated study design might also include for example, multi-level modeling, which would assess the extent institutional level factors affect an individual's burnout. Once this is done, a meta-analysis should follow to validate the literature. Qualitative studies might identify those demands that are perceived as threatening for some but challenging for others and assess the acceptability of various intervention types.

Conclusion

This review is one of the first to collate literature on the predictors of burnout. We provide a theoretical basis to explain why relationships with burnout exist and to guide future research. Obtaining a clearer picture on the various workplace and person-specific factors that influence burnout across the medical career pathway can better inform interventions to address what is widely recognised as a serious problem.

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CHAPTER 3: The Effect of Incivility on Medical Students: The Role of Emotional Intelligence and Resilience

This chapter aims to investigate the unanswered problem as to why some medical students are more susceptible than others to poor wellbeing as a result of uncivil experiences (Cook et al., 2014). The two *person* factors examined in this chapter are emotional intelligence and perceived capacity for resilience. Drawing on the Job Demands-Resources (JD-R) model (Demerouti et al., 2001), I explain how both factors may protect against the negative effects of incivility on wellbeing, specifically burnout, stress and negative affect. In terms of my hypothesised moderated mediation model (see Figure 4 below), this study examines the direct path from incivility to wellbeing but not the mediation effect of professional identity. Measuring professional identity was unlikely to be valid given the participant pool comprised first year medical students in the very early stage of their medical career.

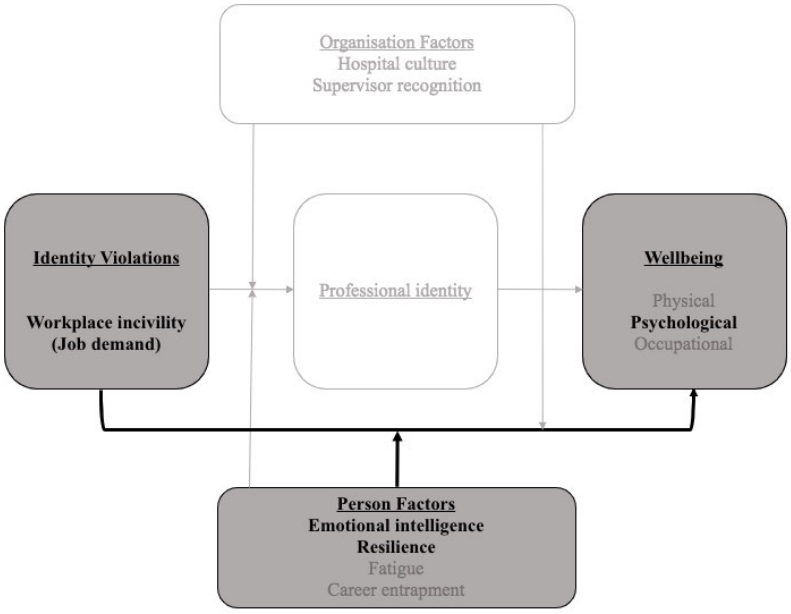

Figure 4. Aspects of the moderated mediation model being tested in this study

Participants were first year students undertaking a 4-year postgraduate medical degree. The data were collected as part of a larger study being conducted to assess emotional intelligence, stress and educational performance in medical and physiotherapy students (the latter were not included here). For medical students, the training environment introduces novel challenges of balancing educational and clinical commitments associated with an accelerated medical program. Given that both emotional intelligence and perceived capacity for resilience are directly associated with better wellbeing in medical students (Gupta et al., 2017; Houpy et al., 2017), I chose to assess how these person factors are likely to influence how well these young medical students cope with the demands associated with their training environment.

The results partially supported my proposed model. As expected, both emotional intelligence and resilience played a protective role against the negative effects of incivility on wellbeing. However, these results were not consistently observed across all three wellbeing outcomes. The impact of emotional intelligence also appeared to depend on the facet of emotional intelligence (i.e., emotional management or emotional understanding). Whilst emotional management buffered the negative effects of incivility, emotional understanding exacerbated these effects.

The results presented in this chapter have not been submitted for publication as yet.

The Effect of Incivility on Medical Students: The Role of Emotional Intelligence and Resilience

As highlighted in the Introductory chapter of this thesis, medical student wellbeing has been of particular concern in recent years, with many students in countries across the globe disclosing experiences of high to very high levels of psychological distress (Dyrbye et al., 2006; Leahy et al., 2010). Whilst efforts are in place to address the issue of poor wellbeing amongst young medical trainees, many initiatives are not adequately guided by evidence-based findings, particularly regarding the need to identify any factors that protect against poor wellbeing in a highly demanding medical training environment. The study presented here therefore specifically looks at the moderating effect of emotional intelligence and resilience on the direct effect of incivility on wellbeing.

Wellbeing Outcomes

Wellbeing triangulates an individual's personality, the resources that are available to them to cope with a stressor, and the mindsets/behaviours they engage with in response to a stressor (Lent, 2004). This study assessed psychological wellbeing operationalised by three constructs, namely burnout, perceived stress and negative affect. Based on our review (Hariharan & Griffin, 2019), it is apparent that burnout, which is characterised by emotional exhaustion, cynicism and a reduced sense of personal accomplishment with respect to one's profession (Maslach et al., 1998), has consequences for both the welfare and work attitudes of medical students. Perceived stress refers to a subjective condition individuals experience when they face demands without adequate resources to encounter them (Lazarus, 1990). The first year of medical training can be especially stressful with most medical students attributing the stress to aspects of their clinical training as opposed to their personal problems (Guthrie et al., 1995). Observed to be highest in the first year of medical training and progressively decreasing up until the final year where it begins to

increase again (Abdulghani et al., 2011), stress can impact cognitive functioning and learning amongst medical students if left unaddressed (Dahlin et al., 2005). Negative affect refers to an individual's mental state characterised by feelings of unpleasantness or experiencing dislike towards the situation at hand (Parkinson et al., 1996). By nature of the construct, affect can be studied as a trait or state characteristic (Gray & Watson, 2007). When it is likely that a person's affective experience is short-lived and tends to fluctuate based on context, measuring state affect is reasonable (Gray & Watson, 2007). Given that I chose to assess a medical student's affect in the short term (one month), with a specific focus on the impact of incivility on negative affect, treating negative affect as a state measure seemed reasonable (Tellegen, 1985; Watson, 2000).

Emotional Intelligence as a Resource

Working in healthcare calls for the need to constantly monitor and regulate how emotions are displayed (Lim et al., 2010). Classified as a resource under the JD-R model (Newton et al., 2016), emotional intelligence (EI) is defined as the "ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p.189). As such, it is thought to be fundamental to informing the quality of the practitioner-patient relationship (Brannick, 2011). High EI entails better emotional regulation, a stronger likelihood of developing a support network and engaging in more adaptive ways of coping in response to stressful/challenging situations (Ziedner et al., 2012). Additionally, it is thought to give the individual a sense of control over the situation in a way that supports personal growth and self-actualisation (Zeidner & Olnick-Shemesh, 2010; Friedman & Kern, 2014), and encourages a willingness to confront the problem (Wons & Bargiel-Matusiewicz, 2011). EI is positively associated with

psychological, social and work-related outcomes (Di Fabio & Kenny, 2012; Di Fabio & Saklofske, 2014; Perera & DiGiacomo, 2015).

Amongst medical students, EI has been associated with better academic performance (Austin et al., 2005) and lower levels of stress in the short term (Birks et al., 2009) and over time (Gupta et al., 2017). Consistent with the literature in non-medical contexts, medical students with higher levels of EI typically adopt more flexible means of coping with stressors and are more willing to confront the issue at hand, as opposed to predominantly focusing on managing their emotions or adopting an escape style of coping (Wons & Bargiel-Matusiewicz, 2011). Therefore, I expect that medical students with a higher EI will be more likely to adopt better coping mechanisms and manage the negative emotions associated with an uncivil experience, and in turn present with better wellbeing compared to those with lower EI.

Hypothesis 1a: EI will moderate the relationship between incivility and burnout in medical students, such that the positive relationship will be weaker when EI is high.

Hypothesis 1b: EI will moderate the relationship between incivility and stress in medical students, such that the positive relationship will be weaker when EI is high.

Hypothesis 1c: EI will moderate the relationship between incivility and negative affect in medical students, such that the positive relationship will be weaker when EI is high.

Resilience as a Resource

Resilience refers to the "maintenance or quick recovery of mental health during and after exposure to significant stressors" (Kalisch et al., 2017, p. 786). Although typically measured following a stressful or traumatic event (de Roon-Cassini et al., 2010),

the present study seeks to understand how a medical student's resilience typically affects their ability to cope with uncivil experiences over one year. To measure this, I instead assessed an individual's *capacity* for resilience. An individual is said to have a strong capacity for resilience when they consider themselves to be able to cope well and recover when faced with challenging circumstances (Crane et al., 2019). As such, these individuals are likely to be in a better position to manage any psychological wellbeing risks associated with the experience and deal with the problem, as opposed to someone who perceives themselves to have a lower capacity for resilience (Tugade & Fredrickson, 2004). Unlike EI that focuses on individuals' management and understanding of emotions to cope with a stressor, resilience addresses an individual's ability to bounce back and recover having faced a poor experience (Crane et al., 2019).

Although resilience has been previously identified as a protective factor against the impact of physical work demands on medical student burnout and compassion satisfaction (Lin et al., 2019), my study is the first to assess its role in mitigating the negative effects of incivility specifically. I expect resilience will moderate the direct effect of incivility on wellbeing. That is, I hypothesise medical students with a higher capacity for resilience will present with lower stress, negative affect and burnout following experiences of incivility compared to medical students with a lower capacity for resilience.

Hypothesis 2a: Resilience will moderate the relationship between incivility and burnout in medical students, such that the positive relationship will be weaker when perceived capacity for resilience is high.

Hypothesis 2b: Resilience will moderate the relationship between incivility and stress in medical students, such that the positive relationship will be weaker when perceived capacity for resilience is high.

Hypothesis 2c: Resilience will moderate the relationship between incivility and negative in medical students, such that the positive relationship will be weaker when perceived capacity for resilience is high.

Method

Participants

Participants comprised medical students enrolled in the first year of a 4-year graduate medical program in an Australian University. Two consecutive cohorts were included given that only 50 students are admitted into this program each year. Time 1 data were collected after participants completed the pre-intake interview for the medical program (at which time they were still categorised as 'applicants' and not yet enrolled as 'students' in the program). Of the 173 applicants who were interviewed (n = 90 in 2017 and n = 83 in 2018), 139 responded to the survey, 100 of whom were eventually selected into the program. Of those selected into the program, 67 provided data at 'Time 2' (within six weeks of completing their first year of medical school). Out of the 67, 62 medical students provided age demographics (M = 22.71 years, SD = 2.68), and 48 provided data related to gender (61% were male) as collected at 'Time 1'.

Measures

Using both paper-based and online surveys, different types of data were collected across the two time points. Whilst demographic information was obtained at Time 1, only data from Time 2 was analysed in this study due to the relevance of measures collected at this stage in relation to my model. Institutional ethics approval was obtained for this study (Ref: 5201924817249).

Job Demand

Workplace Incivility. The 7-item Workplace Incivility Scale (Cortina et al., 2001) measured the frequency with which participants experienced uncivil behaviors (e.g., 'Put

you down or was condescending to you?' or 'Made demeaning or derogatory remarks about you?') arising from their supervisors/teaching staff/clinical placement staff over the past month. A response scale ranging from 0 (*Never*) to 3 (*Most of the time*) was used. Coefficient alpha was .92.

Wellbeing Outcomes

Burnout. The Maslach Burnout Inventory: Human Services Survey for Medical Personnel (Maslach & Jackson, 1996) measured burnout. Due to survey length constraints, only 11 of the 22 scale items were included in the survey. These 11 items were selected based on their relevance to the cohort and their relative validity in previous studies. Participants were asked to describe how frequently they experienced the 11 job-related feelings (e.g., "I feel I'm positively influencing other people's lives" or "I feel burned out from my study") on a seven-point scale from 0 (*Never*) to 6 (*Every day*). Coefficient alpha was .72.

Perceived Stress. The 4-item Perceived Stress Scale (Cohen et al., 1983) assessed stress. Participants responded to the items (e.g., "felt difficulties were piling up so high that you could not overcome them?" and "felt that things were going your way?") using a scale from 0 (*Never*) to 4 (*Very often*) to indicate how often they experienced certain feelings and thoughts during the last month. Coefficient alpha was .79.

Negative Affect. The Short-Form Positive and Negative Affect Schedule (Thompson, 2007) measured negative affect. On a scale from 0 (*Slightly or not at all*) to 4 (*Extremely*) participants responded to 10 words, five of which were positive and five of which were negative to describe the extent to which they experienced different feelings and emotions over the past month. Responses across the five words assessing negative effect (e.g., "upset" and "hostile") were averaged to derive a score for negative affect. Coefficient alpha was .68.

Person Resources

Emotional Intelligence. Petrides and Furnham (2000) argue that measuring EI (as an ability) should include both *managing* one's emotions and *understanding* emotions. Indeed, Douglas et al., (2004) show how both good emotional management and understanding protect against the negative effects of work stressors. Both facets of emotional intelligence were therefore measured.

Emotional Management. Participants responded to all 18 items from the Brief Situational Test of Emotional Management (Brief STEM-B; Allen et al., 2015). This is an "objective" test (i.e. with correct/incorrect answers not self-reported EI) where participants are presented with a few brief details about an emotional situation (e.g., "Wai-Hin and Connie have shared an office for years but Wai-Hin gets a new job and Connie loses contact with her. What action would be most effective for Connie?") and must choose, from four response options, the most effective course of action to manage both the emotions the person is feeling and the problems they face in that situation. Response options for this particular item included "Just accept that she is gone and the friendship is over", "Ring Wai-Hin and ask her out for lunch or coffee to catch up", "Contact Wai-Hin and arrange to catch up but also make friends with her replacement", "Spend time getting to know the other people in the office, and strike up new friendships". Using the expert scoring method (see Allen et al., 2015; MacCann, 2006 for an explanation of scoring types), all correct responses were added to provide each participant a score out of 18. According to Allen et al. (2015), the Brief STEM-B has acceptable reliability with a Cronbach alpha of .84 and reliability index of .87, and is meaningfully correlated with the facet of emotional understanding (r = .30).

***Emotional understanding*.** Participants responded to all 19 items from the Brief Situational Test of Emotional Understanding (Brief STEU-B; Allen et al., 2014), where

each item describes a situation and asks the participant to choose which emotion (out of five options) is mostly likely to result from that situation. An example item is "Clara receives a gift. Clara is most likely to feel?" with response emotions to this question being "happy", "angry", "frightened", "bored" and "hungry". Using expert scoring answers (see Allen et al., 2014; MacCann, 2006 for an explanation of scoring types), all correct responses were added to provide each participant a score out of 19, with Allen et al. (2014) deeming this version shows acceptable reliability with a Cronbach alpha of .63 and reliability index of .70.

Resilience

Perceived Capacity for Resilience. The COPE scale (Carver et al., 1989) assesses how people typically respond when confronted with difficult or stressful life events. Two 4-item sub-scales (active coping and positive re-interpretation and growth) were included in the survey. Using a scale from 0 (*I usually don't do this at all*) to 3 *(I usually do this a lot*), participants indicated how they have dealt with stress related to their medical degree in the past month. Example items include "concentrating my efforts on doing something about it" and "trying to grow as a person as a result of the experience". Cronbach alpha for the active coping and positive re-interpretation growth (*henceforth positive growth*) sub-scales were .71 and .78 respectively.

Data Analysis

Linear regression analyses (using SPSS Version 25) examined the effects of incivility on burnout, stress and negative affect, and the role of moderators (two EI factors and two indicators of perceived capacity for resilience). Interaction terms were computed from the product of the mean centered variables. Listwise deletion of missing data was included as part of the regression process and a 95% confidence interval (CI) was used as a criterion of statistical significance. Simple slope tests of the identified significant

interactions were also conducted to understand the difference between relationships at one standard deviation above and below the centred mean value of 0. Unlike burnout and negative affect, the stress dependent variable was not normally distributed. To address the assumptions of normality, bootstrapping adjustments (using 1000 bootstraps) were used to on all regressions on stress (Pek et al., 2018).

Results

Means, SDs and correlations are reported in Table 2. As indicated, emotional management (STEM) was significantly correlated with emotional understanding (STEU) (r = .28, p < .01); active coping was significantly correlated with positive growth (r = .57, p < .01); and all three dependent variables were significantly associated with each other. Incivility was not significantly correlated with any of the study variables.

Table 2

Means, SDs, and Correlations

	M	SD	1	2	3	4	5	6	7
1. Incivility	.51	.65							
2. STEM	.77	.12	.02						
3. STEU	.69	.11	-.07	.28**					
4. Active Coping	1.82	.63	-.003	.20	-.18				
5. Positive Growth	1.94	.62	.02	.21	-.22	.57**			
6. Stress	1.53	.66	.20	-.08	-.04	-.01	-.04		
7. Burnout	2.09	.76	.17	.03	.11	-.08	.05	.38**	
8. Negative Affect	7.03	3.25	.16	-.10	.09	.02	.06	.55**	.51**

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

Moderating Effect of Emotional Intelligence

The results below describe the interaction effects between incivility and emotional management and between incivility and emotional understanding on burnout, stress and negative affect. In other words, three regressions were conducted for each facet of EI.

Emotional Management (STEM)

As reported in Table 3, the interaction between incivility and emotional management was significant in the regressions on burnout (B = -4.18, p < .05) and negative affect (B = -19.32, p < .05) but not in the regression on stress. The simple slopes test of the interaction effect between incivility and emotional management on negative affect (illustrated in Figure 5) revealed that when emotional management was low, there was a significant positive association between incivility and negative affect (t = 2.84, p < .01). However, when emotional management was high, the effect of incivility on negative affect was no longer significant (t = -.57, p > .05). That is, good emotional management buffered the negative effect of incivility supporting Hypothesis 1c. Incivility also had a significant main effect on negative affect (see Table 3).

Supporting Hypothesis 1a, this same pattern was found with burnout (see Figure 6), where the post-hoc simple slopes test revealed that when emotional management was low, incivility was significantly associated with burnout (t = 2.42, p < .05) but was no longer significant when emotional management was high (t = -.80, p > .05). However, I note that the overall F value for the regression on burnout was not significant. Whilst some may question interpreting the interaction, Bedeian & Mossholder (1994) argue that having a significant overall F value is not crucial when interpreting a significant interaction term and that whilst an overall F test represents how well a single regression line explains the underlying data, a significant interaction term indicates that two or more lines are a better fit of the same data and is therefore more relevant to interpret. Some researchers (e.g., Keppel & Zedeck, 1989; Kirk, 1968) also believe that an omnibus F test does not logically contribute to the ANOVA framework when specific comparisons are being studied. Hypothesis 1b was not supported as the regression on stress returned no significant findings.

Table 3

Moderating effect of Emotional Management (STEM), on Burnout, Stress and Negative Affect

	Dependent Variables								
	Burnout			**Stress**			**Negative Affect**		
		95% CI			**95% CI**			**95% CI**	
	B	Lower	Upper	**B**	Lower	Upper	**B**	Lower	Upper
Incivility	.30	-.06	.66	.25	-.14	.71	1.66*	.13	3.19
STEM	.26	-1.93	2.44	-.57	-2.88	1.56	-3.62	-12.92	5.68
Incivility x STEM	-4.18*	-7.96	-.40	-2.37	-6.56	2.75	-19.32*	-35.40	-3.25
F		2.00			1.28			2.89*	
R^2		.11			.07			.15	

Note. * $p < .05$

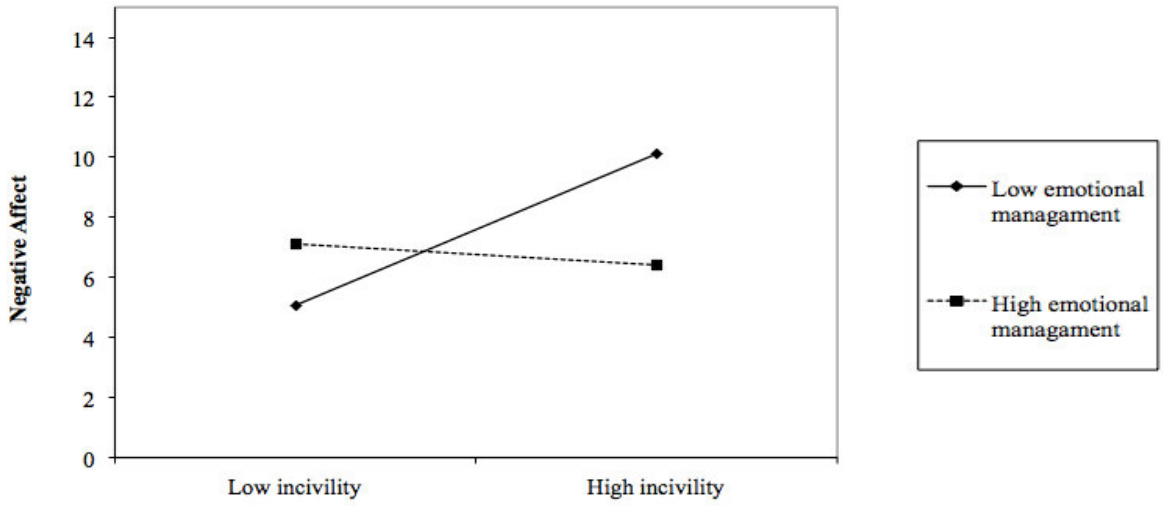

Figure 5. Moderating effect of emotional management on negative affect

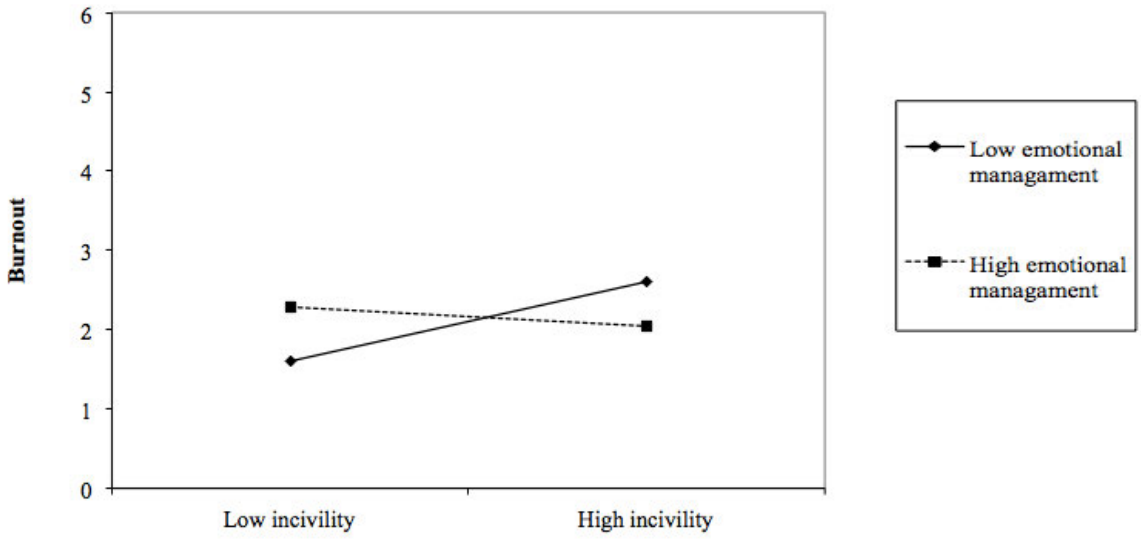

Figure 6. Moderating effect of emotional management on burnout

Emotional Understanding (STEU)

As shown in Table 4, the interaction between incivility and emotional understanding returned a significant effect in the regression on burnout ($B = 5.73$, $p < .05$). Although the overall ANOVA was not significant, post-hoc simple slopes test (see Figure 7) revealed that contrary to the hypotheses predicting EI would buffer the negative effect of incivility on burnout (Hypothesis 1a), it appeared to exacerbate them. When emotional understanding was high, incivility was significantly associated with burnout ($t = 2.38$, $p < .05$, and when emotional understanding was low, the effect of incivility on burnout was no longer significant ($t = -1.47$, $p > .05$). Emotional understanding did not moderate the effect of incivility on stress and negative affect (see Table 4) unlike predicted (Hypotheses 1b and 1c).

Table 4

Moderating Effect of Emotional Understanding (STEU), on Burnout, Stress and Negative Affect

	Dependent Variables								
	Burnout			**Stress**			**Negative Affect**		
		95% CI			**95% CI**			**95% CI**	
	B	Lower	Upper	**B**	Lower	Upper	**B**	Lower	Upper
Incivility	.06	-.29	.42	.10	-.19	.50	.97	-.64	2.58
STEU	.87	-1.29	3.03	-.23	-1.65	1.89	3.54	-6.19	13.26
Incivility x STEU	5.73*	.41	11.06	3.52	-.70	8.49	6.38	-17.60	30.36
F	2.17			1.22			.93		
R^2	.12			.07			.05		

Note. * $p < .05$

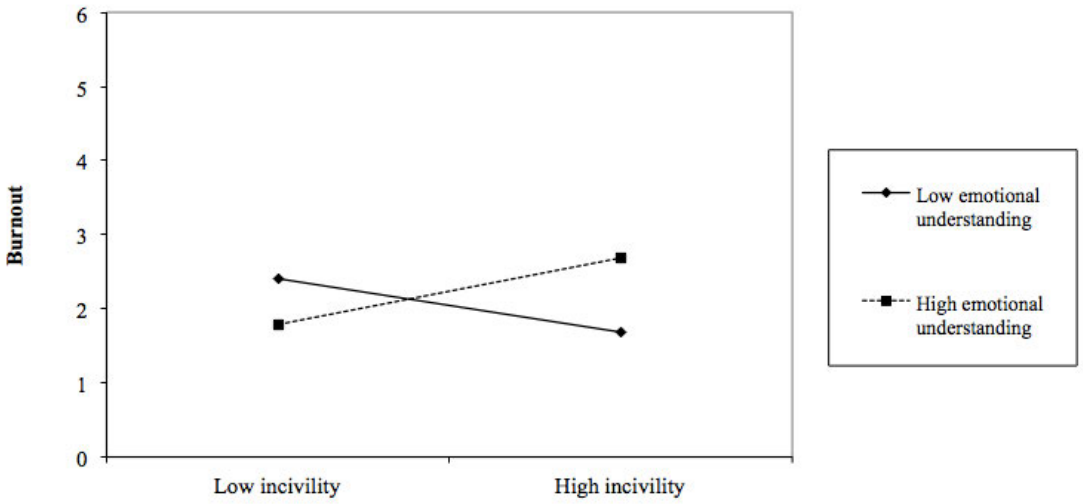

Figure 7. Moderating effect of emotional understanding on burnout

Resilience

The results of the six regression analyses presented below describe the interaction effects between incivility and active coping and between incivility and positive growth on burnout, stress and negative affect.

Active Coping

Supporting Hypothesis 2c, the interaction between incivility and active coping was significant in the regression on negative affect (B = -2.53, $p < .05$), noting that the overall ANOVA was not significant in the regression (see Table 5). As illustrated in Figure 8, the post-hoc simple slopes test revealed that when a medical student's perceived ability to actively cope in response to a stressor was low, incivility was significantly associated negative affect (t = 2.72, $p < .01$). However, when this perceived ability to actively cope with a stressor was high, the effect of incivility on negative affect (t = -.68, $p > .05$) was no longer significant. Active coping did not moderate the effect of incivility on burnout and stress and therefore Hypotheses 2a and 2b were not supported.

Table 5

Moderating Effect of Active Coping, on Burnout, Stress and Negative Affect

	Dependent Variables								
	Burnout			**Stress**			**Negative Affect**		
		95% CI			**95% CI**			**95% CI**	
	B	Lower	Upper	**B**	Lower	Upper	**B**	Lower	Upper
Incivility	.23	-.07	.53	.26	-.08	.51	1.04	-.18	2.26
Active Coping	-.09	-.39	.22	.02	-.25	.33	.22	-1.02	1.47
Incivility x Active Coping	-.27	-.76	.23	-.54	-1.10	.12	-2.53*	-4.57	-.49
F		1.19			3.39*			2.61	
R^2		.05			.14			.11	

*Note. * $p < .05$*

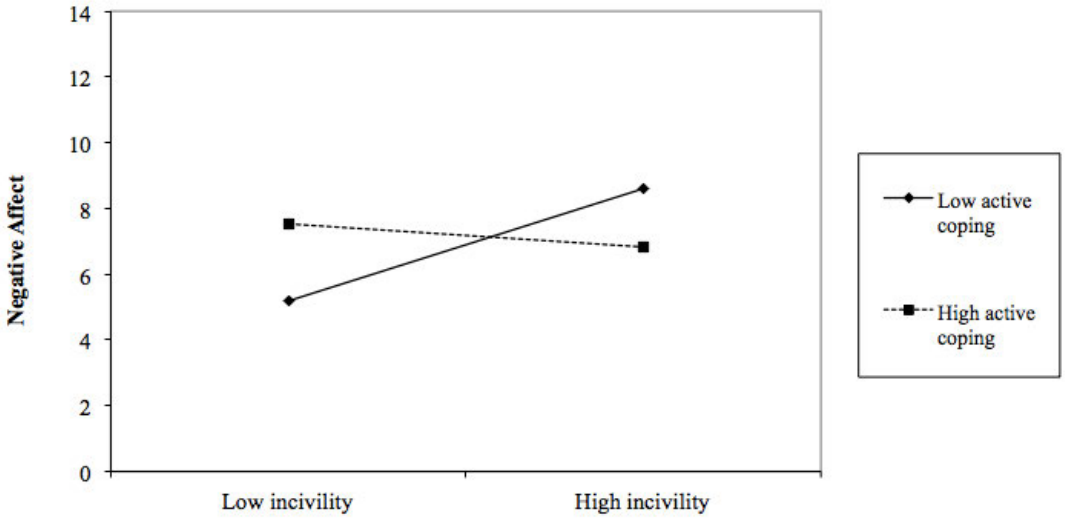

Figure 8. Moderating effect of active coping on negative affect

Positive Growth

As reported in Table 6 and supporting Hypotheses 2a and 2c, the interaction between incivility and positive growth was significant in the regressions on two of the three dependent variables, burnout (B = -.73, p < .01) and negative affect (B = -3.15, p < .05). Figures 9 and 10 illustrate the interaction effects, with post-hoc simple slope tests showing that when perceived positive growth in response to stressors was low, incivility was associated with burnout (t = 3.00, p < .01) and negative affect (t = 2.93, p < .01). When perceived positive growth in response to stressors was high, the effect of incivility on burnout (t = -1.07, p > .05) and negative affect (t = -1.18, p > .05) was no longer significant. In contrast to expectations (Hypothesis 2b), no significant findings were observed in relation to stress.

Table 6

Moderating Effect of Positive Growth on Burnout, Stress and Negative affect.

	Dependent Variables								
	Burnout			**Stress**			**Negative Affect**		
		95% CI			**95% CI**			**95% CI**	
	B	Lower	Upper	**B**	Lower	Upper	**B**	Lower	Upper
Incivility	.23	-.05	.51	.23	-.08	.46	.88	-.31	2.07
Positive Growth	.08	-.21	.38	-.03	-.31	.29	.41	-.84	1.66
Incivility x Positive Growth	-.73**	-1.28	-.19	-.66	-1.29	.15	-3.15**	-5.47	-.82
F	3.17*			3.80*			3.10*		
R^2	.13			.16			.13		

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

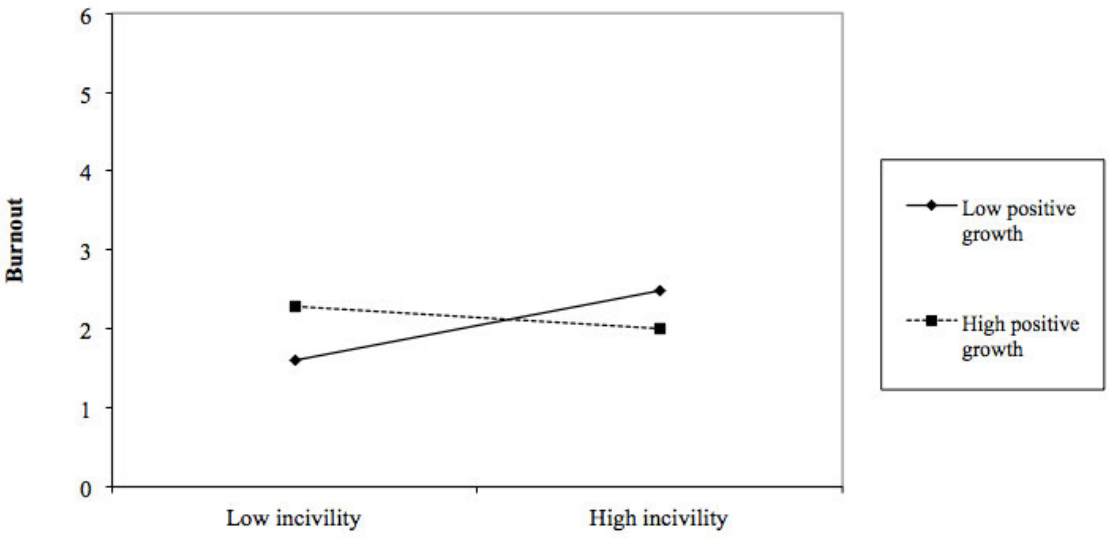

Figure 9. Moderating effect of positive growth on burnout

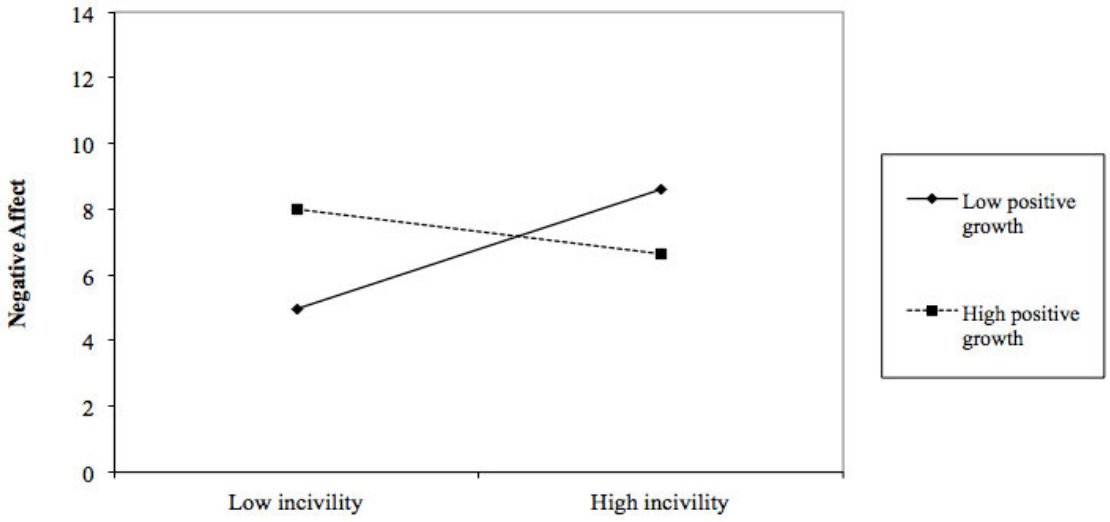

Figure 10. Moderating effect of positive growth on negative affect

Discussion

This study sought to understand if the two person factors (EI and resilience) have the potential to buffer the negative effects of incivility on medical student wellbeing.

Operationalised by emotional management and emotional understanding, the moderation effects of EI were both consistent and inconsistent with hypothesised relationships. As expected, the facet of emotional management reduced the impact of incivility on burnout and negative affect in medical students (although not on stress). In contrast, emotional understanding *exacerbated* the negative effects of incivility on burnout as opposed to being a protective factor. These contrasting effects of EI are consistent with previous research studying the moderating effects of these variables. Whilst Newton et al. (2016) found EI buffered the negative effects of certain job demands on job satisfaction, EI also amplified the negative effects of other job demands tested. Although the varying effects of emotional management and emotional understanding may be attributed to the type of job demand, Newton et al. (2016) provide alternative explanations to this observation which helps explain my results. In the case of emotional management, medical students with a stronger ability to manage emotions may be in a better position to maintain

positive emotions and minimise negative emotions in order to adapt and cope with the incivility they experience, and in turn present with better wellbeing. In contrast, high emotional understanding can mean that the person is in a better position to comprehend the experienced incivility (e.g., perpetrator's intent, understanding of the perpetrator's emotions) and the potential consequences associated with the experience (e.g., poor team relationships, reduced performance) and may therefore feel more frustration, stress, and sensitivity compared to an individual who has a lower understanding of the situation and who therefore may be more immune to the experience and less likely to perceive there to be an issue (Newton et al., 2016). Understanding the ideal balance between emotional management and emotional understanding is therefore crucial to determining how helpful EI can be in challenging circumstances.

Resilience (both active coping and positive growth) protected against the negative effects of incivility on wellbeing. Consistent with my hypotheses, a strong perceived ability to actively cope with stressors reduced the impact of incivility on negative affect in medical students. However, in contrast to expectations, active coping did not buffer the effects of incivility on burnout and stress. In line with my hypotheses, positive growth mitigated the negative effects of incivility on two of the three wellbeing outcomes, burnout and negative affect. However, contrary to expectations a positive growth mindset did not mitigate the effects of incivility on stress.

Consistent with previous research outlining the protective role of a medical student's capacity for resilience against poor mental health (Lin et al., 2019), my study underlines the importance of resilience in a medical training environment. A medical student's perceived capacity for resilience operationalised through the ability to actively cope and positively re-interpret challenging issues and treat them as an opportunity to grow reduced the effects of incivility on burnout and negative affect. Compared to medical

students with a lower perceived capacity for resilience, those with a higher perceived capacity for resilience appear to be more equipped to appraise and respond to uncivil behaviours in a way that supports effective coping.

With neither EI nor resilience moderating the negative effect of incivility on stress, it is likely that 1) the small sample size may have limited the power of the analysis or that 2) given that stress is highest in the first year of medical school (Abdulghani et al., 2011), there could be other demands that have a stronger influence on stress levels amongst these individuals which future research needs to consider.

Practical Implications

To assume that the results of this study primarily point to the need to select students who are high on resilience and EI, unfairly puts the onus on the student to manage the problem of incivility rather than the institution to reduce the problem. Addressing incivility experienced by medical students must be a key priority. Pearson & Porath (2005) recommend organisations implement a 'zero tolerance' policy to prevent, sanction and isolate behaviours that can violate an individual's dignity. Morrisette (2001) recommends implementing an end-to-end communication and feedback process that allow individuals to share experiences and lessons, and ensure that conflicts are managed well.

Whilst traditionally considered to be more trait-like characteristics of an individual, researchers have progressed towards treating EI and resilience as constructs that have state-like qualities and therefore susceptible to change (Crane et al., 2019; Nelis et al., 2009). This presents the possibility that training might improve a person's level of EI and resilience. The protective role of these person factors highlight that helping individuals to better manage their emotions, actively face stressors, and treat experiences as learning opportunities may be beneficial (Di Fabio & Kenny, 2012; Crane et al., 2019; Martins et al., 2010; Schutte et al., 2007). Given the mutable nature of both EI and resilience,

understanding the extent to which these effects remain the same as a medical student transitions further through their postgraduate training will be important in guiding support and training initiatives moving forward.

Limitations and Future Research

The use of self-report measures of outcomes, incivility and resilience means that common-method bias is a potential limitation of this study. However, three factors likely offset such a concern. First, given the personal nature of the outcomes and experienced incivility, self-report measures are considered suitable and widely used (Lim et al., 2008; Linton et al., 2015). Second, objective measures (of EI) balanced the self-report measures and were a strength of this research. Third, finding significant interaction effects render common method less likely to be an issue (Siemsen et al., 2010).

Other limitations include the small sample size and the (probably resulting) non-significant ANOVA. Future research needs to reassess these effects with a larger sample size to understand the exact nature of the moderating effect of EI on medical student wellbeing, particularly clarifying the distinction between good emotional management and good emotional understanding. Cross-sectional study design limited the ability for results to be predictive as cause-and-effect relationships could not be determined. Additionally, the results from this sample may not be generalisable to the wider medical student population given data was solely collected from one tertiary institution and after only one year of study. Future research should prioritise collecting longitudinal data across a broader cohort of students. Where possible, these students should be assessed on an ongoing basis to understand the exact turning points where incivility has a stronger impact, and where resources are needed most. Furthermore, whilst this study focused on the person factors that influence the negative impact of incivility on burnout, stress and negative affect, I also acknowledge that organisation factors (e.g., hospital culture and supervisor

recognition) may play an equally important role in minimising the negative effect of incivility and therefore should be considered in future research.

Conclusion

Partially supporting my model, my results outline that person factors (EI and resilience) play a role in influencing the negative effects of incivility on medical student wellbeing. Different aspects of these factors work towards protecting or exacerbating any associated negative effects, and need to be studied further across larger samples and more senior cohorts to determine the exact nature of these relationships across the early-career medical pathway. Consideration for the role of organisation factors can also provide an additional lens on what environmental aspects influence wellbeing in a highly demanding training environment.

CHAPTER 4: Incivility and Medical Student Burnout: It Depends on Motivation

Presented as a conference paper at the APS 13th Industrial and Organisational Psychology Conference in Adelaide Australia (2019, July), this study examined my hypothesised moderated mediation model using burnout as the outcome, career value as the indicator of professional identity, and resilience and career entrapment as moderators (see Figure 11). The results partially support the proposed model. Workplace incivility had an indirect relationship on wellbeing, via a reduced sense of professional identity. A high perceived capacity for resilience protected against the negative relationship between workplace incivility and professional identity. Career entrapment was not a significant contributor to the model. These results demonstrated how individual differences (one's perceived capacity for resilience) explain why medical students may vary with respect to how they respond to incivility. A copy of the slides presented at the conference is available in Appendix A and the abstract is available in Appendix C.

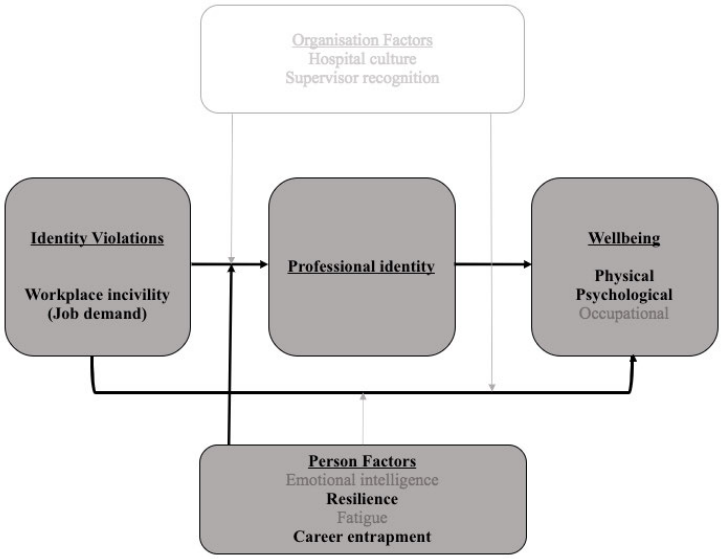

Figure 11. Moderated mediation model with arrows representing hypothesised relationships tested in the study

In the current chapter, I present the paper that provides more details of the study. Participants were 115 final year students undertaking a 5-year undergraduate medical degree. The data were collected as part of a larger study being conducted by Professors B. Griffin and W. Hu assessing the change in medical students' career goals and interests across their tertiary program. For these students, career decisions are a very salient issue given the stage of their medical training and the investments made prior to and during this course into developing their career. Therefore, when operationalising the constructs of my model, I focused on specific career measures.

Professional identity was operationalised by the level of commitment to being a doctor and the value one places on having this career (and in this paper, I adopt Oyserman and Destin's (2010) argument that identity is a motivating construct, using the two terms synonymously). Likewise, career entrapment was chosen as a person resource (or lack of) in light of the significant investments made to engage in a medical training program. Career entrapment is the extent to which one feels confined within their current career prospects (Carson et al., 1995). We therefore assesses how much medical student's felt trapped in their programs with limited alternatives for other career options.

Incivility and Medical Student Burnout: It Depends on Motivation

Experiencing workplace incivility has progressively become a 'global norm' within the medical training environment (Frank et al., 2006; Owoaje et al., 2012; Rautio et al., 2005; Scott et al., 2015). Fnais et al.'s (2014) meta-analysis highlight that around 60% of medical trainees have experienced harassment and discrimination during their training programs. Characterised by low-intensity, rude, dismissive and undermining behaviours, such as being humiliated in front of others and being spoken to in a belittling manner (Cortina et al., 2013), incivility is thought to have both short and long-term negative effects on medical students' wellbeing and work attitudes (Fnais et al., 2014; Frank et al., 2006). Although it is evident that medical students differ in their response to incivility, the reason behind certain students being more vulnerable to negative outcomes relative to others remains unanswered (Cook et al., 2014).

In the early career stage of medical training, experiences play a critical role in identity formation (van den Broek et al., 2020). Acknowledging that the nature of interactions in professional settings significantly contribute to a doctor's growth in professional identity (Foster & Robers, 2016), there are also concerns that unprofessional behaviours like incivility may impact this identity development process (Rees & Monrouxe, 2018). We therefore hypothesises that incivility, which can be conceived as an identity threat, reduces a medical student's professional identity which in turn increases burnout. As explained in the section below, this study tests a moderated mediation model whereby a student's perceived capacity for resilience and feelings of career entrapment are assessed as potentially reducing/exacerbating the negative effects of incivility on identity and of identity on burnout.

A Medical Student's Professional Identity

Social identity theories suggest that an individual's career identity is defined by how they describe themselves and how others describe them in professional settings (Ellemers & Haslam, 2011). Drawing on the identity-based motivation model (Oyserman & Markus, 1998) that says when experiences are aligned with their identity (e.g., engaging in clinical training), the individual is more likely to be motivated to act in identity-congruent ways even if these expectations may be challenging (Oyserman & Destin, 2010). However, when experiences are incongruent with one's identity (e.g., being excluded from professional camaraderie), value for one's identity will be lower. The model suggests that the challenges that come with coping with this incongruence can make the act of coping seem pointless and instead make individuals start questioning their own identity with respect. In medical school, students' developing sense of career identity is mostly influenced by practical clinical experiences and the interactions they have with their lecturers and peers (van den Broek et al., 2020). Supervisors and peers are typically treated as role models and considered as comparative benchmarks when appraising their professional belonging (van den Broek et al., 2020). In addition, the feeling associated with being treated as a colleague and considered as part of the 'in-group' reinforces one's identification as a doctor (van den Broek et al., 2020).

When medical students experience incivility, the humiliation and disrespect is likely to make them feel like an outsider and less valued as a colleague, potentially instilling a reduced sense of professional belonging (Ouyang et al., 2015). In the healthcare literature, a weak professional identity is in turn associated with poor wellbeing (Edwards & Dirette, 2010; Monrouxe et al., 2017). Consistent with these findings, we expect experiences of incivility to indirectly impact wellbeing in medical students, via a weakened level of professional identity.

The Relevance of Personal Resources

Crawford et al. (2010) categorise incivility as a psychosocial job demand, implicit in its conceptualization as a professional identity threat. As outlined in the Job Demands-Resources (JD-R) model (Demerouti et al., 2001), job demands have the potential to deplete an individual's cognitive, physical and emotional capacities in the absence of sufficient resources. Resources refer to qualities of the person or of the working environment that support professional growth and career goals (Bakker, 2011; Bakker and Demerouti, 2007). Having adequate resources can buffer or reduce the negative effect of a demand, such as incivility, on wellbeing (Demerouti et al., 2001). As noted previously, the current study examined the moderating effect of two person factors that might function as a resource (or lack of resource): the perceived capacity for resilience and career entrapment.

Individuals' perceived capacity for resilience is considered to be strong when they deem themselves to have the ability to cope well and recover in the face of challenging circumstances (Crane et al., 2019). Although often described as an enduring characteristic of an individual, Crane et al. (2019) believe one's perceived capacity for resilience can fluctuate over time (i.e., strengthen or deplete relative to how individuals cope to meet situational demands and the resources available to them at that point in time). High resilience entails a strong ability to withstand adversity and can emotionally equip the individual to manage any risks to psychological wellbeing (Tugade and Fredrickson, 2004). We therefore hypothesise that medical students with higher levels of perceived capacity for resilience are likely to cope better with incivility (i.e, the association between incivility and identity will be weaker) and in turn report better wellbeing. Additionally, we also expect that higher levels of perceived capacity for resilience will protect against the negative effects of a poor professional identity on burnout.

Career entrapment describes the sense of being ‘trapped’ in one’s career without alternatives for change (Carson et al., 1995). This feeling of entrenchment stems from the investments made into one’s career, the emotional costs associated with changing one’s occupation, and awareness of limited opportunities external to one’s field of work (Carson et al., 1995). We view career entrapment to be symbolic of a lack of career resources given that it reflects a state where an individual is unable to benefit from flexible career options nor make reasonable career-related choices (e.g., role type, work structure) despite having invested a lot of effort to reach a certain career stage. For medical students, the act of investing time, effort, money and emotions in a medical career begins even before students embark on their tertiary qualifications, and become ingrained in their journey to becoming a doctor (e.g., preparing for pre-medicine entrance assessments; dealing with the parental pressures to undertake a prestigious profession (Griffin & Hu, 2019)). Medical skills are not readily transferable to other working environments, unlike business-related capabilities that are more broadly applicable allowing for flexibility and choice (Ljuboja et al., 2016). Although there is anecdotal evidence of this concept among the medical practitioners, it has not been studied empirically in the medical context. There is however, evidence of the negative effect of career entrapment amongst veterinarians, whose training is very specific like medical practitioners. Crane et al. (2017) showed that career entrapment in the form of low perceived skill transferability inhibited occupational mobility and was related with higher suicide-related cognitions and behaviours amongst veterinarians with a high intention to leave the profession. Goodger et al. (2007) also show career entrapment to be associated with burnout, albeit outside a medical context. We hypothesise that career entrapment is likely to exacerbate the negative effects of incivility on professional identity, and professional identity on burnout.

Methods

Participants

Participants were 115 medical students completing their final year of an undergraduate medical degree in an Australian university. Of the 115, 84 students provided demographic data (collected in Year 1 of their training), showing that their age ranged from 17 years to 39 years (M = 19.07, SD = 3.10), and 62% were females.

Measures

Cross sectional data were obtained from a broader longitudinal study that was conducted across five years with this cohort of students. Participants were invited to complete a survey assessing their attitudes and motivations around their choice to study medicine. Apart from the demographics, all data used in this study were collected in the final year of medical school (Year 5). Institutional ethics approval was obtained (H10434).

Burnout. Burnout was assessed with two items from the Maslach Burnout Inventory (Maslach et al., 1996) that West et al. (2009) argue provides meaningful insight on burnout in medical professionals. Using a 5-point Likert scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*), participants indicated the extent to which they agreed to two statements, 'I have become more callous toward people since I became a medical student' and 'I feel burned out from being a medical student'. Coefficient alpha was .50.

Workplace Incivility. The 7-item Workplace Incivility Scale (WIS) (Cortina et al., 2001) measured this construct. Participants indicated the extent to which they experienced uncivil behaviors (e.g., 'Put you down or was condescending to you?' or 'Made demeaning or derogatory remarks about you?') over the past one month arising from their supervisors /teaching staff/clinical placement staff, on a response scale ranging from 1 (*Never*) to 4 (*Most of the time*). Coefficient alpha was .86.

Professional Identity (Career Value). Two items from the Career Commitment Scale (Carson & Bedeian, 1994) assessed whether the effort and cost of studying medicine had been worthwhile. Participants indicated their level of agreement on a 5-point scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*) to the two items, 'The costs (financial, emotional, effort etc.) associated with a career in medicine sometimes seem too great' and 'Given the problems doctors face, I sometimes wonder if the personal burden is worth it', Coefficient alpha was .76.

Perceived Capacity for Resilience. Participants responded to the 25-item Connor-Davidson Resilience Scale (Connor & Davidson, 2003) reflecting on how true a set of statements were in relation to their experiences over the past month (e.g., 'I can deal with whatever comes my way' or 'I have a strong sense of purpose in my life'). A scale ranging from 1 *(Not true at all)* to 5 *(True nearly all the time)* was used. Coefficient alpha was .88.

Career Entrapment. The 11-item Career Entrenchment Scale (Carson et al., 1995) was reworded to be applicable to a medical career. Participants indicated their level of agreement to statements (e.g., 'If I left medicine, I would feel like I had no reasonable career options' and 'It would be emotionally difficult to change my career') on a 5-point Likert scale from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Coefficient alpha was .79.

Data Analysis

Moderated regression analyses (using SPSS Version 25) assessed the effects of workplace incivility on burnout, with consideration for the moderating effects of perceived capacity for resilience and career entrapment, and the mediating effect of career values (professional identity). Parameters were estimated using SPSS PROCESS Macro (Hayes, 2012). As estimating parameters for three statistical models is recommended when establishing moderated mediation (Muller et al., 2005), we first tested the moderation effects of perceived capacity for resilience and career entrapment on the direct effect of

incivility on burnout by running a moderation analysis using SPSS PROCESS Macro model 1. Secondly, we ran a mediation analysis using SPSS Process Macro Model 4 to test the indirect effect of incivility on burnout via professional identity, excluding the two moderator variables. Finally, Models 7 and 14 of the SPSS Macro were used to assess the complete moderated mediation model for each of the two moderator variables. Perceived capacity for resilience and career entrapment were treated as moderators of the incivility-professional identity relationship, and of the professional identity-burnout relationship. Interaction terms were automatically computed from the product of the mean centered variable.

Across all process analyses, listwise deletion of missing data paired with bootstrapping adjustments (using 5000 reiterations) addressed the assumptions of normality (Pek et al., 2018). Generated by the bias-corrected bootstrap method, a 95% confidence interval (CI) was used as a criterion of statistical significance. Simple slope tests on the identified significant interaction were also conducted to understand the difference between relationships at one standard deviation above and below the centred mean value of 0.

Results

As indicated in Table 7, incivility was significantly correlated to both career value (r = -.18, p < .05) and burnout (r = .29, p < .01). Career value was significantly associated with burnout (r = -.42, p < .01). Although a mean value of 3.74 indicated that medical students felt some degree of entrapment in their medical careers, career entrapment was not related to resilience or burnout.

Table 7

Means, SDs and Correlations

	M	***SD***	**1**	**2**	**3**	**4**
1. Incivility	1.71	.61				
2. Career value	2.39	.98	-.18*			
3. Perceived resilience	3.73	.45	-.08	.17		
4. Career entrapment	3.74	.62	.13	-.16	-.17	
5. Burnout	3.23	1.03	.29**	-.42**	-.27**	.02

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

Professional identity had a significant partial indirect effect on the relationship between incivility and burnout, excluding moderators (B = .12, p > .05, see Table 8). The bootstrapping technique (Shrout & Bolger, 2002) returned a bootstrapped confidence interval that excluded 0 [95% CI: (.01, .28) indicating a significant indirect effect of incivility on burnout. The regression outcomes for the moderated mediations tested are outlined below in the Tables 8 and 9.

Table 8

Mediation Analysis – Effect of Incivility on Burnout Via Career Value (Model 4 of PROCESS Macro; N = 115)

	Career Value			
	B	*SE*	Lower	Upper
Constant	2.89**	(.27)	2.36	3.43
Incivility	-.30*	(.15)	-.59	-.002
R^2		.03		
F (*df*)		*F*(1, 113) = 3.97*		
	Burnout			
	B	*SE*	Lower	Upper
Constant	3.56**	(.36)	2.84	4.27
Incivility	.37*	(.14)	.09	.65
Career value	-.40**	(.09)	-.57	-.22
Indirect effect	.12*	(.259)	.09	.65
R^2		.24		
F (*df*)		*F*(2, 112) = 16.29*		

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

Moderated Mediation Analysis

Perceived Capacity for Resilience

As reported in Table 9, the analysis using Model 7 of the SPSS PROCESS Macro (Hayes, 2012) showed a significant interaction between incivility and perceived capacity for resilience on career value (*B* = 1.03, *p* < .01, 95% CI [.39, 1.67]). This interaction effect, illustrated in Figure 12, accounted for 14% of the variance of career value (*F*(3,111) = 5.81, p < .05). A post-hoc simple slope test revealed that when perceived capacity for resilience was low, incivility had a negative effect on a medical student's career value (*t* = -3.53, *p* < .05). However, when perceived capacity for resilience was high, the effect of incivility on career value was no longer significant (*t* = 1.13, *p* > .05).

Table 10 reports the results of the analysis using Model 14 of the SPSS PROCESS Macro (Hayes, 2012), which showed that the interaction between career value and perceived capacity for resilience was not significant in the regression on burnout (*B* = -.05,

p > .05, 95% CI [-.43,33]). However, self-reported capacity for resilience had a significant main effect on burnout (see Table 10).

Overall, a significant index of moderated mediation (*B* = -.41, 95% CI [-.78, -.17], see Table 9) supports the hypothesised moderated mediation model. When perceived capacity of resilience was low, the conditional effect of incivility on burnout via a reduction in professional identity was significantly positive (*B* = .27, 95% CI [.14, .45]). In contrast, when perceived capacity of resilience was high, the conditional effect of incivility on burnout via a reduction in professional identity disappeared (*B* = -.10, 95% CI [-.32, .08]). As the direct effect of incivility on burnout was also significant (*B* = -.37, *p* < .05, 95% CI [.09, .65]), it indicates a partial moderated mediation model.

Table 9

Moderated Mediation Model of Perceived Capacity for Resilience, Incivility, and Career Value Predicting Burnout (Model 7 of PROCESS Macro; N = 115)

	Explained variables			
	Career Value		Burnout	
	B	*SE*	B	*SE*
Constant	2.41**	(.09)	4.18**	(.23)
Incivility	-.21	(.14)	.37*	(.14)
Resilience	.25	(.20)		
Career value			-.40**	(.09)
Incivility x Resilience	1.03**	(.32)		
R^2	.14		.23	
F (*df*)	*F*(3, 111) = 5.81**		*F*(2, 112) = 16.29**	
Levels of resilience	B	*SE*	95% CI	
			Lower	Upper
Low (-1 SD)	.27	(.08)	.14	.45
Moderate	.08	(.06)	-.02	.21
High (+1 SD)	-.10	(.10)	-.32	.08
Index of moderated mediation	-.41	(.15)	-.78	-.17

*Note. *p<.05, **p<.01, Resilience: Perceived capacity for resilience, Value: Career value*

Table 10

Moderated Mediation Model of Perceived Capacity for Resilience, Incivility, and Career Value Predicting Burnout (Model 14 of PROCESS Macro; N = 115)

	Explained variables			
	Career Value		Burnout	
	B	*SE*	B	*SE*
Constant	.51	(.27)	2.61**	(.23)
Incivility	-.30*	(.15)	.36*	(.14)
Resilience			-.45*	
Career value			-.36**	(.09)
Career value x Resilience			-.05	
R^2	.04		.26	
F (*df*)	*F*(1, 113) = 3.97*		*F*(4, 110) = 9.79**	
Levels of resilience	B	*SE*	95% CI	
			Lower	Upper
Low (-1 SD)	.10	(.07)	.01	.29
Moderate	.11	(.06)	.01	.26
High (+1 SD)	.11	(.07)	.01	.29

*Note. *p<.05, **p<.0, Resilience: Perceived capacity for resilience*

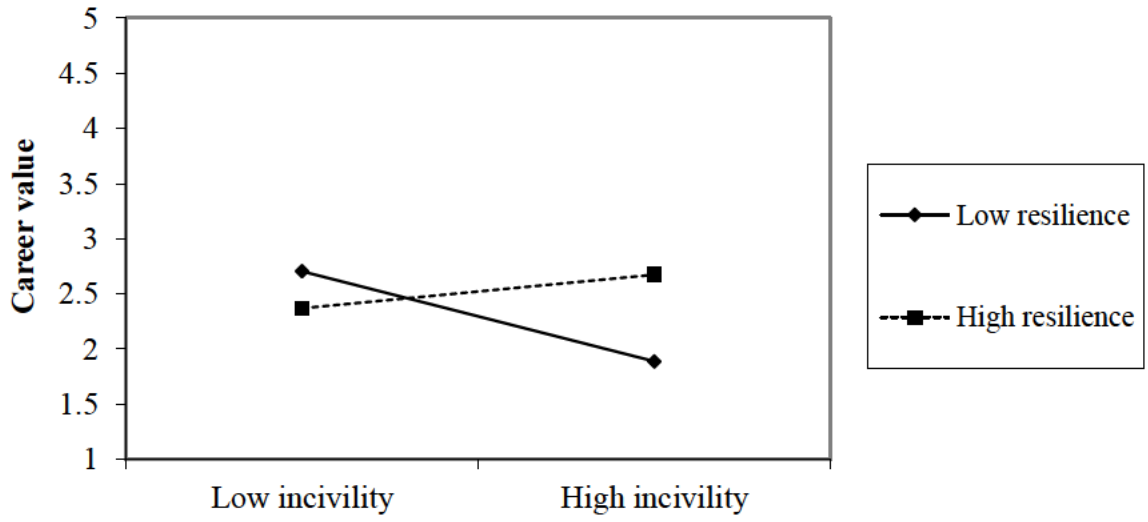

Figure 12. Moderating effect of resilience on career value (professional identity)

Career Entrapment

The regression analyses showed no significant main or interaction effects of career entrapment (see Tables 11 and 12) either on career value or burnout.

Table 11

Moderated Mediation Model of Career Entrapment, Incivility, and Career Value Predicting Burnout (Model 7 of PROCESS Macro; N = 115)

	Explained variables			
	Career Value		Burnout	
	B	*SE*	B	*SE*
Constant	2.39**	(.09)	4.18**	(.23)
Incivility	-.25	(.15)	.37*	(.14)
Entrapment	-.21	(.15)		
Career value			-.40**	(.09)
Incivility x Entrapment	-.13	(.24)		
R^2	.06		.23	
F (*df*)	*F*(3, 111) = 2.16**		*F*(2, 112) = 16.29**	
Levels of entrapment	B	*SE*	95% CI	
			Lower	Upper
Low (-1 SD)	.07	(.11)	-.14	.29
Moderate	.10	(.07)	-.01	.26
High (+1 SD)	.13	(.09)	-.01	.33

*Note. *p<.05, **p<.01, Entrapment: Career entrapment*

Table 12

Moderated Mediation Model of Career Entrapment, Incivility, and Career Value Predicting Burnout (Model 14 of PROCESS Macro; N = 115)

	Explained variables			
	Career Value		Burnout	
	B	*SE*	B	*SE*
Constant	.51	(.27)	2.58**	(.26)
Incivility	-.30*	(.15)	.38**	(.14)
Entrapment			-.11	(.14)
Career value			-.41**	(.09)
Value x Entrapment			-.04	(.13)
R^2	.04		.23	
F (*df*)	*F*(1, 113) = 3.97*		*F*(4, 110) = 8.23*	
Levels of resilience	B	*SE*	95% CI	
			Lower	Upper
Low (-1 SD)	.13	(.07)	.02	.31
Moderate	.12	(.07)	.02	.28
High (+1 SD)	.11	(.07)	.01	.31

*Note. *p<.05, **p<.01, Entrapment: Career entrapment*

In testing the total direct effect of incivility on burnout, the regression outputs did not return a significant interaction effect of perceived capacity for resilience (*B* = .06, *p* >.05, 95% CI [-.61, .72], see Table 13) nor career entrapment (*B* = .21, *p* > .05, 95% CI [-.28, .70], see Table 14). That is, the magnitude of the total direct effect did not vary with levels of perceived capacity for resilience and career entrapment supporting the moderation effect of perceived capacity for resilience to only be significant when accounting for the mediating effect of professional identity on the effect of incivility on burnout.

Table 13

Moderation Analysis - Effect of Perceived Capacity for Resilience on the Relationship Between Incivility and Burnout (Model 1 of PROCESS Macro; N = 115)

	Burnout			
	B	*SE*	Lower	Upper
Constant	3.23**	(.09)	3.05	2.58
Incivility	.46**	(.14)	.16	.75
Resilience	-.58**	(.20)	-.98	.17
Incivility x Resilience	.06	(.34)	-.61	.72
R^2	.15			
F (*df*)	*F*(3, 111) = 6.29**			

*Note. *p<.05, **p<.01, Resilience: Perceived capacity for resilience*

Table 14

Moderation Analysis - Effect of Career Entrapment on the Relationship Between Incivility and Burnout (Model 1 of PROCESS Macro; N = 115)

	Burnout			
	B	*SE*	Lower	Upper
Constant	3.22	(.09)	3.04	3.41
Incivility	.46**	(.16)	.16	.77
Career value	-.03	(.15)	-.33	.27
Incivility x Career value	.21	(.25)	-.28	.70
R^2	.09			
F (*df*)	*F*(3, 111) = 3.66*			

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

Discussion

This study tested a moderated mediation model assessing the indirect effect of incivility on medical student burnout via professional identity, with consideration for whether person resources (i.e., one's perceived capacity for resilience and career entrapment) mitigate or exacerbate any observed effects. Experiencing incivility was both directly indirectly associated with more burnout in medical students; indirectly via a reduction in professional identity for those who had a low perceived capacity for resilience. As expected, a high perceived capacity for resilience protected against the negative effects of incivility on professional identity. However, a high perceived capacity for resilience did not protect against the negative impact of a weak professional identity on burnout. Career entrapment had no significant effect on professional identity or burnout and did not moderate the effect of incivility.

Consistent with Ouyang et al. (2015)'s results demonstrating the negative impact of workplace incivility on individuals' sense of professional belonging, our findings indicate that experiences in medical school form an integral part of how valuable medical students perceive their medical career to be and in turn their wellbeing. This supports the identity-

based motivation model (Oyserman & Markus, 1998; Oyserman & Destin, 2010), which would indicate that experiencing uncivil behaviours is “identity incongruent” and might instill a perception in medical students that their involvement in the profession is not as meaningful as they expect it to be. In our study, this reduced sense of motivation is also associated with higher burnout. If left unaddressed, burnout can have serious consequences for medical students, such as increased suicidal ideations, low self-efficacy, poor physical and psychological health, attrition and poor professional behaviours (Hariharan & Griffin, 2019).

To the best of my knowledge, this is the first study to assess the effects of career entrapment in medical students. Although it was clear that at least some medical students did feel a level of entrapment, the absence of any effects associated with career entrapment suggests that it was not having an effect during this early training period (with regard to the variables assessed). It possible that medical students may not actually perceive themselves to have an actual ‘career’ until they finish their tertiary qualifications and commence a hospital-based role with clinical responsibilities, registrar training commitments and the need to form more professional relationships (van den Broek et al., 2020). As such, the effects of career-entrapment could be assessed amongst qualified physicians, when any feelings of entrenchment may surface more strongly.

Consistent with previous research outlining the protective role of a medical student’s capacity for resilience against poor mental health (Lin et al., 2019), this study underlines the value of such person resources in a rigorous training environment. High perceived capacity for resilience was not only associated with lower burnout but it eliminated the negative effects of incivility on professional identity.

Practical Implications

Addressing incivility experienced by medical students is a primary concern. Morrisette (2001) suggests structuring course, a closed feedback loops that allows for adequate sharing and receiving of experiences and lessons, and a clear process that ensures conflicts are managed in a non-defensive and respectful manner to name a couple. It is also important to understand how to support medical students in developing their professional identity during training programs (e.g., providing students the opportunity to engage in a variety of interactive settings such as bedside teaching and communication skill development, and receive ongoing performance feedback; Goldie, 2012). Whilst it is acknowledged that efforts are often employed to support professional identity development, the potential for incivility to undermine such efforts means that additional consideration needs to be given towards maintain the quality and effectiveness of identity development initiatives. Finally, providing opportunities for medical students to strengthen their capacity for resilience (e.g., reflective practices to strengthen resilience in the face of significant stress; Crane et al., 2019) may be beneficial.

Limitations and Future Research

The use of self-report measures means that common-method bias is a potential limitation of this study. However, both the personal nature of the chosen measures and a significant interaction effect render common method less likely to be an issue (Siemsen et al., 2010). Although Green's (1991) rule that regression studies with five variables require at least 109 participants was met, larger samples in future studies could strengthen the statistical power for identifying effects. Furthermore, despite the two-item measure of burnout being valid (West et al., 2009), the low cronbach alpha suggests that using the complete Maslach Burnout inventory (Maslach et al., 1996) with more items in future studies might help lift the reliability of the measure of burnout and minimise any

measurement error (Tavakol & Dennick, 2011). By nature of the cross-sectional study design, cause-and-effect relationships could not be identified. Additionally, as the data was solely collected from one tertiary institution, the results from this sample may not be generalisable to the wider medical student population. Future research should prioritise collecting longitudinal data across a range of samples.

Understanding the extent to which these effects remain the same as a medical student transitions into hospital-based practice is important. This study focused on the person factors that influence the negative impact of incivility on burnout, but future research should consider identifying any workplace factors (e.g., hospital culture and supervisor recognition) that limit the negative effect of incivility. Emphasis should be given to addressing how resilience development programs might be beneficial in supporting medical students' identity development and associated wellbeing in the early-stages of training. Addressing any differences associated with the type of perpetrator (e.g., peers) can also help better inform the nature of the problem.

CHAPTER 5: Assessing the Impact of Incivility on Junior Doctors: The Moderating Role of Resilience and Fatigue

Currently undergoing peer review for the Advances in Health Sciences Education journal (see Appendix C for abstract) this study addresses a component of my hypothesised moderated mediation model using incivility as the job demand of interest, measures of the DASS (Depression, Anxiety and Stress scale) and work engagement as wellbeing outcomes, and resilience and fatigue as moderators of the relationship between incivility and wellbeing (see Figure 13). As hypothesised, the results support this part of my model in that incivility has a direct relationship on wellbeing moderated by both resilience and fatigue.

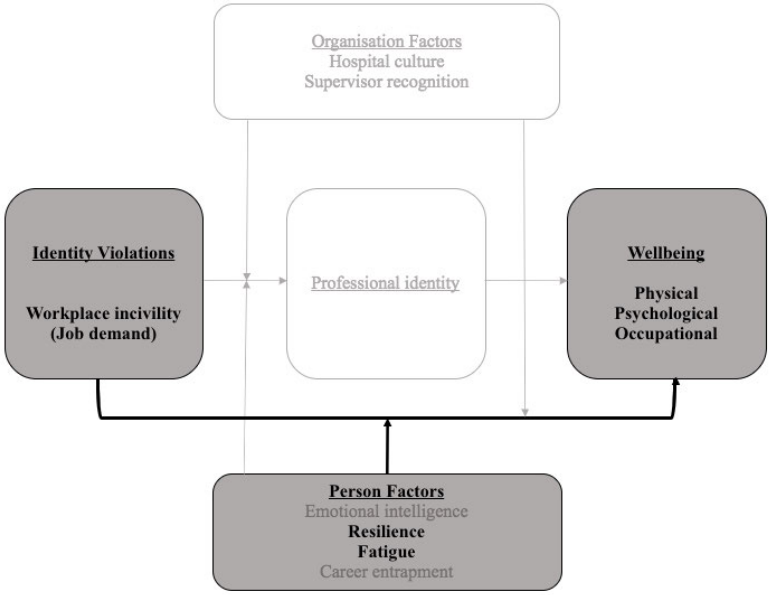

Figure 13. Aspects of my model tested in this study

Whilst Chapter 4 assessed this component of my model amongst medical students, this chapter details how these relationships play out amongst junior doctors (note, although participants referred to themselves as JMOs, *'junior doctor'* was used in this chapter instead of *'JMO'* to cater to the journal preference) in hospital-based practice. The results showed that the majority of junior doctors sampled experienced at least one incident of

incivility in the previous year, with such experiences being associated with greater symptoms of depression, anxiety and stress. Whilst high resilience and low fatigue buffered the effect of incivility on depression and anxiety, this moderation effect was not observed in relation to stress and work engagement. Professional identity did not significantly mediate the effect of incivility on wellbeing.

Though beyond the scope of my model, there were data on social support (classified as an person resource in Chapter 2) and we sought to understand how it influenced the negative effects of incivility. However this construct returned no significant effects.

My contribution to this paper was: conception = 50%; data collection = 85%; analysis = 100%; writing = 70%. Contribution from Associate Professor Monique Crane was: conception = 10%; data collection = 0%; analysis = 0%; writing = 5%. Contribution from Associate Professor Paul Dugdale was: conception = 0%; data collection = 10%; analysis = 0%; writing = 5%. Contribution from Professor Barbara Griffin was: conception = 40%; data collection = 5%; analysis = 0%; writing = 20%.

Assessing the Impact of Incivility on Junior Doctors: The Moderating Role of Resilience and Fatigue

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Westbrook et al. (2018) recently described the experience of unprofessional behaviour as "endemic" among the healthcare workforce. They highlighted the diversity of this behaviour, which ranges from the serious problems of bullying and harassment to more general incivility. However, most of the existing empirical research focuses on bullying or on the nursing profession, with less known about incivility (including that perpetrated by colleagues, patients and their families) and how it impacts junior doctors.

Defined as rude, discourteous and disrespectful behaviours towards others (Pearson et al., 2005), incivility at work includes verbal rudeness, being humiliated, gossip, passive aggression, and lack of responsiveness. Although prevalent across industries and organisations (Schilpzand et al., 2016), incivility appears particularly problematic for medical students and junior doctors (Fnais et al., 2014).

Impact of incivility in medicine

Despite being described as "milder" than other forms of interpersonal mistreatment, a large body of literature in non-medical work contexts shows that incivility is associated with negative work attitudes and poor wellbeing (Schilpzand et al., 2016). Our study builds on the scant empirical evidence demonstrating the effect of incivility on junior doctors, but more importantly, is the first to investigate factors that might mitigate or exacerbate the negative outcomes of incivility amongst these professionals.

Incivility has both an immediate effect and longer-term negative consequences. In medical settings, immediate effects were recently illustrated by Katz et al. (2019) who found that anesthetic residents exposed to rudeness performed more poorly in technical and non-technical skills than those working in a civil environment. Over time, incivility is thought to demotivate junior doctors and result in psychological distress (Bradley et al., 2015), but evidence is limited. We examine the implications of incivility for junior doctors in terms of their psychological wellbeing and work engagement. Engagement (the positive state of vigor, dedication and absorption) is a core work attitude that influences outcomes such as job performance and intention to leave (Halbesleben and Wheeler, 2008).

Incivility and the Job Demands-Resources Model

A prominent theory explaining the relationship between workplace demands and strain, the Job Demands-Resources (JD-R) model (Demerouti et al., 2001), suggests that available resources can moderate the harmful effects of job demands. Demands, such as incivility in the workplace, deplete an individual's cognitive, physical and emotional capacities whilst resources are qualities of the person (social, psychological, and physical) or the organisation (e.g. leadership, and qualities of the culture and job) that support work goals and professional growth. Coping with demands requires sustained physiological and psychological effort, draining the person and resulting in negative outcomes (Demerouti et al., 2001). In medicine, these outcomes can surface as heightened psychological distress and reduced motivation to work in response to incivility (Bradley et al., 2015).

Bakker et al. (2014) argue that workers who experience high job demands are likely to develop mental and physical health impairments in the absence of sufficient resources to support them. In other words, the availability of personal and organisational resources can buffer or protect against the depletion caused by demands (Bakker, 2011; Bakker and Demerouti, 2007). In this study, we examine the potential for three types of

personal resources, social, psychological, and physical to moderate the effect of incivility. The psychological resource, perceived capacity for resilience, is a relatively enduring characteristic of a person thought to influence emotional responses to stressors (Crane et al., 2019). Available support (a social resource) and fatigue (a physical resource, or lack thereof) are state-like characteristics of a person.

The Effect of Personal Resources

Dwyer et al. (2011) argue that social support external to the hospital environment (i.e., a person's family and friends) is important in improving the welfare of 'at-risk' and poorly performing young doctors. Indeed, a recent study showed family support protected physicians against high demands (Taku, 2014). When social support is available, doctors can share about their uncivil encounters and seek comfort, advice and reassurance to cope, likely weakening the negative effect on wellbeing and work attitudes.

The *perceived* capacity for resilience is the perception that one has the capability (at that point in time) to cope well and recover when facing stressors and adversities (Crane et al., 2019). Although defined as a more enduring characteristic of an individual, Crane et al. (2019) highlight that one's perceived capacity for resilience can fluctuate over time, strengthening or depleting depending on an individiual's available resources and coping strategies to meet situational demands at any one point. When individuals perceive that they have high capacity for resilience they are more able to withstand adversity, maintaining better emotion regulation in the face of risks to psychological wellbeing (Tugade and Fredrickson, 2004). They may therefore cope better with uncivil experiences than at times when capacity for resilience is low.

Fatigued junior doctors are prone to developing health problems and face challenges in performing optimally (Gander et al., 2007). In our study, fatigue represents a lack of personal resources, lowering energy to cope with demands and manage wellbeing

(Hobfoll and Shirom, 2000). Whilst under-researched in junior doctors, fatigue appears to exacerbate the effects of work demands on stress and is associated with maladaptive coping (i.e. avoidance-oriented) and stress in medical students (Achnak et al., 2018; Tanaka et al., 2009). We therefore expect highly fatigued doctors to be more likely to exhibit psychological distress and poor engagement in response to incivility.

Method

Participants and Design

The study involved a cross-sectional survey (online and pen-and-paper options) of junior doctors. The data collection took place in October – November 2019 in an Australian local health district with around 800 beds. Approximately 520 junior doctors (number provided by the hospital administration staff) were employed across the three participating hospitals within this local health district, two of which were located in rural areas. Invitations to participate were sent by email (managed by hospital administration) and we were unable to determine how many actually opened the emailed invitations or were on leave/night duty/rostered days off when the email was sent. The initial response was quite slow, suggesting many did not see the email invitation. We were therefore given permission to distribute hard copy surveys during a medical seminar in the central hospital, with response rate for those who attended well over 50%. We suspect that less than half of the total number of junior doctors within this local health district had access to the survey given the nature of the distribution and that the reported response rate of 24.6% is an underestimate of the real response rate.

Of those who accessed the survey link or completed a hard copy survey, 115 provided sufficient data to be included in the analyses. Participants (61% female) worked across clinical rotations, with 37% in their first postgraduate year (PGY1), 20% in the second postgraduate year (PGY2), both of which include experience across a range of

specialty teams, and the remainder (43%) in Postgraduate Year 3 or higher (PGY3+), when specialty training commences. Their mean age was 31.3 years (*SD* = 4.98).

Ethics approval for the study was obtained from Macquarie University HREC (no. 5201953689278) and the ethics board of the local health district involved, with all participants providing informed consent to engage in the study. As an incentive to engage in the study, participants could choose to enter a draw to win one of three $100 gift cards.

Measures

The self-report survey used, unless otherwise stated, a 5-point Likert response scale from 1 *Strongly disagree* to 5 *Strongly agree* to collect data on the following measures:

Incivility. Using the 15-item Negative Acts Questionnaire-Revised (NAQ-R; Einarsen et al., 2009), junior doctors indicated the extent (from 1 *Never* to 5 *Daily*) they experienced uncivil behaviours (e.g., 'being humiliated or ridiculed in connection with your work') over the past year. An additional item ('someone yelling, shouting or swearing at you') was included from Cortina et al (2013). Coefficient alpha was .88.

Non-work Social Support. The 9-item Multidimensional Scale of Perceived Support (Zimet et al., 1988) measured the support junior doctors felt they received from friends, family, and significant others with items such as 'My friends really try to help me'. Coefficient alpha was .89.

Perceived Capacity for Resilience. The Brief Resilience Scale (Smith et al., 2008) measured self-reported capacity for resilience in stressful or challenging contexts with six statements (e.g., 'I tend to bounce back quickly after hard times'). Coefficient alpha was .88.

Fatigue. The Occupational Fatigue Exhaustion Recovery Scale (OFER; Winwood et al., 2005) assessed junior doctor's current fatigue using four items (e.g. 'I feel exhausted all the time'). Coefficient alpha was .78.

Psychological Distress. The short version of the Depression Anxiety and Stress Scale (DASS 21; Lovibond and Lovibond, 1995) measured psychological distress. Participants indicated how often they experienced each of 21 symptoms over the past week (from 0 *Never* to 3 *Almost Always*). There were seven items in each of the three subscales of depression anxiety and stress, with responses added then multiplied by 2 (see normative scoring method recommended by Lovibond & Lovibond, (1995)). Coefficient alphas were .90, .76 and .88 for depression, anxiety and stress respectively.

Engagement. Using the Utrecht Work Engagement Scale-3 (Schaufeli et al., 2019), junior doctors responded to three statements describing their vigor, dedication and absorption at work (e.g., 'I am immersed in my work'). Coefficient alpha was .61.

Data Analysis

Each variable in the study was computed as means of their respective scale items, apart from the DASS-21 for which normative scoring was used as recommended by the manual (Lovibond & Lovibond, 1995). Linear regression analyses (using SPSS Version 25) examined the effects of incivility on psychological distress (depression, anxiety, stress) and work engagement, and the role of moderators (social support, perceived capacity for resilience, and fatigue), controlling for sex. Interaction terms were computed from the product of the mean centered variables. Simple slopes tests of significant interactions assessed the difference between relationships at one SD above and below the mean of the moderator variable (Liu et al., 2017).

The regression process and post-hoc tests included listwise deletion of missing data, and bootstrapping adjustments (using 1000 bootstraps) were used to address the assumptions of normality (Pek et al., 2018) for all outcome variables. In comparison to other methods of addressing a non-normal distribution that involve changing the data by modifying or removing outliers, bootstrapping changes the estimator in determining the

sampling distribution of the variables being assessed (Pek et al., 2018). This technique is based on a less restrictive assumption in determining the representativeness of the sample. Note, incivility was not normally distributed. This distribution pattern is common relative to other studies assessing the effects of incivility (e.g. Birkeland & Nerstad, 2015; Holm et al., 2019). As incivility was treated as an independent variable in this study and bootstrapping was used to address the assumptions of normality for the dependent variables, the regressions are still viable as a form of analysis.

Results

Means, SDs and correlations are reported in Table 15.

Almost all (98.3%) junior doctors who responded to the survey reported at least one experience of incivility over the past year. Whilst the mean score for the 16 items was not high, frequency of the different behaviours varied. The most frequently reported were expectations of unmanageable workloads (experienced by 64.8% at least monthly) and having opinions ignored (37.4% at least monthly). Facing unreasonable deadlines and being ordered to work below their level of competence occurred at least monthly for 34.3% and 33.3% of junior doctors respectively. Although 36.1% had never experienced verbal abuse, 20.4% reported at least monthly experiences of been yelled, shouted or sworn at, and 49.1% experienced being humiliated or ridiculed in connection with their work at least once over the previous year.

Although within the ‘normal’ range for depression and anxiety, and the ‘mild’ range for stress, the means (9.13, 6.80 and 15.17 for depression, anxiety and stress respectively) were above population norms (4.42, 2.96 and 7.58) (Crawford et al., 2011) and consistent with previous studies using the DASS to assess mental health of junior doctors (Goldhagen et al., 2015). The proportion of participants who presented with severe or extremely severe symptoms of depression, anxiety or stress was 13%, 13% and 14%

respectively. Post-hoc Bonferroni tests assessed any differences in depression, anxiety, stress and engagement outcomes by training year (i.e., PGY 1, PGY 2, PGY 3+). Post-hoc Bonferroni tests indicated that PGY 1 junior doctors reported lower depression (M = 6.67, SD = 6.70) and anxiety (M = 5.28, SD = 5.35) scores relative to those in PGY 2 (depression; M = 14.70, SD = 9.34, anxiety; M = 9.10, SD = 6.97). No other significant differences in the four outcome variables were observed between training years.

As reported in Tables 15 to 17, incivility was significantly correlated with all three psychological distress outcomes and remained significant in each of the regressions after adding the other variables. Incivility was not correlated with work engagement.

Table 15

Means, SDs, and Correlations

	n	M	SD	1	2	3	4	5	6	7	8
1. Sex	98	-	-								
2. Incivility	108	1.95	.63	-.03							
3. Social Support	108	4.05	.71	-.11	-.00						
4. Resilience	103	3.23	.78	.10	-.09	.16					
5. Fatigue	114	3.58	.75	-.08	-.27*	-.15	-.30*				
6. Depression	108	9.13	9.05	-.00	.47*	-.29*	-.51*	.46*			
7. Anxiety	108	6.80	6.81	-.14	.44*	-.13	-.41*	.43*	.63*		
8. Stress	108	15.17	9.06	-.06	.44*	.01	-.49*	.51*	.68	.62	
9. Engagement	107	3.26	.63	-.02	-.13	.17	.42*	-.31*	-.39*	-.27*	-.35*

*Note. * $p < .05$*

The sections below report the results for the regression analyses for each hypothesised moderator. The figures show values of the moderator one standard deviation above and below the mean.

Social Support

Social support was significantly correlated with depression and retained a significant negative relationship in the regression analysis, controlling for other variables (B = -3.33, $p < .01$). It was unrelated to anxiety, stress and engagement. The interaction between social support and incivility did not significantly relate to any dependent variable.

Perceived Capacity for Resilience

As reported in Tables 15 and 16, self-reported capacity for resilience was significantly correlated with all dependent variables and retained a significant main effect in all the regression analyses, being associated with lower depression, anxiety and stress, and higher engagement. The interaction between incivility and perceived resilience was significant in the regressions on depression (B = -3.23, $p < .01$) and anxiety (B = -2.55, $p < .01$), but not significant for stress or engagement. As illustrated in Figure 14, incivility experience was significantly associated with depression (t = 6.74, $p < .01$) and anxiety (t =

5.48, $p < .01$) when perceived capacity for resilience was low. When this perception was high, the effect on depression continued to be significant but was weaker ($t = 2.20$, $p < .05$) whilst the effect on anxiety was no longer significant ($t = 1.44$, $p > .05$).

Table 16

Moderating Effect of Resilience

	Dependent Variables											
	Depression			**Anxiety**			**Stress**			**Engagement**		
		95% CI			**95% CI**			**95% CI**			**95% CI**	
	B	Lower	Upper	**B**	Lower	Upper	**B**	Lower	Upper	**B**	Lower	Upper
Sex	.75	-1.53	3.21	-1.17	-3.35	1.33	.61	-2.05	3.64	-.11	-.35	.17
Incivility	5.57**	3.64	8.01	3.73**	1.85	5.41	4.27**	1.78	7.28	-.12	-.31	.13
Social Support	-3.72**	-5.78	-1.59	-1.41	-3.31	.43	1.20	-.99	3.26	.07	-.09	.26
Resilience	-3.92**	-5.79	-2.22	-2.11*	-3.73	-.75	-4.06**	-5.85	-2.27	.29**	.14	.46
Fatigue	2.76**	.94	4.41	1.89**	.68	3.24	4.05**	2.05	6.12	-.14	-.32	.03
Incivility*Resilience	-3.23**	-5.20	-.51	-2.55**	-4.20	-.39	-2.25	-4.12	1.03	.14	-.11	.48
F	25.45**			13.26**			16.03**			4.89**		
R^2	.61			.44			.49			.20		

Note. ** $p < .01$, * $p < .05$, *n = 96 (regressions on depression, anxiety and stress), n = 95 (regression on engagement)*

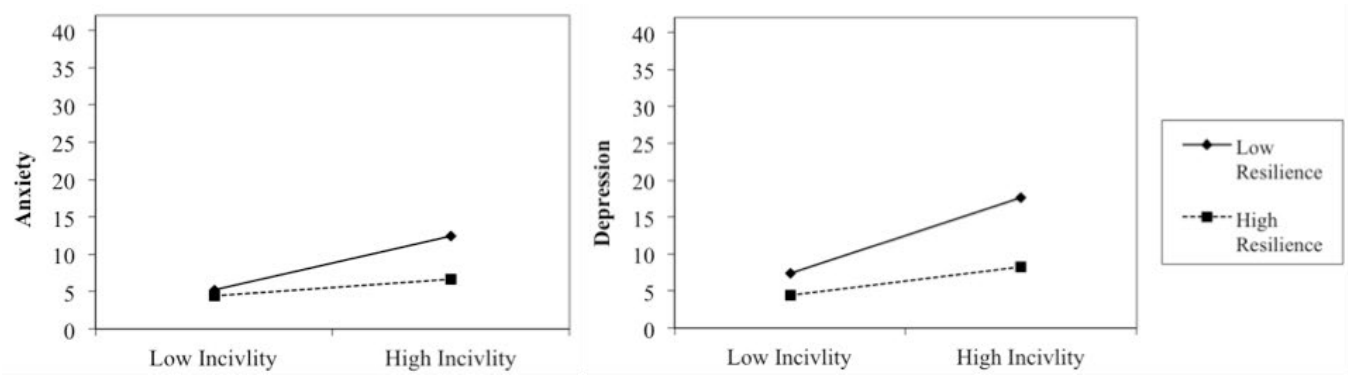

Figure 14. Moderation effect of resilience on anxiety and depression

Fatigue

Fatigue was significantly associated with higher depression, anxiety, stress and lower engagement, and had a significant main effect on all dependent variables except engagement in the regression analyses (see Tables 15 and 17). The interaction between incivility and fatigue was significant in the regressions on depression ($B = 3.28$, $p < .05$) and anxiety ($B = 3.43$, $p < .01$), but not on stress or engagement (Table 17). Figure 15 shows that when fatigue was high, incivility experience was significantly associated with depression ($t = 6.27$, $p < .01$) and anxiety ($t = 5.75$, $p < .01$). When fatigue was low, incivility had a significant, but weaker, effect on depression severity ($t = 2.27$, $p < .05$) but no effect on anxiety (t = 1.00, $p > .05$).

Table 17

Moderating Effect of Fatigue

	Dependent Variables											
	Depression			**Anxiety**			**Stress**			**Engagement**		
		95% CI			**95% CI**			**95% CI**			**95% CI**	
	B	Lower	Upper	**B**	Lower	Upper	**B**	Lower	Upper	**B**	Lower	Upper
Sex	.64	-1.46	3.38	-1.26	-3.53	1.06	.54	-2.34	3.65	-.11	-.36	.15
Incivility	5.74**	3.61	8.19	3.79**	1.85	5.27	4.48**	1.68	7.48	-.12	-.31	.11
Social Support	-3.44**	-5.29	-1.38	-1.20	-3.02	.50	1.41	-.58	3.78	.06	-.09	.22
Resilience	-4.20**	-6.13	-2.49	-2.26*	-3.84	-.68	-4.35**	-6.04	-2.53	.30**	.14	.46
Fatigue	3.00**	1.07	4.79	2.15**	.70	3.44	4.11**	2.08	6.16	-.15	-.33	.04
Incivility*Fatigue	3.28*	.26	5.85	3.43**	.83	5.70	1.05	-2.14	3.68	-.06	-.40	.25
F	24.41**			14.02**			15.03**			4.60**		
R^2	.60			.45			.47			.19		

Note. ** $p < .01$, * $p < .05$, *n = 96 (regressions on depression, anxiety and stress), n = 95 (regression on engagement)*

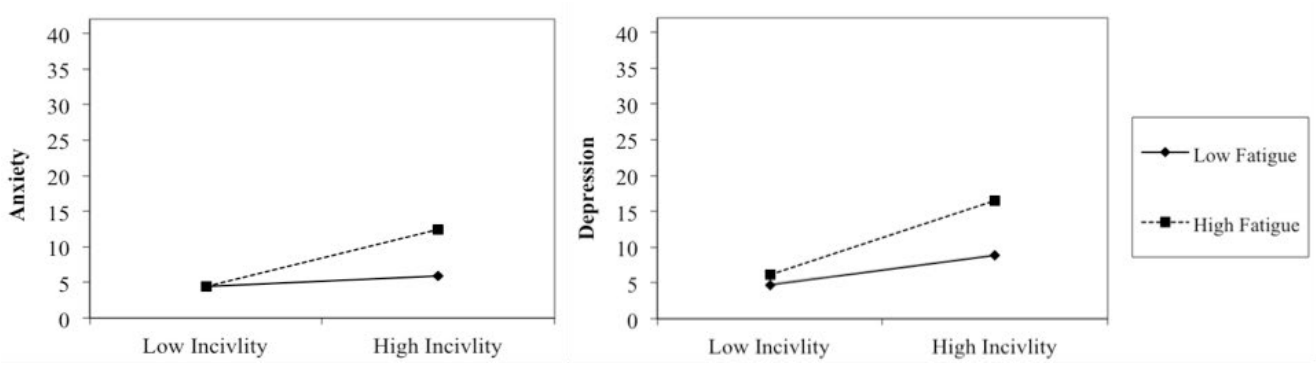

Figure 15. Moderation effect of fatigue on anxiety and depression

Discussion

This study drew on the JD-R model (Demerouti et al., 2001) to assess the impact of incivility on psychological distress and work engagement in junior doctors, considering whether personal resources (social support, perceived capacity for resilience, fatigue) mitigated or exacerbated any observed effects. Junior doctors reported relatively high levels of some uncivil behaviours, with unmanageable workloads and disregard for one's opinions identified as the most frequent. Incidents of verbal abuse and being ridiculed at work were also reported. Incivility had a significant main effect on junior doctor psychological distress. Those who experienced more uncivil behaviours presented with more cumulative symptoms of depression, anxiety and stress. However, the impact on depression and anxiety (but not stress) was reduced in junior doctors who had a stronger perceived capacity for resilience and were less fatigued, underlining the importance of these resources in difficult work environments.

Those with high social support from family and friends presented with lower depression, confirming its value for young doctors (Dwyer et al., 2011). Yet our results indicate this support was unable to reduce the negative effect of incivility at work. Future research might investigate the effect of support within the hospital work environment (e.g., from supervisors and colleagues).

The protective role of perceived capacity for resilience on junior doctor depression and anxiety supports its previously identified buffer against burnout in medical practitioners (Taku, 2014). Despite indicating its value as a personal resource for reducing the negative effect of workplace demands in line with the JD-R model, perceived capacity for resilience did not entirely negate the impact of incivility on depression and did not reduce its effect on stress (albeit $p = .05$). Our results did however show that those with higher self-reported resilience were more likely to report lower psychological distress and higher engagement.

This is the first study to examine the moderating role of fatigue among young doctors. Fatigue exacerbated the effect of incivility on depression and anxiety, supporting the concept that it depletes the energy required to adequately cope with adversity and manage wellbeing. Clearly a significant risk factor for junior doctors in terms of safety and physical health (Gander et al., 2007), our results underscore the negative consequences of fatigue in the context of workplace incivility where psychological distress has further repercussions for the individual (e.g., increased suicidal ideation; Markwell and Wainer, 2009) and the community (e.g., increased likelihood of medical error impacting patient care; Brunsberg et al., 2019). Even though those who perceived a high capacity for resilience and who had low fatigue were more engaged at work, personal resources did not alter the effect of incivility on engagement.

We stress that the current study focused only on personal resources. Organisational resources (e.g. supportive leadership, respect for culture, workload management systems) are also critically important in reducing both incivility and its negative effects. Indeed, our findings highlight the urgent need for efforts to be directed towards reducing the prevalence of uncivil behaviour in hospitals. In terms of personal resources, the practical implications of the current findings include: 1) Health departments might support

interventions that help junior doctors strengthen their capacity for resilience, including the development of strategies to cope effectively with uncivil encounters (see Crane et al., 2019 who describe techniques such as reflective practices to strengthen resilience in the face of significant stress); and 2) Initiatives to reduce fatigue are clearly required. Ways to managing fatigue either during a shift (e.g. building in rest periods; Rimmer, 2018) or more broadly (e.g. implementation of a fatigue risk management system (FRMS); Noone and Waclawski, 2018) can be considered.

Limitations and Future Research

The risk of common method bias stemming from our use of self-report measures is a potential limitation. Nevertheless, self-report is widely considered appropriate given the personal nature of psychological distress and experiences of incivility, and significant interaction effects render common method is less likely a problem (Siemsen et al., 2010). Although we met Green's (1991) rule that regression studies with five variables require at least 109 participants, larger samples in future studies would ensure greater statistical power for identifying effects. With data collected from a single local health district, the sample may also not have been representative of the broader junior doctor population. We note though that the DASS scores mirrored previous research, supporting the adequacy of the current sample at least to study relationships between variables. Most importantly, the cross-sectional study design could not identify cause-and-effect relationships. Future research should prioritise collecting longitudinal data.

This study examined the longer-term effects of incivility on junior doctor wellbeing, taking a between-person approach. There remains a need to understand the within-person effects of incivility and whether these resources affect individual fluctuations in wellbeing and engagement that are known to occur on a daily basis (Beattie and Griffin, 2014). The source of incivility (e.g. comparing that from supervisors, other

staff, or patients) is another potential area for further investigation as different perpetrators may impact outcomes differentially.

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CHAPTER 6: A Shift Makes a Difference: Within-person Effects of Incivility on Junior Doctor Wellbeing

Submitted for peer-review to the journal Medical Education (see Appendix C for abstract), this paper summarises the results of a diary study to assess the within-person effects of incivility on JMO wellbeing and work attitudes conducted with 54 of the 128 junior medical officers who partook in the between-person component of the research (see Chapter 5). With the broader literature placing an overarching emphasis on understanding differences in experiences across groups of people, this study is the first attempt to understand how experiencing uncivil behaviours during a single work shift can impact the daily fluctuations in wellbeing, namely anxiety, fatigue and work engagement on the day of the work shift. In addition, this study also looked how the effect of incivility varied by perpetrator (i.e., supervisors, nurses/allied health staff, patients/relatives), and whether two organisation factors influenced the day-to-day effects of incivility on these outcomes as shown in the model below (Figure 16).

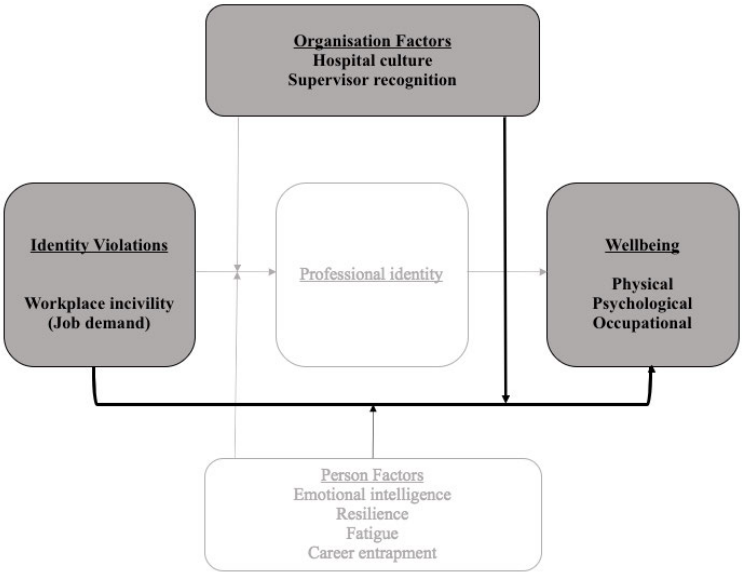

Figure 16. Aspects of my model tested in this study

Note that fatigue was treated as an outcome instead of a moderator for the purpose of this diary study. Given the prevalence of fatigue as a problem amongst JMOs as

outlined in the previous chapter, I sought to understand if level of fatigue was a factor that fluctuated on a daily basis. As hypothesised, incivility had shift-based effects on JMO wellbeing and work attitudes. Importantly, these effects varied by perpetrator. On shifts where senior doctors were the source of incivility, JMOs reported higher levels of anxiety at the end of a shift. When nurses/allied health staff and patients/relatives behaved in an uncivil manner, affected JMOs were likely to be more fatigued and less engaged during a shift respectively. Contrary to expectations, neither supervisor recognition nor the hospital culture moderated the shift-based effects of incivility on all three outcomes of wellbeing. However, having one's work being appreciated by the supervisor was associated with junior doctors being less anxious at the end of a shift, and less fatigued and more engaged during a shift, whilst a better culture was related to less fatigue during a shift and less anxiety at the end of a shift.

Note, the term 'diary' does not refer to qualitatively written output as in the common understanding of diary. Rather, it is a technical term for a repeated measures design that involves quantitative surveys at close occurring time intervals (e.g., once a day, 2-3 times a day, once a week). This method was considered most suitable for this study as it allowed for the analysis of within-person fluctuations in shift-based experiences of incivility, wellbeing and work engagement. Commonly, this type of data is analysed using hierarchical regression modelling as demonstrated in this study and not longitudinal modeling.

My contribution to this paper was: conception = 50%; data collection = 100%; analysis = 100%; writing = 70%. Contribution from Associate Professor Paul Dugdale was: conception = 0%; data collection = 0%; analysis = 0%; writing = 5%. Contribution from Professor Barbara Griffin was: conception = 50%; data collection = 0%; analysis = 0%; writing = 30%.

A Shift Makes a Difference: Within-person Effects of Incivility on Junior Doctor Wellbeing

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Characterised by rude, disrespectful and undermining behaviours, incivility is a widespread problem in hospital contexts and thought to impact the wellbeing, work attitudes and performance of junior doctors.[1-2] However, much of the extant research is qualitative or limited to studying the between-person effects of incivility (e.g., comparing those who experience high incivility with those who are rarely treated in an uncivil manner). Little is known about the within-person effects, that is, whether a junior doctor's fluctuation in wellbeing across time is linked to when they experience incivility. We therefore conducted a 'diary' study, capturing repeated assessments across a two-week period to understand how the amount of incivility experienced on a hospital-based shift relates to wellbeing and work engagement that day. People have physical and emotional peaks and troughs over a period of time [3] and within-person analysis can identify any link between such dips in wellbeing to events that junior doctors experience across a shift. Because incivility has known impacts on victims' psychological, physical health and occupational wellbeing,[4-5] we assessed fluctuations in anxiety, fatigue, and work engagement.

Importantly, we are also the first to investigate whether the effects of incivility depend on the type of perpetrator. Common sources of incivility toward junior doctors include more senior or supervising doctors, co-workers, and patients (including relatives)[6-

[9] but it is unclear if they have differing effects on the targets of their incivility. The broader incivility literature indicates that its impact might depend on the power of the instigator. For example, compared to incivility from co-workers, supervisor incivility has poorer outcomes for victims.[10] There are not only greater expectations for those in power to behave respectfully,[11] but given their authority to evaluate and reward work performance, incivility from those in more senior positions can be seen as more threatening. With junior doctors positioned lower in a hospital's power dynamic, they may also be hesitant to defend themselves in the face of mistreatment from senior doctors,[12] which could compound the anxiety caused by the uncivil incident. We therefore expect that, relative to other perpetrators, incivility from senior doctors is likely to cause greater distress. Even though co-worker incivility during a work shift may be less stressful than that from senior doctors, Herschcovis and Barling[10] show that incivility from individuals inside an organisation results in poorer outcomes than incivility from those external to it. Victims are likely to attribute the cause of disrespect from a co-worker to an organisation failing in its duty of care to look after their employees.[13-14] We therefore expect co-worker incivility during a shift to have a more negative effect on junior doctors than that from patients.

Although junior doctors' wellbeing is likely to drop on days when they are treated in an uncivil manner (from any source), it may be that there are factors that can reduce or protect against this negative effect. The Job Demands-Resources (JD-R) model[15] offers a theoretical explanation for the negative effect of job demands (such as workplace incivility) on employee wellbeing. It also proposes that the demands/poor wellbeing association is weakened by the presence of "resources"- aspects of the person or the work environment that support goal achievement and stimulate personal development. These are protective in the face of high job demands as people with sufficient resources are more likely to feel competent in managing the situation or have the support to cope with any

impact.[16] The usefulness of person-related factors in coping with incivility has received some attention,[17] so this current study focuses on factors related to the work environment, namely hospital culture and the positive feedback given by supervisors. Hospital culture was chosen to represent the *global* or broader environmental context that affects how people behave and respond, whilst supervisor recognition represents a more *local* or immediate environmental resource.

An organisation's culture refers to the shared beliefs, assumptions, values, and unwritten rules that influence how individuals think, feel and behave in a work setting.[18] Although incivility's low-intensity nature can make it difficult to detect,[19] it determines a substantial part of an organisation's culture.[20] Whether a hospital's culture actually promotes civility and respect is dependent upon the types of messages the organisation sends with regards to the behaviours that are and are not tolerated in the workplace.[21] With environmental norms, practices and policies typically acting as a frame of reference for what is acceptable at work,[22] the manner in which these are embedded in practice can reflect how well an organisation's culture prioritises employee welfare.[23] These norms in turn influence how individuals interpret their own experiences[24-25] and, behaviourally and emotionally respond to demands like incivility.[4] For example, Nielsen and colleagues [26] found that a positive climate functioned as a job resource and buffered the negative effects of job demands on employee satisfaction in high risk working environments. Specifically, the culture of prioritising safety measures and routines set a standard for acceptable behaviour and helped mitigate the negative effects associated with the demands at hand.

A civil working environment can create a message that incivility is unacceptable and that support is available should employees seek it.[27] Therefore, when a junior doctor experiences incivility in such an environment, they may be more likely to interpret the

experience as the perpetrator's problem with violating accepted norms (as opposed to their own failing).[22] In contrast, where uncivil behaviours are a norm, a junior doctor will have no clear frame of reference for what is tolerated and acceptable , and may not know how to respond or cope with the situation.[27] We therefore expect that a positive hospital culture for civility and respect will act as a protective factor against the negative effects of incivility experienced across a shift.

Supervisors also act as an important resource in the workplace,[28] representing the clearest source of reward and support by the way they acknowledge and respond to situations.[29] With recognition and feedback being a key aspect of supportive leadership,[30] receiving positive recognition from supervisors lets an individual know that they are being treated with dignity and are a valued member in the workplace.[31] Recognition from supervisors can also help shift one's perception of work demands and foster a more positive response[32-33] that acts as an antidote for any negative emotions associated with the demand.[34] For example, gaining recognition and hearing positive feedback from a supervisor may neutralise the negative emotions a junior doctor would normally experience when treated in an uncivil manner by others in the workplace. As demonstrated by Bergin and Jimmieson,[28] positive emotions generated by supervisor recognition in turn encourage active rather than the less effective avoidance-related coping in response to demands.[35] We therefore expect that in addition to its direct benefit on wellbeing and task engagement, a supervisor's provision of appreciation and acknowledgement of a junior's efforts is likely to enable better coping in response to incivility.

Method

Participants

Participants were hospital-based junior doctors from one Australian local health district. Of the 128 who completed an initial survey collecting background information, 57

participated in the diary study component (described below). Three participants' diary data were excluded from the analysis given they only partially completed one survey (of six). The remaining 54 junior doctors (65% female) were aged between 25 and 41 years (M = 31.03, SD = 3.71). They were either practicing in the first or second postgraduate year (28% and 24% respectively) or undertaking specialist training (i.e., postgraduate year 3 and above; 48%).

Measures

Designed as a "diary study", participants were invited to complete a short 'mini' survey at the end of six work shifts spread over a two-week period. Junior doctors received links to each survey by text, pre-selecting times to fit their upcoming roster. These surveys gathered reports of incivility, fatigue, anxiety, work engagement and supervisor recognition related to the shift just completed. Prior to the diary study, participants completed the initial survey that collected information on demographics (i.e. age, sex, clinical rotation, training year) and hospital culture.

Within-person Measures

Source and Frequency of Incivility. Junior doctors reported the number of times during the shift they had experienced incivility from 0 (*Never*) to 3 (*3 or more times*) from senior doctors, from nurses or other medical/allied health staff (henceforth 'nurses/allied health staff'), and from patients or their family/friends (henceforth 'patients').

Anxiety. The 6-item Spielberger State-Trait Anxiety Inventory[36] assessed symptoms of anxiety (e.g., 'calm', 'tense') experienced at the end of the shift from 1 (*not at all*) to 4 (*very much*), with a mean Cronbach alpha of 0.82 (range: 0.69 to 0.90).

Fatigue. Five items (e.g. 'I felt less alert') from the Fatigue Impact Scale[37] measured the extent of fatigue experienced during a shift, using a scale from 1 (*Strongly*

disagree) to 5 (*Strongly agree*). Mean Cronbach alpha over the shifts was 0.88 (range = 0.84 to 0.90).

Work Engagement. The Utrecht Work Engagement Scale-3[38], often used in diary studies (e.g., Leeuw, 2020; Matthews et al., 2020), [39 40] captured fluctuations in engagement. Participants indicated their agreement, from 1 (*Strongly disagree*) to 5 (*Strongly agree*), to three statements describing vigor, dedication and absorption experienced during each shift (e.g., 'I was immersed in my work'). An average Cronbach alpha of 0.65 (range: 0.46 to 0.81) was obtained.

Between-person Measures

Hospital Culture. The 8-item Team Incivility Climate Scale[41] measured junior doctors' perceptions of procedures, expectations and practices related to the norms for uncivil/civil behaviour in their hospital (e.g., 'People shame and humiliate each other'). A 5-point Likert scale of 1 (*Strongly disagree*) to 5 (*Strongly agree*) was used, with responses returning a Cronbach alpha of 0.89. Items were reverse scored so that a higher score was reflective of a more positive culture.

Supervisor Recognition. One item ("During the last shift worked, to what extent did you have your work recognised by your supervisor?") adapted from the QPS Nordic 34+[42] assessed supervisor recognition on each shift with a 4-point scale from 1 (*not at all*) to 4 (*to a great extent*). As might be expected given that the participants' supervisor did not change over the period of the study, there was no within-person variance in the amount of supervisor recognition received across shifts, so responses were aggregated to create a between-person measure. Mean Cronbach alpha was 0.84.

Data Analysis

The diary study design created a multilevel dataset with two levels (within- and between-person) whereby reports of shift experience (via the mini surveys) were nested in

each junior doctor. We therefore employed multilevel modeling using the Mplus software (Version 8.4).[43]

The within-person analysis, to assess how incivility from each source affected individuals' fluctuations in anxiety, fatigue and engagement, was justified by the presence of significant *within-person* variance across the study period in all outcomes (see Results). In other words, the degree of stress, anxiety and work engagement each doctor experienced at the end of a shift was different for each of the shifts they worked in the study period. The incivility and control variables were group-mean centred as recommended by Enders & Tofighi.[44] That is, the variables were centred relative to each junior doctor's mean scores across shifts, ensuring that scores are representative of deviations from each participant's mean (i.e., each junior doctor serves as their own control).[45] We specified random slope effects (of the relationships between incivility and dependent variables) to allow for variance in the outcomes over the two week period.[46] When testing the effects of each source of incivility on the three outcomes, we controlled for the random slope effects of the other sources. Given the pervasive effect of fatigue on junior doctors,[47] we also controlled for fatigue when assessing the effect of incivility on anxiety and engagement.

The between-person analysis, to assess the "cross-level" effects of hospital culture and supervisor recognition, required significant variance in the three outcomes *between* junior doctors (see Results). Note, cross-level interactions are evident if the between-person factors (hospital culture, supervisor recognition) are significantly related to the slope of incivility from each source on anxiety, fatigue and engagement. Where variables contained missing values, Mplus estimated the model using full information maximum likelihood (FIML).

Results

Table 18 displays means, standard deviations and correlations. There were 183 completed diary surveys, with at least 218 incidents of incivility reported (scale value 3 = 3 or more incidents of incivility from a source during one shift). The median number of surveys completed was 3 (IQR = 2 to 5).

Table 18

Means, SDs, and Correlations

	M	*SD*	1	2	3	4	5
Within-person							
1. Senior Doctor Incivility	0.31	0.47					
2. Nurse/Allied Health Staff Incivility	0.41	0.58	0.61**				
3. Patient Incivility	0.31	0.40	0.01	0.33*			
4. Anxiety	2.41	0.51	0.19	0.20	0.08		
5. Fatigue	3.05	0.66	0.29*	0.46**	0.13	0.51**	
6. Engagement	2.93	0.51	-0.14	-0.15	-0.11	-0.46**	-0.54**
Between-person							
1. Hospital Culture	3.09	0.74	-	-	-	-	-
2. Supervisor Recognition	2.13	0.75	0.26	-	-	-	-

Note. * $p < 0.05$, ** $p < 0.01$. Within-person correlations have been aggregated across up to six shifts

Within-person Effect of Incivility on Outcomes

Significant variance across the two weeks in each junior doctor's anxiety (B = 0.19, p <0 .01), fatigue (B = 0.39, p < 0.01) and engagement (B = 0.23, p < 0.01) justified the within-person analysis.

Senior Doctor Incivility

As reported in Table 19, incivility from senior doctors was significantly related to anxiety (controlling for fatigue, incivility from nurses/allied health and from patients). That is, on shifts when junior doctors experienced more incivility from senior doctors, they had higher anxiety than on shifts when there was no or little incivility from this source. Every additional (up to 3) incident of incivility was associated with approximately a 14% increase in reported anxiety in junior doctors by the end of the shift. Senior doctor incivility was not related to fluctuations in junior doctor fatigue or work engagement.

Nurses/Allied Health Staff Incivility

Controlling for incivility from senior doctors and patients, incivility from nurses/allied health staff was significantly associated with fatigue (see Table 19). Junior doctors felt more fatigue on shifts during which they experienced more uncivil behaviours from nurses/allied health staff, relative to shifts with less or no incivility. Fatigue during a shift increased by approximately 26% for every additional (up to 3) incident of incivility. Nurses/allied health incivility did not impact fluctuations in junior doctor anxiety or work engagement.

Patient Incivility

As shown in Table 19, patient incivility was significantly related to work engagement (controlling for fatigue, incivility from senior doctors and from nurses/allied health). Junior doctors were less engaged during shifts when they experienced a high number of uncivil behaviours from patients and their friends/family compared to shifts

where these behaviours were limited or absent. Every additional (up to 3) incident of incivility was associated with approximately a 12% decrease in junior doctors' reported engagement during a shift. Patient incivility was not related to fluctuations in junior doctor anxiety or fatigue.

Between-person Effects

The intra-class correlations for anxiety, fatigue and engagement showed that 49%, 43% and 44% of the variance respectively was between-person, thus justifying the analysis of cross-level effects. However, there was no significant variance in any of the random slopes for the relationships between incivility (from any source) and anxiety, fatigue, or engagement. That is, the within-person relationships did not vary across participants so examining cross-level moderation was not justified.[46] We therefore only report the cross-level main effects.

Hospital Culture

As reported in Table 19, good hospital culture was significantly associated with low anxiety and fatigue, where a one unit decrease in reported incivility climate was associated with a 20% decrease in reported anxiety and a 39% decrease in fatigue. Hospital culture was not related to work engagement.

Supervisor Recognition

As shown in Table 20, supervisor recognition was significantly and negatively related to junior doctor anxiety and fatigue and positively related to work engagement. A one unit increase in supervisor recognition was associated with a 28% decrease in anxiety, a 36% decrease in fatigue, and 30% increase in engagement.

Table 19

Multilevel Analysis for each Outcome (full model results presented, when cross level effects of hospital culture included)

	Anxiety			Fatigue			Engagement		
	Υ (95% CI)	SE	*t*	Υ (95% CI)	SE	*t*	Υ (95% CI)	SE	*t*
Within-person factors									
Intercept	1.88	0.28	6.68**	2.08	0.38	5.54**	3.36	0.25	13.37**
Fatigue	0.28 (0.15 to 0.41)	0.07	4.28**	-	-	-	-.41 (-0.55 to -0.26)	0.07	-5.47**
Incivility from:									
Senior doctors	0.13 (0.004 to 0.26)	0.07	2.02*	-0.05 (-0.23 to 0.12)	0.09	-0.61	-0.05 (-0.24 to 0.13)	0.09	-0.56
Nurses/Allied health	-0.02 (-0.15 to 0.11)	0.07	-0.24	0.23 (0.06 to 0.41)	0.09	2.58*	0.02 (-0.12 to 0.17)	0.07	0.33
Patients/relatives	0.06 (-0.07 to 0.19)	0.07	0.98	-0.03 (-0.42 to 0.35)	0.20	-0.17	-0.11 (-0.19 to -0.02)	0.04	-2.51*
Between-person factors									
Hospital culture	-0.18 (-.35 to - 0.004)	0.09	-2.01*	-0.33 (-0.58 to -.07)	0.13	-2.53*	.14 (-0.02 to 0.31)	0.08	1.74

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

Table 20

Multilevel Analysis for each Outcome (full model results presented, when cross level effects of supervisor recognition included)

	Anxiety			Fatigue			Engagement		
	Υ (95% CI)	SE	*t*	Υ (95% CI)	SE	*t*	Υ (95% CI)	SE	*t*
Within-person factors									
Intercept	2.93	0.19	15.58**	3.71	0.28	13.45**	2.38	0.23	10.42**
Fatigue	0.28 (0.15 to 0.41)	0.07	4.28**	-	-	-	-.41 (-0.55 to -0.26)	0.07	-5.47**
Incivility from:									
Senior doctors	0.13 (0.004 to 0.26)	0.07	2.02*	-0.05 (-0.24 to 0.14)	0.09	-0.56	-0.05 (-0.24 to 0.13)	0.09	-0.56
Nurses/Allied health	-0.02 (-0.15 to 0.11)	0.07	-0.25	0.23 (0.06 to 0.41)	0.09	2.56*	0.02 (-0.12 to 0.17)	0.07	0.33
Patients/relatives	0.06 (-0.07 to 0.19)	0.07	0.98	-0.03 (-0.59 to 0.53)	0.29	-0.12	-0.11 (-0.19 to -0.02)	0.04	-2.51*
Between-person factors									
Supervisor recognition	-0.25 (-0.43 to -0.07)	0.09	-2.72**	-0.31 (-0.56 to -0.05)	0.13	-2.33*	0.26 (0.04 to 0.47)	0.11	2.34*

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

Discussion

This study aimed to understand the shift-based effects of incivility on junior doctor wellbeing, with consideration for the differences in effects associated with the type of perpetrator. Although it was hypothesised that incivility from senior doctors would be associated with poorer wellbeing compared to co-worker incivility, and co-worker incivility would be associated with poorer junior doctor wellbeing compared to patient incivility, incivility from the three different sources during work shifts was related to fluctuations in three different outcomes amongst junior doctors. Their anxiety was higher after shifts when senior doctors acted toward them in an uncivil manner. In contrast, incivility from nurses/allied health staff was associated with greater fatigue during a shift, whilst lower work engagement through a shift occurred on days when patients or their relatives were uncivil towards the junior doctor. Consistent with past research, our results highlight that responses to uncivil behaviours vary by perpetrator.[10 11] However, variation in responses by the type of outcome as opposed to severity of outcomes suggests that uncivil behaviours from different perpetrators have diverse meaning for junior doctors and may in turn instigate a varied set of emotions and responses that affect wellbeing and work attitudes more broadly.

Whilst perceptions of hospital culture did not alter the negative effects of daily incivility on anxiety, fatigue and engagement in this study, a more positive culture was related to junior doctors reporting less fatigue and anxiety across shifts. Having one's work being recognised by the supervisor also did not protect against the daily negative effects of incivility but was nevertheless associated with junior doctors being less anxious at the end of a shift, and less fatigued and more engaged during a shift.

Limitations

Ours is the first study to address the within-person effects of incivility on junior doctors, collecting both between-person and within-person data to understand cross-level effects. Whilst others have previously identified the main sources of incivility experienced by junior doctors,[6-7,9] we were able to demonstrate how these perpetrators differentially influence short-term day-level fluctuations in junior doctors' wellbeing and work engagement. However, unlike qualitative studies,[7,48] ours could not provide insights on the reasons and situations associated with incivility, nor were we able, due to insufficient numbers, to compare experiences across different clinical rotations (e.g. Surgical, Critical Care).

Although a larger sample size would be desirable, having more than 30 respondents at the within-person level is considered sufficient to identify relationships.[49] Yet despite multiple measures across time, diary studies do not inform the direction of effect. Although there was also a risk of common method bias from using self-report measures, this approach is considered appropriate given the personal nature of incivility experience and psychological distress.[50] Moreover, scores were person-centred during the analysis to eliminate any potential influence of response tendencies arising from individual differences.[51]

Practical Implications

Prior research has demonstrated the negative consequences of anxiety and fatigue for junior doctors and their patients. For example, anxiety results in low job satisfaction,[52] burnout,[53] and poor interpersonal and clinical communication,[54] while fatigue increases the likelihood of clinical error, compromising patient care.[47] Our results related to supervisor and nurse/allied health incivility as well as hospital culture highlight the importance of maintaining a civil working environment.

Differing perceptions of the roles and goals each healthcare profession has in patient care can trigger conflict[55] and make it challenging to maintain mutual respect.[48] Hospital

systems can foster interprofessional collaborative practice (e.g. by implementing a communication tool such as the SBAR; Situation, Background, Assessment, and Recommendation to support decision-making),[56] and encourage staff to role model trust and respect.[57] The positive effect of supervisor recognition underlines the need to train supervisors to consistently acknowledge their team members' efforts and achievements.

Even though patients' experiences of pain, anxiety and sorrow may explain their use of uncivil behaviours,[58] by doing so they actually risk impacting their own or others' treatment. Junior doctors who are less engaged are more likely to make medical errors[59] and therefore need to be supported when handling rude and aggressive patients so as it minimise harm to the patients and themselves.

Conclusion and Future Research

Our study highlights that daily experiences of incivility can affect junior doctors' level of wellbeing and work engagement across a single shift. Whilst the outcomes vary by perpetrator, longitudinal research is needed to make clear causal inferences and obtain a better understanding of the underlying factors that contribute to these differences. Despite the absence of moderation effects in our study, future research should seek to understand between-person factors that might mitigate or exacerbate the within-person effects of incivility, across a larger sample of junior doctors. Other work-related demands also need to be considered to address any confounding effects on wellbeing and burnout. To understand factors that influence the quality of interactions between the different groups of individuals, observations, ethnographic interviews, and one-on-one shadowing may be useful. Obtaining qualitative insights on shift-based experiences can help shed light on the types of uncivil behaviours experienced from each source, contextual factors that contribute to the experience of incivility, post-experience emotions and coping mechanisms typically adopted.

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CHAPTER 7: Discussion of Findings and Conclusion

This thesis sought to understand how incivility affects the wellbeing and work attitudes of medical students and junior doctors (collectively *medical trainees*, see page 15 for definition), that is, those in the early stages of their medical career. In predicting the effect of incivility, I hypothesised a moderated mediation model (see Figure 1, Chapter 1) underpinned by the Job Demands-Resources (JD-R) Model (Demerouti et al., 2001) as a theoretical framework. Drawing on the JD-R theory, my model treated incivility as a job demand that is both directly associated with poor psychological wellbeing (burnout, depression, anxiety, stress, negative affect), physical wellbeing (fatigue) and occupational wellbeing (work engagement). My model supplemented the JD-R framework by also hypothesising incivility to indirectly affect wellbeing via a reduced sense of professional identity. Person factors (resilience, fatigue, emotional intelligence, career entrapment) and organisation factors (hospital culture and supervisor recognition) were introduced to represent resources (or a lack of) that have the potential to buffer any direct or indirect negative effects of incivility (Bakker & Demerouti, 2005).

Together my four studies attempted to explain different aspects of the model across the early-career medical pathway. Specifically, the studies were conducted with medical students in the first year of a graduate program (Study 1, Chapter 3), final year undergraduate medical students (Study 2, Chapter 4), and Junior Medical Officers (JMOs)/junior doctors in their internship year or undertaking specialist registrar training (Studies 3 and 4, Chapters 5 and 6). Notably, this thesis also assessed both between-person effects (differences across groups of early-career medical trainees who experience varied amounts of incivility) and within-person effects (changes within an individual based on their own experiences) of incivility to provide a more holistic understanding of how experiences of uncivil behaviour can affect an individual. This final chapter summarises

the overall thesis findings, the theoretical contributions made and practical implications of my results. Additionally, limitations identified across the thesis are outlined, with considerations for future research included as guidance for ongoing studies in this field.

Summary of Key Findings and Theoretical Contributions

This empirical thesis made four key findings and associated theoretical contributions toward a better understanding of incivility perpetrated on medical trainees.

1. Incivility is a Problem in the Early-Career Stage of Medicine

Consistent with previous research documenting the prevalence and associated outcomes of bullying, harassment and incivility in the early-career stage of medicine (e.g., Forbes et al., 2019; Llewellyn et al., 2019; Szubert et al., 2018; Westbrook et al., 2018), my studies collectively underline that incivility is a problem for medical students and JMOs in Australia. Although medical administrators and colleges have made attempts to adopt a "zero tolerance" approach to addressing bullying, harassment and discrimination (Parliament of Australia, 2016), the repercussions associated with this problem are unsettling to say the least. As outlined in Chapter 5, commonly reported forms of incivility experienced by JMOs include having opinions ignored, being given unmanageable workloads, ordered to work below one's level of competence, being humiliated or ridiculed in connection with one's work and occasional experiences of being yelled, shouted or sworn at. Although the exact nature of behaviours experienced by medical students was not determined, uncivil experiences impacted the physical, psychological and occupational wellbeing of both medical students and junior medical officers.

2. The Job Demands-Resources (JD-R) Model can be used as a Theoretical Framework to Explain the Problem of Incivility and Poor Wellbeing in the Early-career Stage of Medicine

Whilst the broader literature identifies a handful of factors associated with wellbeing amongst medical students and JMOs, the absence of theoretical guidance means that these studies likely faced challenges in explaining any associated findings and differentiating the roles of varied contributing factors. My systematic review of the factors associated with burnout in the early-career stage of medicine (Chapter 2) [4 citations and 1 altmetric] gave me the opportunity to reflect on relationships historically identified over the past 18 years in light of the principles of the JD-R model (Demerouti et al., 2001). Treating burnout as the outcome of interest, Chapter 2 summarised the appropriateness of the JD-R Model in explaining how demands are related to higher levels of burnout in both medical students and JMOs, whilst resources (aspects of the person and the organisation) act to either protect against or buffer the negative effects of the demand itself. Overall, my four studies indicate that incivility is a job demand that can impact wellbeing and work engagement when not adequately supported by resources. Both person factors and organisation factors played a role (albeit different) in mitigating/exacerbating the effects of incivility or were directly related to wellbeing and work attitudes. These effects varied relative to the sample being studied and the stage of medical training. However, consistent with my hypothesised model, incivility appeared to have both a direct and indirect effect on medical student and JMO wellbeing. These effects are detailed below.

3. Incivility has a Direct Effect on the Wellbeing and Work Attitudes in the Early-Career Stage of Medicine

Each of the four studies demonstrated that incivility has a direct effect on wellbeing, with three studies outlining the between-person effects of incivility and one study reporting on the within-person person effects of incivility.

Between-person. Amongst medical students, incivility had a direct effect on negative affect (Chapter 3) and burnout (Chapter 4). In the sample of junior medical officers, experiencing uncivil behaviours was positively related to high levels of depression, anxiety and stress (Chapter 5). These results highlight that despite varied wellbeing outcomes across the different samples, incivility consistently had a negative effect on medical trainee wellbeing. With medical trainees reporting an ongoing stigma behind seeking help to support their wellbeing, coping with such experiences can be extremely challenging (Forbes et al., 2019; Szubert et al., 2018). Potentially compromising one's privacy and confidentiaility, facing embarrassment from sharing experiences and lacking time to make reports are other reasons believed to inhibit support-seeking behaviours in JMOs (Axisa et al., 2020). If left unaddressed, high levels of burnout, depression and stress can have repercussions for both the medical trainees themselves (e.g., e.g., increased suicidal ideation; Markwell and Wainer, 2009) and for the patient they care (e.g., increased medical errors; Brunsberg et al., 2019, less likely to report mistakes or ask questions; Anderson, 2013).

Within-person. Chapter 6 demonstrated the within-person effects of incivility, which outlined how an individual's experiences directly influence daily changes in their own wellbeing and work attitudes over a period of time. In my study, incivility experienced during a work shift had an impact on the psychological (anxiety), physical (fatigue) and occupational (engagement) wellbeing of junior medical officers during or

after a single shift. This shift-based effect of incivility also varied relative to the source from which the uncivil behaviours arose. On days when supervisors were the perpetrators, JMOs presented with higher levels of anxiety at the end of a shift. Nurse/allied health staff incivility was associated with higher levels of fatigue during a shift, whilst uncivil behaviours arising from patients and their relatives were related to lower levels of engagement during a shift. To my knowledge, this study is the first to assess the within-person effects of incivility on JMO wellbeing. With roles and personal goals varying across different aspects of the healthcare profession, there are increased chances of conflict (Casanova et al., 2007) and additional challenges around maintaining mutual respect (Klingberg et al., 2018) if collaborative ways of working are not fostered. Adding to previous studies that have sought to develop a 'one size fits all' solution to addressing incivility (Hodgins et al., 2014), my findings suggest that interventions need to be designed to deal the various motives of distinctive perpetrators and gauge how the types of uncivil behaviours differ by source. With medicine's hierarchical culture structure, uncivil behaviours from different sources are likely to convey different messages to the victim as well as the broader hospital environment in relation to what behaviours are ingrained within the culture of workplace and what behaviours are otherwise not tolerated.

4. Incivility has an Indirect Effect on the Wellbeing and Work Attitudes of Medical Trainees

In addition to having a direct effect on the wellbeing and work attitudes of medical trainees, incivility also has an indirect effect on these outcomes with factors both mediating and moderating the direct relationship.

Mediation Effect. Whilst professional identity did not mediate the relationship between incivility and wellbeing in junior medical officers (see Chapter 5 pre-introduction), uncivil behaviours experienced in medical school did in fact relate to an

individual's sense of professional belonging and in turn wellbeing (Chapter 4). Amongst medical students, incivility had a significant partial indirect effect on the relationship on burnout, with professional identity mediating this relationship. For the final year medical students sampled in this study, it is likely that the completion of their medical training and upcoming transition into hospital-based instilled a sense of identification as a doctor. My findings also aligned with the identity-based motivation model (Oyserman & Markus, 1998; Oyserman & Destin, 2010) attributing experiences of incivility as incongruent with one's professional identity and therefore a catalyst of a mindset where students perceive their involvement in the profession to be less meaningful.

Moderation Effects. As far as I am aware, my studies are the first to look at the moderating role of resources on the effect of incivility on medical student and JMO wellbeing. Whilst not all hypothesised resources returned significant moderation effects, the results support the relevance of the JD-R model and the role these factors play in influencing the impact of incivility as a job demand. Of those person and organisation factors identified as potential moderators, some played a role in mitigating/exacerbating the negative effects of incivility as predicted, whilst others only had direct effects on wellbeing and engagement. These effects are detailed below.

Person Factors. Emotional Intelligence (EI), resilience and fatigue were the three person factors that moderated the negative effects of incivility on wellbeing. Amongst medical students, EI moderated the effects of incivility on burnout and negative affect, with the two facets of EI (emotional management and emotional understanding) demonstrating different effects. Whilst good emotional management protected against the negative effects of incivility on negative affect and burnout, good emotional understanding (which only returned a significant moderation effect on burnout) exacerbated the negative effect of incivility on this outcome. Although the moderating effects of EI on the negative

impact of incivility has not been previously studied in medical students, my findings are consistent with past research demonstrating both the protective role of EI against job demands and the ability for EI to also amplify negative effects of job demands (Newton et al., 2014). Whilst good emotional management is likely to have supported better coping in response to uncivil behaviours, a stronger sense of emotional understanding would have also meant that a medical student had more awareness around the perpetrator's intentions and emotions (e.g., knowing that their supervisor is disappointed in them) and associated consequences (e.g., poor performance reviews), therefore being more impacted by the experience. With the healthcare profession also demanding an ongoing need to monitor and regulate one's emotions (Lim et al., 2010), these findings emphasise the clear need to differentiate the roles of good emotional management and understanding to guide adequate coping and response to incivility. The moderating role of EI was not assessed amongst JMOs.

Across both medical students (Chapters 3 and 4) and JMOs (Chapter 5), resilience protected against the negative effects of incivility on wellbeing. In medical students, resilience buffered the effects of incivility on burnout and negative affect, whilst it mitigated the effects of incivility on depression and anxiety in junior medical officers. Chapter 4 also identified a moderated mediation, whereby resilience protected against the negative effect of incivility on professional identity, which in turn was associated with lower burnout. The consistent moderating effect of resilience across three of the studies in this thesis suggests it has an important role in supporting individuals to actively cope and recover from uncivil experiences in the early-career stage of medicine. The progressive move towards treating both EI and resilience as 'state-like' (malleable) characteristics of an individual as opposed to trait-like (stable) characteristics (Crane et al., 2019; Nelis et

al., 2009) not only suggests that they can be developed to support these trainees but also indicate caution in their use in selection contexts.

Extending on previous research outlining the role of fatigue in exacerbating the negative effects of work demands on wellbeing (e.g., Achnak et al., 2018), my findings demonstrate that fatigue amplifies the effect of incivility on JMO depression and anxiety. Being a significant risk factor for JMO wellbeing (Gander et al., 2007), high levels of fatigue likely deplete the amount of energy that a JMO would otherwise require to cope with uncivil behaviours and manage their wellbeing. With nurse/allied health staff incivility also related to shift-based fluctuations in fatigue levels, it is important to understand both the broader factors associated with higher fatigue in JMOs, as well as the factors that mitigate or amplify the negative effects of nurse/allied health staff incivility on this measure. This person factor was not studied amongst medical students.

Contrary to expectations, career entrapment did not moderate the relationship between incivility and wellbeing in medical trainees. Although the results suggest that both medical students (Chapter 4) and junior medical officers (Chapter 5) felt some level of entrenchment, the absence of significant effects across both studies suggest that the effect itself may not be as strong in the early-career stage of medicine. Qualified physicians are likely to display a stronger sense of career entrapment (if any) given the increased clinical responsibilities and professional relationships (van den Broek et al., 2020) and therefore may be a stronger moderator at later career stages.

Organisation Factors. Although cross-level moderation effects of hospital culture and supervisor recognition were not identified in the diary study (Chapter 6), the results highlight that both these resources are directly associated with wellbeing across a shift. A more positive culture (as perceived by the individual) was related to lower levels of anxiety at the end of a shift and lower levels of fatigue during a shift. A civil working

environment can convey a strong message that uncivil behaviours are unacceptable and provide a frame of reference around what behaviours are tolerated and when/how support should be sought for those who are exposed to such poor behaviours (Bar-David, 2018). Perceptions that one's work is recognised well by supervisors related to lower levels of anxiety at the end of a shift, lower fatigue levels during a shift, and higher levels of engagement during a shift. Extending past findings (e.g., Bergin & Jimmison, 2020; Stajkovic & Luthans, 1997), my results underscore the importance of supervisors in the workplace. Although the protective role of supervisor recognition was not demonstrated in this thesis, when individuals are recognised well, it is likely to make them feel more valued and supported (Fredrickson, 2001).

Practical Implications

The findings from this thesis have four implications pertinent to hospitals/medical training environments, hospital supervisors, JMOs and medical students. Whilst relevant implications associated with each study have been outlined in the respective chapters, this section collectively summarises them.

Implication 1: In Australia, Incivility is a Widespread Problem Amongst Medical Trainees that Needs to be Addressed

The high prevalence of incivility in Australia paired with the repercussions it has for the wellbeing of early-career medical trainees stresses the urgent need to deal with incivility. Norms, policies and procedures within a hospital affect how people think, feel and behave following experiences of incivility (Chapter 6)**.** Forbes et al. (2019) found junior doctors displaying a higher level of tolerance to poor workplace behaviours that would otherwise be unacceptable outside the hospital, due to the cultural expectations that encapsulated the work environment. Whilst regulatory reforms are in place to set standards around what behaviours are deemed 'acceptable' in a hospital environment, creating a

workplace culture that is underpinned by norms, policies and values that communicate the message that uncivil behaviours are unacceptable/not tolerated in the workplace is important.

As experiences of incivility can be subjective and therefore go underreported/unrecognised, findings by Pattani et al. (2018) also highlight that hospitals and training environments clearly articulate what uncivil behaviours look like (such as through definitions with supportive examples) and build awareness around how to identify poor behaviours. Additionally, providing mechanisms for people to comfortably speak up and proactively raise issues (e.g., anonymous reporting platforms, appointing peer clinical staff to specifically deal with reports of incivility) can also ensure that incidences of incivility are addressed efficiently and that support is available should people require it (Pattani et al., 2018). Without such provisions, individuals may feel discouraged from disclosing poor experiences and develop a sense of 'learned helplessness' in response to the issue. Otherwise, leaving uncivil experiences unaddressed also increases the risks of victims becoming perpetrators (Gallus et al., 2014).

Implication 2: Interventions must Focus on the Appropriate Perpetrator

Because uncivil behaviours arising from senior doctors, nurses/allied health staff and patients/relatives demonstrated differential effects on wellbeing, it is important to understand that initiatives that may be introduced to limit incivility from one source may not be adequate in mitigating incivility from other sources. Across these perpetrators, each have a different type of exposure and relevance to junior doctors. For example, as previously outlined in Chapter 6, senior doctors are positioned in a manner that enables them to evaluate junior doctor performance, provide direction and instruction, and communicate feedback and support. By nature of medicine's hierarchical nature, senior doctors tend to adopt a more powerful position in the medical hierarchy and therefore can

be more authoritative and demanding (Schilpzand et al., 2016). Nurses/allied health staff may typically have competing priorities for a patient, which can impact both the wellbeing of the practitioner and the patient (Anderson, 2013; Lachman, 2014). Managing how individuals collaborate across roles and responsibilities is important (e.g. implementing the SBAR communication tool; Situation, Background, Assessment, and Recommendation to support decision-making; Tang et al., 2018). With regards to patients/relatives being uncivil towards junior medical officers, it is important for hospital administrators to articulate the vulnerability of a patient's status and the physical/emotional turmoil they are experiencing. Patients are likely to feel heightened levels of frustration and anxiety (Giesen, 2008), which they may unintentionally project at their doctors. Whilst these behaviours are understandable to some extent, they can in fact be detrimental to the patient's welfare (Giesen, 2008). Supporting junior doctors to develop their people skills (e.g., empathy, active listening) can help minimise the strain in the doctor-patient relationship (O'Dowd, 2012). Although not specific to incivility, Kimani et al. (2019) suggest that organising debrief sessions post negative experiences with a patient can be helpful in reflecting on the situation and learning from the experience. Through these sessions, the JMO has the opportunity to 'vent' but also come to terms with the situations with the support of supervisors and the organisation.

Implication 3: Provide Initiatives to Build Trainees' Levels of EI and Resilience, and Reduce Fatigue Levels, to Enable Better Coping in Response to Incivility

With results suggesting a role for both EI and resilience in protecting against the negative effects of incivility, it is suggested that training institutions and hospitals might consider introducing initiatives that can help medical students and JMOs strengthen their capacity for resilience and ability to manage emotions. I emphasise that prioritising the building of peoples' capabilities should not be done at the expense of efforts to remove the

demand itself where possible. However, supporting medical trainees to develop their perceived capacity for resilience and emotional understanding can enable them to actively cope with stressors (not just incivility), manage their emotions, and recover from experiences by treating them as learning opportunities (Di Fabio & Kenny, 2012; Crane et al., 2019; Martins et al., 2010; Schutte et al., 2007). Just as the results point to the benefits of building resilience and EI, efforts need to be directed at reducing JMO fatigue. At the person-level, Rimmer (2018) suggests building in rest periods during a shift for junior doctors to take a physical and mental break from their work demands, whilst other researchers (e.g., Noone & Waclawski, 2018) suggest more organisation-level tactics like introducing a Fatigue Risk Management System (FRMS) to monitor and analyse ongoing data-driven insights on fatigue-related safety risks. Given the impact of nurse/allied health staff incivility on JMOs during a single shift, the aforementioned means of improving collaboration across the healthcare system, in addition to reinforcing the importance of behaving in a respectful and trusting manner (Wong & Laschinger, 2013) can also help deter the detrimental effects of fatigue.

Implication 4: How Supervisors Behave and Respond to their Team Members is Important

With more appreciation from supervisors related to lower levels of anxiety and fatigue, and higher levels of engagement across a shift, it is important to ensure that supervisors are aware of the benefits of employee recognition and equipped to consistently recognise their team members. Bergin and Jimmieson (2020) recommend training supervisors to praise and recognise employees particularly during stressful circumstances. Whilst praise is considered to be the most feasible and easiest form of recognition, Yukl (2013) found this to be highly underutilised by supervisors. Although the cross-level moderation was not observed in my study possibly due to the small sample size, previous

research has shown that good supervisor recognition can instil positive emotions that can offset the negative emotions associated with a bad experience (Fredrickson, 2001). As such, Bergin and Jimmieson (2020) argue that any form supervisor recognition training needs to be paired with emotion recognition training, especially given that emotion recognition has been identified as a skill that can developed in adults (e.g., Herpertz, Schütz, & Nezlek, 2016; Schlegel, Vicaria, Isaacowitz, & Hall, 2017). Additionally, it is recommended that supervisors are equipped to gauge both the verbal and non-verbal emotional cues displayed by their team members so that recognition can be conveyed in a more sensitive manner (e.g., adjusting one's one of voice or form of appreciate) (Bergin & Jimmieson, 2020). Other forms of recognition that can be encouraged include verbal one-on-one expressions, which are typically preferred over electronic, financial or handwritten ways of appreciating others (Beck, 2016).

Limitations and Areas of Future Research

Limitations related to each of my four studies were outlined in the respective chapters and are therefore not explicitly repeated in this section. Instead, limitations that potentially impact the thesis in its entirety are discussed and can be considered in future research over and above general suggestions for researchers.

Limitation 1: All Components of the Moderated Mediation Model could not be tested across all Four Studies

By nature of the profession, accessibility to medical trainees is challenging. The different shift-based rosters, night shifts, multiplied responsibilities of engaging in clinical practice and educational training suggests that these individuals are typically time pressured or have more competing priorities. As such, I had to be selective on what variables I measured in each study to ensure that the survey material was quick and easy to complete – and this meant not all constructs in the model were measured each time. On a

positive note, I was able to test the moderation effects of resilience as well as the mediation effect of professional identity (see pre-introduction summary Chapter 5) in both medical students and junior doctors,. However, the moderation effects of the organisation factors were only tested amongst JMOs. Given that junior doctors actually work in a hospital environment away from a tertiary education setting, it seemed more reasonable to test the organisation factors amongst this cohort of individuals.

Although this thesis attempted to understand the impact of incivility across different stages of the medical career pathway (first year medical students, final year medical students, JMOs in their internship year and JMOs in specialised training), future studies should consider assessing the effects of incivility and comparing the same set of effects across the early-career, mid-career and late-career stages of the medical profession to adequately gauge overlapping observations and turning points where effects start to vary.

Limitation 2: Reliance on Self-report Measures

The overarching reliance on self-report measures in this thesis is a limitation. Self-report measures increases the chance of common method bias (Podsakoff et al., 2003), which means that observed correlations may be higher than the actual value. Self-report measures also allow for more socially desirable responses, particularly with regards to incivility and mental health issues (Pearson & Porath, 2005). In workplaces underpinned by complex relationships, employees may be less inclined to disclose their honest experiences (Coyne et al., 2003), and therefore limit the representativeness and generalisiblity of the results obtained. Whilst attempts were made to steer away from using these measures (e.g., Chapter 3 where objective methods of measuring EI were used), experiences such as incivility and psychological distress are generally more personal (Sandvik et al., 2009) and therefore may be better measured by self-report instruments.

The use of objective methods where possible, the identification of significant moderation effects, and the incorporation of multi-level analysis in the final study suggest that not all the results were significantly impacted by common method bias (Podsakoff et al., 2003; Siemsen et al., 2010). It is recommended that future research attempt to reassess the effects hypothesised in my model with objective methods of measuring the all constructs, or by adopting a randomized controlled trial (as conducted by Katz et al., 2019) where participants are allocated to different groups that are exposed to either civil or uncivil environments for a period of time before wellbeing and work attitudes are measured.

Limitation 3: The Cross-sectional Designs Limited the Ability to Make Cause-and-Effect Statements

All four studies in this thesis adopted a cross-sectional study design. Although this design in widely used in the medical literature (e.g., Askew et al., 2012; Klingberg et al, 2018; Prins et al., 2010; Owoaje et al., 2012; Tautio et al., 2005; Scott et al., 2015), it limits the ability to make clear cause-and-effect relationships. A longitudinal study design to replicate these findings can better inform the exact nature of relationships and determine clear causal factors of poor wellbeing in the early-career stage of medicine. For example, it would be beneficial to know the exact casual relationships of incivility from different perpetrators on wellbeing as such findings can help with the implementation of more tailored solutions / initiatives to support the problem. Understanding which wellbeing outcomes are directly caused by incivility and whether incivility in fact causes a reduction in professional identity that in turn affects certain forms of wellbeing, can help differentiate aspects of wellbeing that are directly affected by incivility and those that are influenced by the extent to which medical students / Junior Medical Officers identify with being a doctor.

Limitation 4: Small Sample Size (Study 1 and 4)

Study 1 (Chapter 3) had 67 medical students and Study 4 (Chapter 6) had 54 junior medical officers that likely limited the power for the analyses. The lack of numbers may have been due, at least in part, to the constraints of data collection. For example, we were only given one opportunity to distribute hard copy surveys to the medical students with additional methods of following up not possible. The diary study design, although suitable in studying the within-person effects of incivility, requires extensive long-term commitment from participants over a set period of time (Ohly et al., 2010). Despite tailoring the diary survey invites to meet individual JMO rosters, it could not be guaranteed that JMOs were always available to complete all the mini surveys given competing work priorities. It is recommended that future research adopt the diary design, but account for more rigorous management of participant responses over a longer period of time. Xu et al. (2018) suggest 1) providing participants hard copy versions of the diary survey (one for each collection date) ahead of the study should they experience technical issues or are unable to access it online on the invitation date, 2) automating the data collection process to minimise human error in survey distribution and management, and 3) conducting two waves of data collection where the first wave is treated as a pilot study which allows for feedback on the survey content and distribution process, and the second wave is the actual diary study updated to address concerns identified in wave one. Ensuring that organisation leaders facilitate participation can also help drive compliance with the study (Ohly et al., 2010). Whilst Xu et al. additionally recommend embedding a prorated incentive structure where participants receive cumulative monetary funds for completing each diary survey, researchers should be cautious about some participants being inclined to fake responses in order to receive a monetary incentive (Green et al., 2006).

Additional Considerations for Future Research

Beyond managing the methodological limitations mentioned above, there are other possibilities for future research in this field of research. Firstly, it is likely that there are other factors that explain the relationship between incivility and wellbeing beyond the scope of my hypothesised model. For example, apart from re-assessing the mediating effect of professional identity, other potential mediators such as self-efficacy (Selamat et al., 2019), perceptions of organisational injustice (Miner & Cortina, 2016) and intrinsic motivation (Hur et al., 2016) that have previously been identified as mediators of the effect of incivility on wellbeing and work attitudes (albeit outside the medical context) can be assessed. My review (Chapter 2) also highlighted other person (e.g., empathy, family structure, sleep quality) and organisation (e.g., supervisor support, peer support, work structure) factors that future research may treat as moderators at both the between and within-person level. Likewise, beyond wellbeing and work attitudes, it is important to understand what factors may in fact protect against the negative effects that incivility has on patient care (Dang et al., 2016). Over and above researching the various mediators and moderators, studying aspects of the hospital environment and the profession that are responsible for instigating or causing uncivil behaviours in the first place can also expand the knowledge base around this problem. The medical literature outlines a range of stressors that are unique to medicine including the need to care for patients who are suffering from acute/life threatening conditions, the closeness to facing death on a frequent basis and the administrative expectations (e.g., overnights, on calls and long working hours) that all have the potential to foster negative emotions in an individual and act as a catalyst for incivility (Miedema et al., 2012**)**.

Secondly, it is important to understand how different demographic factors play a role in affecting the impact of incivility (e.g., gender, sexuality, SES, marital status etc.).

Although my thesis attempted to collect this demographic information, the sensitivity of the information meant that not all individuals were comfortable sharing this. Future research can attempt to address individuals' hesitations with information provision prior to data collection through ongoing and clear messages that their data will be treated with confidence and integrity.

Finally, most of the current literature on incivility, including the studies in my thesis, has not taken into consideration qualitative data insights to support findings. Qualitative insights can help capture differences in individual experiences and provide more context around reasons behind an experience of incivility, emotional reactions, environmental factors, nature of the problem, barriers to reporting etc. As such, whilst quantitative data provides an objective standpoint on the experiences being measured whereby the researcher is relatively independent of the research outcomes, qualitative research provides a more subjective explanation of an individual's experiences (Cleland, 2015).

A qualitative approach accounts for the fact that real experiences cannot always be measured directly, and that they can be defined by social contructs and subjective experiences that demand unstructured ways of comprehending them (Cleland, 2015). Whilst the quantitative data collection methods adopted in this thesis allow for more deductive reasoning and validation of theory, the lack of qualitative data meant that I was unable to use personal experiences and perspectives (e.g., during the diary study) to build on the patterns / behaviours observed and its theoretical relation to the JD-R model (i.e., adopt a more inductive reasoning methodology) (Cleland, 2015). Future research should consider collecting both quantitative and qualitative data insights to inform observations and gauge the validity of the data obtained.

Conclusion

In conclusion, my thesis provides a theory-based explanation of the effect of incivility on the physical, psychological and emotional wellbeing of early-career medical trainees. Whilst the results highlight that aspect of the person and their work environment have the potential to mitigate/exacerbate the negative effects of incivility, and reflect an initial attempt at describing the within-person shift-based effects of incivility on junior medical officer wellbeing, future research should consider replicating my findings amongst a larger sample of medical trainees with the ability to potentially follow the same individuals across the entirety of the early medical career pathway. Taking into consideration person and organisation factors beyond the scope of my thesis will also help better inform the nature of this problem and guide the design of tailored solutions as research progresses in this space.

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Appendix

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Appendix A: IOP Presentation Slides

MACQUARIE University

Incivility and Medical Student Burnout: It Depends on Motivation

MACQUARIE UNIVERSITY, SYDNEY, AUSTRALIA

Miss Thripura Samyuktha Hariharan, Department of Psychology
Professor Barbara Griffin, Department of Psychology

APS 13th Industrial and Organisational Psychology Conference, Adelaide SA

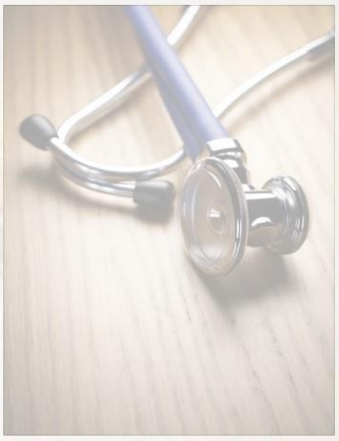
The Problem

MACQUARIE University

AUSTRALIA & GLOBALLY

- **Australia** (Scott, Caldwell, Barnes, & Barrett, 2016)
  - **74%** experienced teaching by humiliation
  - **83.6%** witnessed it
- **United States** (Frank, Carrera, Strattong, Bickel, & Nora, 2006)
  - **42%** reported harassment
  - **84%** experienced belittlement during training
- **India** (Kapoor, Ajinkya, & Jadhav, 2016)
  - **98.7%** indulged in bullying
  - **88.8%** reported feeling victimised

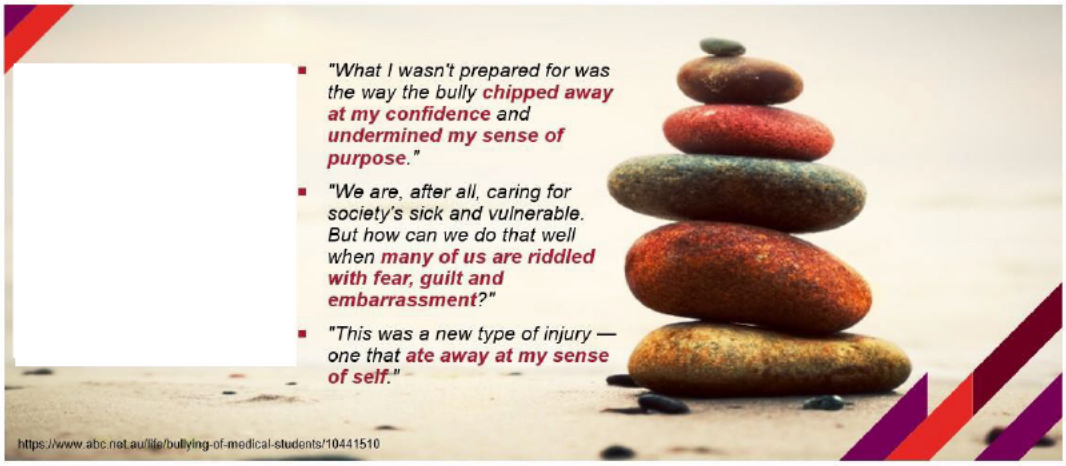
*"The **hierarchical nature** of medicine, gender and cultural stereotypes, **power imbalance** inherent in medical training, and the **competitive nature** of practice and training has engendered **a culture of bullying and harassment** that has over time, become **pervasive and institutionalised** in some areas of medicine."*
Australian Medical Association (AMA)



Ben Bravery's Story

MACQUARIE University

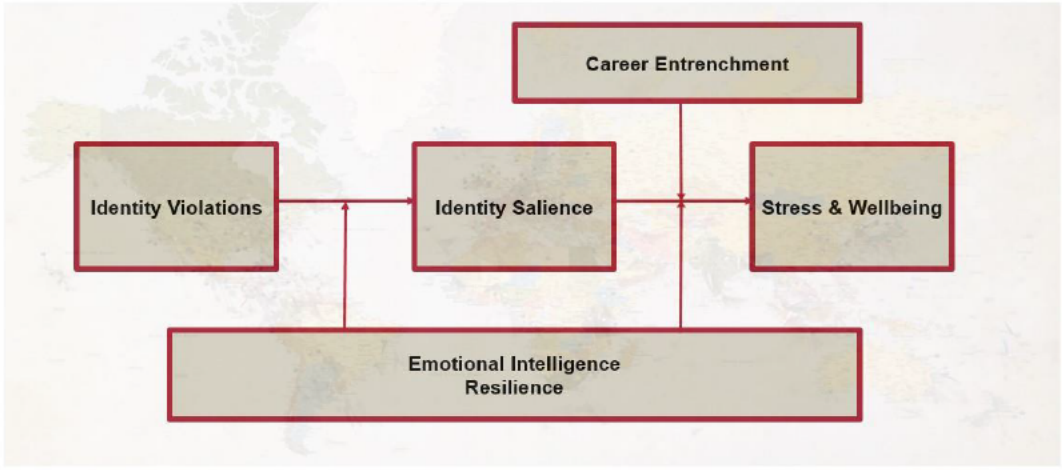
A MEDICAL STUDENT'S PERSPECTIVE - AUSTRALIA



Our Model

MACQUARIE University

MODERATED MEDICATION MODEL

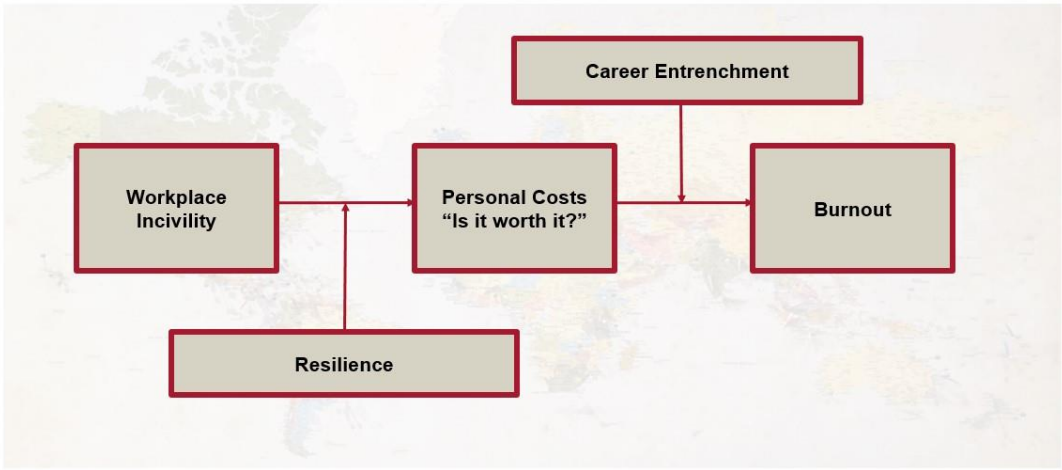


Theoretical Background

MODERATED MEDIATION MODEL

Adapting the Model to this Study

MODERATED MEDICATION MODEL

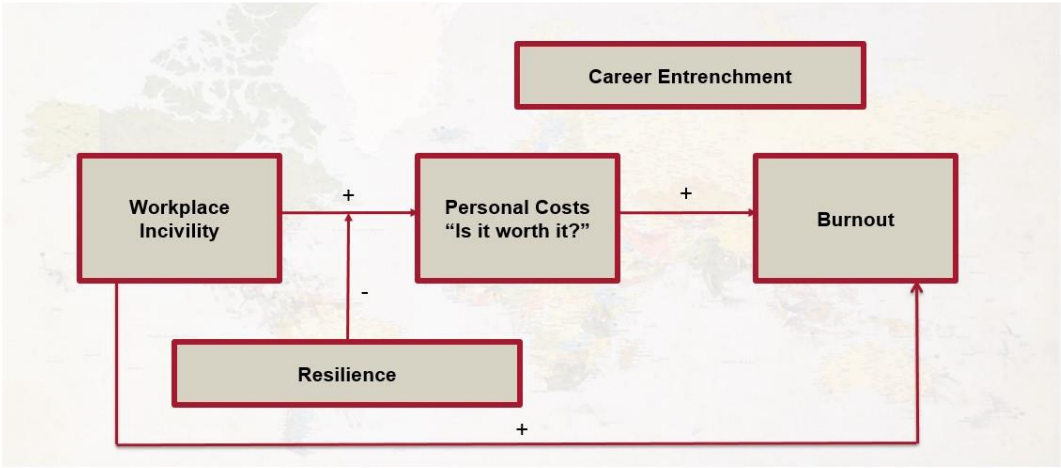


Methodology

DESIGN & METHOD

Results Part I

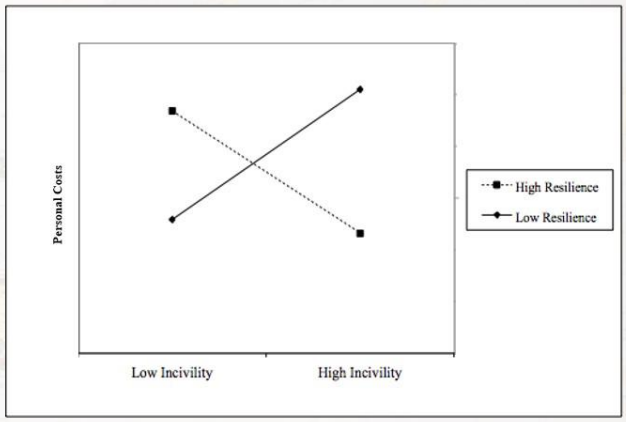
SIGNIFICANT PATHS



Results Part II

THE INTERACTION EFFECT

- **Incivility** had an **indirect association with burnout via identity salience** for those with **low resilience**.
- **Lower personal costs is reflective of stronger identity salience (motivation / professional value)**



Results Part III

RESEARCH SUMMARY

Incivility is indeed **associated with worser burnout**, both through a;

- **Direct** association
- **Indirect** association **via resilience**

Limitations

- **Cross-sectional** design
- Common method **bias**

Conclusion

KEY TAKEAWAYS & FUTURE RESEARCH

Thank you

QUESTIONS?

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- Professor Barbara Griffin: barbara.griffin@mq.edu.au

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Appendix B: AMEE Presentation Slides

MACQUARIE University

Workplace Incivility, Self-efficacy, and Medical Student Burnout: A JD-R Perspective

MACQUARIE UNIVERSITY, SYDNEY, AUSTRALIA

Miss Thripura Samyuktha Hariharan, Department of Psychology
Professor Barbara Griffin, Department of Psychology

AMEE Conference August 2019, Vienna Austria

The Problem

AUSTRALIA & GLOBALLY

MACQUARIE University

- **Australia** (Scott, Caldwell, Barnes, & Barrett, 2016)
  - **74%** experienced teaching by humiliation
  - **83.6%** witnessed it
- **United States** (Frank, Carrera, Strattong, Bickel, & Nora, 2006)
  - **42%** reported harassment
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- **India** (Kapoor, Ajinkya, & Jadhav, 2016)
  - **98.7%** indulged in bullying
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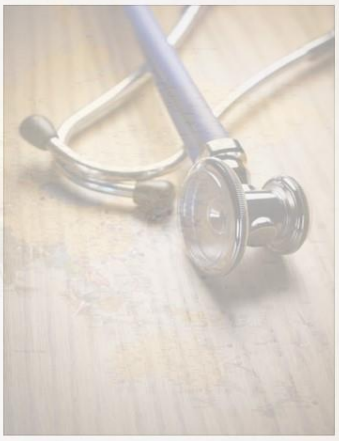
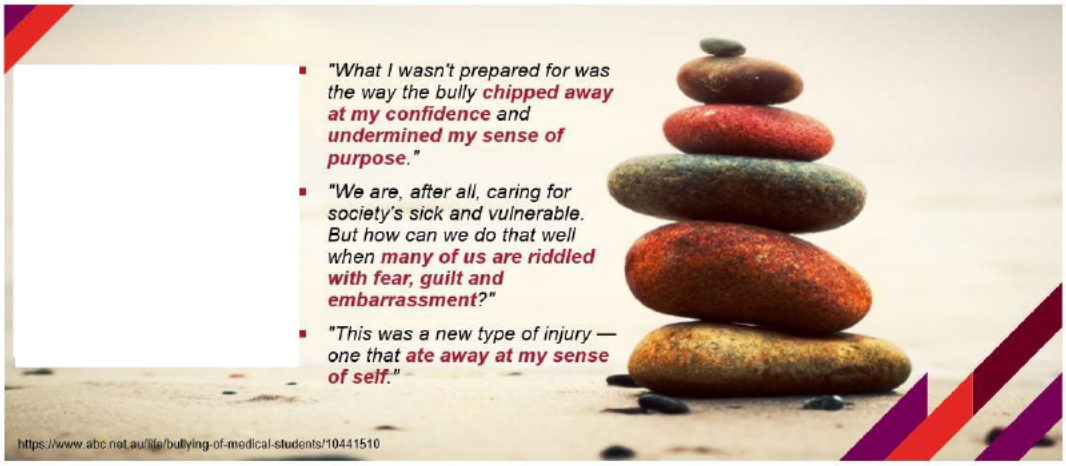
*"The **hierarchical nature** of medicine, gender and cultural stereotypes, **power imbalance** inherent in medical training, and the **competitive nature** of practice and training has engendered **a culture of bullying and harassment** that has over time, become **pervasive and institutionalised** in some areas of medicine."*

Australian Medical Association (AMA)



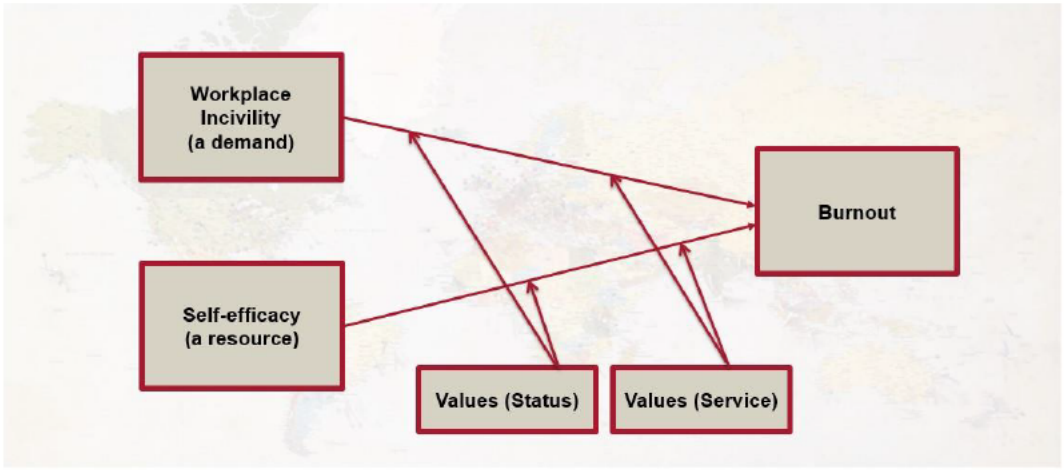
Ben Bravery's Story

A MEDICAL STUDENT'S PERSPECTIVE - AUSTRALIA



Adapting the JD-R Model to this Study

MODEL SUMMARY



Methodology

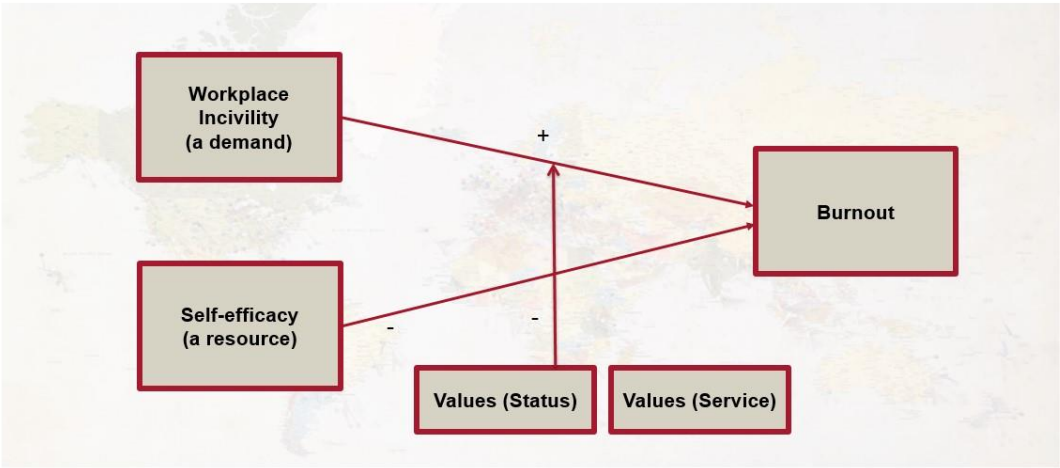
MACQUARIE University

DESIGN & METHOD

Results Part I

MACQUARIE University

MODEL SUMMARY

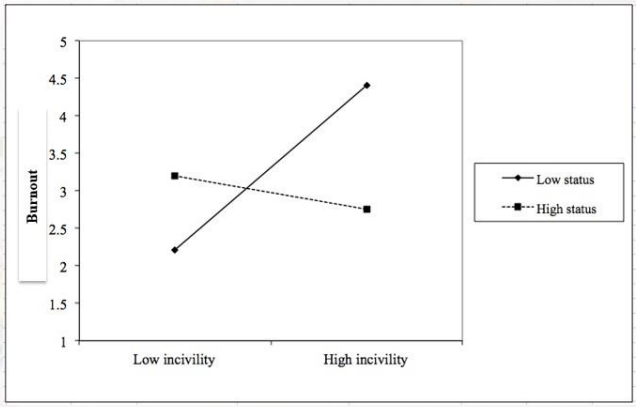


Results Part II

MACQUARIE University

THE INTERACTION EFFECT

- **Workplace incivility** is associated with **higher burnout**;
- This **relationship is stronger** amongst medical students who place **a lower value on status**.



Conclusion

MACQUARIE University

KEY TAKEAWAYS & FUTURE RESEARCH

- Findings support the **JD-R Model**; both demands and resources impact burnout
- Individual differences can act as a **protective factor**
- Whilst this study draws attention to the effect of individual differences, **environmental factors** need to be addressed
- Extent to which these **effects are replicated** during **internship / residency** has scope for research
- Understanding the combined effect of **workplace factors** and **person factors** can better inform **interventions**


MACQUARIE University
Thank you
QUESTIONS?
Researcher Contact Details
• Thripura Hariharan: thripura.hariharan@hdr.mq.edu.au
• Professor Barbara Griffin: barbara.griffin@mq.edu.au
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Appendix C: Abstracts of Published / Under Review Manuscripts and Conference Presentations

Chapter 2: A Review of the Factors Related to Burnout at the Early-career Stage of Medicine (*Published in Medical Teacher*)

Background: Globally, burnout is an increasingly prevalent problem amongst young medical professionals. This review aims to understand the factors related to burnout in the early-career stage of medicine. Drawing on the widely used Job Demands-Resources Model, the antecedents of burnout were distinguished from its outcomes.

Methods: The review adopted the PRISMA guidelines. Using specific search terms peer-reviewed articles were obtained from a range of databases and assessed against selection criteria. To meet inclusion requirements, the study had to be published between 2000 and 2018, include a validated measure of burnout, and undertake empirical assessment of factors related to burnout in medical students and/or junior medical officers / residents. Additional studies were obtained and reviewed from the reference lists of selected articles.

Results: Out of the 3796 studies that were initially found, 585 were assessed against the eligibility criteria leaving 113 studies for review. These studies highlighted the negative consequences of burnout in the early medical career. Also identified were work-specific and person-specific demands that likely lead to burnout and, work and person resources that appear to reduce burnout.

Conclusion: This review provides a framework to explain the growing problem of burnout amongst early-career medical professionals. However, further research is necessary to overcome the current reliance on cross-sectional designs and small sample sizes.

Chapter 4: Incivility and Medical Student Burnout: It Depends on Motivation (*IOP Conference Paper*)

Aim: This study proposed and tested a moderated mediation model explaining burnout in medical students whereby incivility was defined as an identity threat that increases burnout via a reduction in professional identity. Resilience and career entrapment were included as moderators.

Design: Cross-sectional analysis of data obtained from one of five waves of a longitudinal cohort study.

Method: Participants were 115 medical students. All variables were assessed in the final (5th) year of study using validated scales. Moderated regression analyses and the Hayes process software were used to test the model.

Results: Incivility had an indirect effect on burnout, via a reduction in professional identity. Experiencing workplace incivility was associated with more doubts about being a doctor (weak professional identity) and this effect was stronger amongst medical students with lower resilience. A weakened professional identity was associated with higher burnout. Career entrapment did not moderate this relationship. Incivility also had a significant direct effect on burnout.

Conclusion: The findings of this study support the moderated mediation model to explain how incivility can impact burnout. Understanding the extent to which these effects remain the same as a medical student transitions into hospital-based practice will be important. The effect of career entrapment may surface more strongly once an individual's 'actual' career begins post-graduation.

Chapter 5: Assessing the impact of incivility on junior doctors: the moderating role of resilience and fatigue (*Under Review in AHSE*)

We sought to understand the effect of incivility on junior doctors' psychological distress and work attitudes, and identify personal resources that may mitigate or exacerbate this effect. Through a cross-sectional survey, 128 junior doctors (61% female) provided information on their experiences of incivility over the past year, and levels of psychological distress (depression, anxiety, and stress symptoms) and work engagement. These junior doctors were from one Australian local health district, working across a range of clinical rotations and training years. Almost all junior doctors (98.3%) experienced at least one incident of incivility in the previous year. The more incivility a person experienced, the higher their depression, anxiety and stress symptoms. Perceived capacity for resilience and fatigue moderated the effect of incivility on depression and anxiety, but not on stress or engagement. Whilst perceived capacity for resilience acted as a protective factor against the negative impacts of incivility, fatigue exacerbated it. Social support from friends and family did not buffer the effect of incivility. Health services must work towards reducing the incidence of this problem, and embed initiatives that help strengthen one's perceived capacity for resilience and reduce fatigue.

Chapter 6: A shift makes a difference: Within-person effects of incivility on junior doctor wellbeing (*Under Review in Medical Education*)

Objective: To understand the within-person effects of incivility experienced during hospital-based shifts on junior doctors' fluctuations in wellbeing and work attitudes. The study also investigates the differential effects of the source of incivility (i.e., senior doctors, nurses/allied health staff, patients/relatives) and whether context (hospital culture and supervisor recognition) buffers negative effects.

Design: Diary study methodology, with participants completing a short survey at the end of up to six work shifts over a two-week period.

Setting: Hospitals within one Australian local health district.

Participants: 54 junior doctors (65% female) working in the first two years of internship (52%) or undertaking specialist training (48%).

Main outcome measures: Reports of fatigue, anxiety and work engagement in relation to the most recent shift completed.

Results: On shifts when junior doctors experienced incivility from senior doctors, they reported higher levels of anxiety at the end of the shift (95% confidence interval [CI] .004 to .26). When nurses/allied health staff were the perpetrators of incivility, junior doctors reported higher fatigue during a shift (95% CI 0.06 to 0.41). Lower work engagement during a shift was evident on days when patients/relatives were uncivil towards junior doctors (95% CI -0.19 to -0.02). Neither hospital culture nor supervisor recognition moderated the negative effects of daily incivility, but they had significant main effects on anxiety (95% CI -0.35 to -.004, -0.43 to -0.07), fatigue (95% CI -0.58 to -0.07, -0.56 to -0.05) and work engagement (supervisor recognition only 95% CI 0.04 to 0.47).

Conclusion: Experiencing incivility during a shift is negatively associated with junior doctor's daily wellbeing and work attitudes. The nature of these effects varies with the

source of incivility and local context does not appear to be protective. With potential for flow-on effects on the quality of patient care and practitioner welfare, interventions to reduce incivility are recommended.

AMEE Conference Paper: Workplace Incivility, Self-efficacy, and Medical Student Burnout: A JD-R Perspective

Background: This study adopted the Job Demands-Resources (JD-R) model of burnout (Bakker & Demerouti, 2007; Demerouti et al., 2001) to test the extent to which workplace incivility (a demand) and self-efficacy (a resource) predicted burnout amongst medical students. We also sought to identify if two primary motivations to study medicine (i.e., high value for status and high value for service) moderated the influence of these predictors.

Summary of Work: Design: Cross-sectional analysis of data obtained from a broader longitudinal cohort study over five years. Method: Participants were 97 medical students. Values were assessed in the first year of medical school while burnout and incivility were assessed in the final (5th) year of study, with all variables measured with validated scales. Moderated regression analyses were conducted to assess the direct and moderated effects of these variables on burnout.

Summary of Results: The experience of workplace incivility was associated with higher burnout. Contrary to expectations, this relationship was stronger amongst medical students who placed a lower value on status. Value for service did not impact this relationship. As predicted, self-efficacy was associated with lower burnout. However, neither status nor service values affected this relationship.

Discussion and Conclusions: The findings of this study support the JD-R model, reiterating that both demands and resources affect burnout. Even though valuing medicine for its status appeared to diminish the impact of incivility on burnout, understanding the extent to which these effects remain the same as a medical student transitions into hospital-based practice is important. Incivility may even have the reverse effect in practicing

doctors who value status, compared to its effect during the student period when there is no real ‘status’.

Take Home Messages: Obtaining a clearer picture on the various workplace and person-specific factors that influence burnout across the medical career pathway can better inform interventions to address what is increasingly recognised as a serious problem globally.

Appendix D: Contructs and Items Used in All Surveys

Workplace Incivility

Workplace Incivility Scale – Chapter 3 and 4

Cortina, L. M., Magley, V. J., Williams, J. H., & Langhout, R. D. (2001). Incivility in the workplace: Incidence and impact. *Journal of Occupational Health Psychology, 6*(1), 64–80. https://doi.org/10.1037/1076-8998.6.1.64

During this last year of your studies, how often have you been in the situation where any of your supervisors, teachers or fellow students / During the last month, have you been in a situation where any of your supervisors/teaching staff or staff are your clinical placement;

1. Put you down or was condescending to you
2. Paid little attention to your statement or showed little interest in your opinion
3. Made demeaning or derogatory remarks about you
4. Addressed you in unprofessional terms, either publicly or privately
5. Ignored or excluded you from professional camaraderie
6. Doubted your judgment on a matter over which you have responsibility
7. Made unwanted attempts to draw you into a discussion of personal matters

Negative Acts Questionnaire-Revised (NAQ-R) – Chapter 5

Einarsen, S., Hoel, H., & Notelaers, G. (2009). Measuring exposure to bullying and harassment at work: Validity, factor structure and psychometric properties of the Negative Acts Questionnaire-Revised. *Work & Stress, 23*(1), 24–44. https://doi.org/10.1080/02678370902815673

These statements describe difficult work situations - how often have you experienced each over the **last year?**

1. Someone withholding information which affects your performance
2. Being ordered to do work below your level of competence
3. Having your opinions ignored
4. Being given tasks with unreasonable deadlines
5. Excessive monitoring of your work
6. Pressure to not claim something to which, by right, you are entitled (e.g. sick leave, holiday entitlement, overtime)
7. Being exposed to an unmanageable workload
8. Being humiliated or ridiculed in connection with your work
9. Being ignored or excluded
10. Having insulting or offensive remarks made about your person, attitudes or private life
11. Hints or signals from others that you should quit your job
12. Repeated reminders of your errors or mistakes
13. Having allegations made against you
14. Intimidating behaviours (e.g. finger-pointing, invasion of personal space, shoving, blocking your way)
15. Threats of violence/physical abuse or actual abuse

Additional Item – Chapter 5

Cortina, L. M., Kabat-Farr, D., Leskinen, E. A., Huerta, M., & Magley, V. J. (2013). Selective incivility as modern discrimination in organizations: Evidence and impact. *Journal of Management, 39*(6), 1579–1605. https://doi.org/10.1177/0149206311418835

These statements describe difficult work situations - how often have you experienced each over the **last year?**

1. Someone yelling, shouting or swearing at you

Source and Frequency of Incivility – Chapter 6

Developed for this thesis by Hariharan, T.S., & Griffin, B.

During the last shift worked, how often did you experience negative behaviour (*e.g. being treated in a rude, uncivil or demeaning manner, threats of physical violence, etc*) from:

1. Doctors more senior to you
2. Nurses or other medical/allied health staff
3. Patients or their family/friends

Professional Identity

Career Commitment Scale – Chapter 4

Carson, K. D., & Bedeian, A. G. (1994). Career commitment: Construction of a measure and examination of its psychometric properties. *Journal of Vocational Behavior, 44*(3), 237–262. https://doi.org/10.1006/jvbe.1994.1017

Now that you've been studying medicine for at least 4 years, how strongly do you agree with the following?

1. The costs (financial, emotional, effort etc.) associated with a career in medicine sometimes seem too great
2. Given the problems doctors face, I sometimes wonder if the personal burden is worth it

Clarity of Professional Identity – Chapter 5

Dobrow, S., & Higgins, M., 2005. Developmental networks and professional identity: A longitudinal study. *Career Development International 1* (6/7), 567-583. http://doi.org/10.1108/13620430510620629

With regards to professional identity:

1. I have developed a clear career and professional identity
2. I know who I am, professionally and in my career
3. I am still searching for my career and professional identity
4. I do not yet know what my career and professional identity is

Psychological distress

The short version of the Depression Anxiety and Stress Scale (DASS 21) – Chapter 5

Lovibond, S. H. & Lovibond, P. F. (Eds.) (1995). Manual for the Depression Anxiety Stress. (Sydney, New South Wales, Australia: Psychology Foundation).

The scale on this page is the DASS-21, used regularly in medical contexts. Please indicate how often each of the following applied over the **past week**?

1. I found it hard to wind down
2. I was aware of dryness in my mouth
3. I couldn't seem to experience any positive feeling at all
4. I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)
5. I found it difficult to work up the initiative to do things
6. I tended to over-react to situations
7. I experienced trembling
8. I felt that I was using a lot of nervous energy
9. I was worried about situations in which I might panic and make a fool of myself
10. I felt that I had nothing to look forward to
11. I found myself getting agitated
12. I found it difficult to relax
13. I felt down-hearted and blue
14. I was intolerant of anything that kept me from getting on with what I was doing
15. I felt I was close to panic
16. I was unable to become enthusiastic about anything
17. I felt I wasn't worth much as a person
18. I felt that I was rather touchy
19. I was aware of the action of my heart in the absence of physical exertion
20. I felt scared without a good reason
21. I felt that life was meaningless

Anxiety

Spielberger State-Trait Anxiety Inventory – Chapter 6

Marteau, T. M., & Bekker, H. (1992). The development of a six-item short-form of the state scale of the Spielberger State–Trait Anxiety Inventory (STAI). *British Journal of Clinical Psychology*, *31*(3), 301–306. https://doi.org/10.1111/j.2044-8260.1992.tb00997.x

To what extent do you currently feel:

1. Calm
2. Tense
3. Upset
4. Relaxed
5. Content
6. Worried

Stress

Perceived Stress Scale – Chapter 3

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396. https://doi.org/10.2307/2136404

In the last month how often have you ….

1. Felt that you were unable to control the important things in your life?
2. Felt confident about your ability to handle your personal problems?
3. Felt that things were going your way?
4. Felt difficulties were piling up so high that you could not overcome them?

Burnout

The Maslach Burnout Inventory: Human Services Survey for Medical Personnel – Chapter 3

Maslach, C., & Jackson, S.E. (1996). Maslach burnout inventory-human services survey (MBI-HSS). *MBI manual*, 192-198.

This survey consists of statements of job-related feelings. Please indicate how often you have felt this way about being a medical student during this year.

1. I feel emotionally drained
2. I feel used up at the end of the day
3. I feel fatigued when I get up in the morning and have to face another day
4. I can easily understand how patients feel about things
5. I feel I treat some patients as if they were impersonal objects
6. Working with people all day is really a strain for me
7. I deal very effectively with the problems of my patients
8. I feel burned out from my studies
9. I feel I'm positively influencing other people's lives
10. I've become more callous toward people since becoming a medical student
11. I worry that this job is hardening me emotionally

Two items from the Maslach Burnout Inventory – Chapter 4

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *MBI: Maslach burnout inventory* (3rd ed.). Mountain View, CA: CPP, Incorporated.

West, C. P., Dyrbye, L. N., Sloan, J. A., & Shanafelt, T. D. (2009). Single item measures of emotional exhaustion and depersonalization are useful for assessing burnout in medical professionals. *Journal of general internal medicine, 24*(12), 1318-1321. http://doi.org/10.1007/s11606-009-1129-z

To what extent do you agree with the following statements?

1. I have become more callous toward people since I became a medical student
2. I feel burned out from being a medical student

Negative Affect

Short-Form Positive and Negative Affect Schedule – Chapter 3

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070. https://doi.org/10.1037/0022-3514.54.6.1063

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way in the last month. Use the following scale to record your answers. *In the last month how often have you ….*

1. Upset
2. Hostile
3. Ashamed
4. Nervous
5. Afraid

Fatigue

Occupational Fatigue Exhaustion Recovery Scale (OFER) – Chapter 5

Winwood, P. C., Winefield, A. H., Dawson, D., & Lushington, K. (2005). Development and validation of a scale to measure work-related fatigue and recovery: the Occupational Fatigue Exhaustion/Recovery Scale (OFER). *Journal of Occupational and Environmental Medicine, 47*(6), 594-606. http://doi.org/ 10.1097/01.jom.0000161740.71049.c4

These questions ask about your current feelings:

1. I feel exhausted all the time
2. I usually have lots of energy to give my family or friends
3. I have energy for my hobbies/relaxing activities in my spare time
4. After a typical work shift I have little energy left

Fatigue Impact Scale – Chapter 6

Fisk, J. D., Ritvo, P. G., Ross, L., Haase, D. A., Marrie, T. J., & Schlech, W. F. (1994). Measuring the functional impact of fatigue: initial validation of the fatigue impact scale. *Clinical Infectious Diseases, 18*(Supplement_1), S79-S83. http://doi.org/ 10.1093/clinids/18.supplement_1.s79

During the last shift worked, because of fatigue:

1. I felt less alert
2. I had trouble maintaining physical effort for long periods
3. I found it difficult to make decisions
4. I was less able to finish tasks that require thinking
5. I felt slowed down in my thinking

Engagement

Utrecht Work Engagement Scale-3 (UWES-3) – Chapter 5 and 6

Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & De Witte, H. (2019). An ultra-short measure for work engagement: The UWES-3 validation across five countries. *European Journal of Psychological Assessment, 35*(4), 577–591. https://doi.org/10.1027/1015-5759/a000430

During the last shift worked:

1. I felt bursting with energy
2. I was enthusiastic about my job
3. I was immersed in my work

Hospital Culture

Team Incivility Climate Scale – Chapter 6

Paulin, D., & Griffin, B. (2017). Team incivility climate scale: Development and validation of the team-level incivility climate construct. *Group & Organization Management, 42*(3), 315–345. https://doi.org/10.1177/1059601115622100

At your current workplace (i.e. the hospital):

1. We treat one another with respect
2. People shame and humiliate each other
3. General bad manners (e.g. interrupting, being late to meetings) is tolerated
4. It is common for people to put each other down
5. There are clear policies and procedures that prohibit uncivil behaviour
6. There is a climate of professionalism
7. The atmosphere is one of consideration and courtesy
8. There a spirit of inclusion

Supervisor Recognition

QPS Nordic 34+ - Chapter 6

Lindstom K, Elo AL, Skogstad A, Dallner M. QPS Nordic. General Nordic Questionnaire for psychological and social factors at work. User's Guide. TemaNord 603. Nordic Council of Ministers, 2000.

During the last shift worked, to what extent did you:

1. Have your work recognised by your supervisor?

Resilience

The COPE Scale – Chapter 3

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*(2), 267–283. https://doi.org/10.1037/0022-3514.56.2.267

In response to stressful situations in my medical training in the LAST MONTH, I have been:

1. trying to grow as a person as a result of the experience
2. concentrating my efforts on doing something about it

3. taking additional action to try to get rid of the problem
4. trying to see it in a different light, to make it seem more positive
5. looking for something good in what is happening
6. taking direct action to get around the problem
7. doing what has to be done, one step at a time
8. learning something from the experience

Connor-Davidson Resilience Scale) – Chapter 4

Connor, K. M., & Davidson, J. R. (2003). Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression and Anxiety*, *18*(2), 76-82. https://doi.org/10.1002/da.10113

How true are the following statements as they apply to you over the LAST *MONTH*. If a particular situation has not occurred recently, answer according to how you think you would have felt.

1. I am able to adapt when changes occur
2. I have at least one close and secure relationship that helps me when I am stressed
3. When there are no clear solutions to my problems, sometimes fate or God can help
4. I can deal with whatever comes my way
5. Past successes give me confidence in dealing with new challenges and difficulties
6. I try to see the humorous side of things when I am faced with problems
7. Having to cope with stress can make me stronger
8. I tend to bounce back after illness, injury, or other hardships
9. Good or bad, I believe that most things happen for a reason.
10. I give my best effort no matter what the outcome may be.
11. I believe I can achieve my goals, even if there are obstacles
12. Even when things look hopeless, I don't give up.
13. During times of stress/crisis, I know where to turn for help.
14. Under pressure, I stay focused and think clearly
15. I prefer to take the lead in solving problems rather than letting others make all the decisions.
16. I am not easily discouraged by failure
17. I think of myself as a strong person when dealing with life's challenges and difficulties
18. I can make unpopular or difficult decisions that affect other people, if it is necessary.
19. I am able to handle unpleasant or painful feelings like sadness, fear, and anger
20. In dealing with life's problems, sometimes you have to act on a hunch without knowing why
21. I have a strong sense of purpose in life
22. I feel in control of my life
23. I like challenges
24. I work to attain my goals no matter what roadblocks I encounter along the way
25. I take pride in my achievements

Brief Resilience Scale – Chapter 5

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The Brief Resilience Scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine, 15*(3), 194–200. https://doi.org/10.1080/10705500802222972

In general:

1. I tend to bounce back quickly after hard times
2. I have a hard time making it through stressful events

3. It does not take me long to recover from a stressful event
4. It is hard for me to snap back when something bad happens
5. I usually come through difficult times with little trouble
6. I tend to take a long time to get over set backs in my life

Emotional Intelligence

Brief Situational Test of Emotional Management (Brief STEM-B) – Chapter 3

Allen, V., Rahman, N., Weissman, A., MacCann, C., Lewis, C., & Roberts, R. D. (2015). The Situational Test of Emotional Management – Brief (STEM-B): Development and validation using item response theory and latent class analysis. *Personality and Individual Differences, 81,* 195–200. https://doi.org/10.1016/j.paid.2015.01.053

In this test, you will be presented with a few brief details about an emotional situation, and asked to choose from four responses the most effective course of action to manage both the emotions the person is feeling and the problems they face in that situation. Although more than one course of action might be acceptable, you are asked to choose what you think the most effective response for that person in that situation would be. Remember, you are not necessarily choosing what you would do, or the nicest thing to do, but choosing the most effective response for that situation.

1. Wai-Hin and Connie have shared an office for years but Wai-Hin gets a new job and Connie loses contact with her.
What action would be the most effective for Connie?
(a) Just accept that she is gone and the friendship is over.
(b) Ring Wai-Hin and ask her out for lunch or coffee to catch up.
(c) Contact Wai-Hin and arrange to catch up but also make friends with her replacement.
(d) Spend time getting to know the other people in the office, and strike up new friendships.

2. Manual is only a few years from retirement when he finds out his position will no longer exist, although he will still have a job with a less prestigious role.
What action would be the most effective for Manual?
(a) Carefully consider his options and discuss it with his family.
(b) Talk to his boss or the management about it.
(c) Accept the situation, but still feel bitter about it.
(d) Walk out of that job.

3. Surbhi starts a new job where he doesn't know anyone and finds that no one is particularly friendly.
What action would be the most effective for Surbhi?
(a) Have fun with his friends outside of work hours.
(b) Concentrate on doing his work well at the new job.
(c) Make an effort to talk to people and be friendly himself.
(d) Leave the job and find one with a better environment.

4. Andre moves away from the city his friends and family are in. He finds his friends make less effort to keep in contact than he thought they would.
What action would be the most effective for Andre?
(a) Try to adjust to life in the new city by joining clubs and activities there.
(b) He should make the effort to contact them, but also try to meet people in his new city.
(c) Let go of his old friends, who have shown themselves to be unreliable.

(d) Tell his friends he is disappointed in them for not contacting him.

5. Clayton has been overseas for a long time and returns to visit his family. So much has changed that Clayton feels left out.
What action would be the most effective for Clayton?
(a) Nothing – it will sort itself out soon enough.
(b) Tell his family he feels left out.
(c) Spend time listening and getting involved again.
(d) Reflect that relationships can change with time.

6. Daniel has been accepted for a prestigious position in a different country from his family, who he is close to. He and his wife decide it is worth relocating.
What action would be the most effective for Daniel?
(a) Realize he shouldn't have applied for the job if he didn't want to leave.
(b) Set up a system for staying in touch, like weekly phone calls or emails.
(c) Think about the great opportunities this change offers.
(d) Don't take the position.

7. Mei Ling answers the phone and hears that close relatives are in hospital critically ill.
What action would be the most effective for Mei Ling?
(a) Let herself cry and express emotion for as long as she feels like.
(b) Speak to other family to calm herself and find out what is happening, then visit the hospital.
(c) There is nothing she can do.
(d) Visit the hospital and ask staff about their condition.

8. Shona has not spoken to her nephew for months, whereas when he was younger they were very close. She rings him but he can only talk for five minutes.
What action would be the most effective for Shona?
(a) Realize that he is growing up and might not want to spend so much time with his family any more.
(b) Make plans to drop by and visit him in person and have a good chat.
(c) Understand that relationships change, but keep calling him from time to time.
(d) Be upset about it, but realize there is nothing she can do.

9. Mina and her sister-in-law normally get along quite well, and the sister-in-law regularly baby-sits for her for a small fee. Lately she has also been cleaning away cobwebs, commenting on the mess, which Mina finds insulting.
What action would be the most effective for Mina?
(a) Tell her sister-in-law these comments upset her.
(b) Get a new babysitter.
(c) Be grateful her house is being cleaned for free.
(d) Tell her only to baby-sit, not to clean.

10. Juno is fairly sure his company is going down and his job is under threat. It is a large company and nothing official has been said.
What action would be the most effective for Juno?
(a) Find out what is happening and discuss his concerns with his family.
(b) Try to keep the company afloat by working harder.
(c) Start applying for other jobs.
(d) Think of these events as an opportunity for a new start.

11. Mallory moves from a small company to a very large one, where there is little personal contact, which she misses.

What action would be the most effective for Mallory?
(a) Talk to her workmates, try to create social contacts and make friends.
(b) Start looking for a new job so she can leave that environment.
(c) Just give it time, and things will be okay.
(d) Concentrate on her outside-work friends and colleagues from previous jobs.

12. A demanding client takes up a lot of Jill's time and then asks to speak to Jill's boss about her performance. Although Jill's boss assures her that her performance is fine, Jill feels upset.
What action would be the most effective for Jill?
(a) Talk to her friends or workmates about it.
(b) Ignore the incident and move on to her next task.
(c) Calm down by taking deep breaths or going for a short walk.
(d) Think that she has been successful in the past and this client being difficult is not her fault.

13. Blair and Flynn usually go to a cafe after the working week and chat about what's going on in the company. After Blair's job is moved to a different section in the company, he stops coming to the cafe. Flynn misses these Friday talks.
What action would be the most effective for Flynn?
(a) Go to the cafe or socialize with other workers.
(b) Don't worry about it, ignore the changes and let Blair be.
(c) Not talk to Blair again.
(d) Invite Blair again, maybe rescheduling for another time.

14. Michelle's friend Dara is moving overseas to live with her partner. They have been good friends for many years and Dara is unlikely to come back.
What action would be the most effective for Michelle?
(a) Forget about Dara.
(b) Spend time with other friends, keeping herself busy.
(c) Think that Dara and her partner will return soon.
(d) Make sure she keeps in contact through email, phone or letter writing.

15. Hannah's access to essential resources has been delayed and her work is way behind schedule. Her progress report makes no mention of the lack of resources.
What action would be the most effective for Hannah?
(a) Explain the lack of resources to her boss or to management.
(b) Learn that she should plan ahead for next time.
(c) Document the lack of resources in her progress report.
(d) Don't worry about it.

16. Reece's friend points out that her young children seem to be developing more quickly than Reece's. Reece sees that this is true.
What action would be the most effective for Reece?
(a) Talk the issue over with another friend.
(b) Angrily confront her friend about making such statements.
(c) Realize that children develop at different rates.
(d) Talk to a doctor about what the normal rates of development are.

17. Jumah has been working at a new job part-time while he studies. His shift times for the week are changed at the last minute, without consulting him.
What action would be the most effective for Jumah?
(a) Refuse to work the new shifts.
(b) Find out if there is some reasonable explanation for the shift changes.
(c) Tell the manager in charge of shifts that he is not happy about it.

(d) Grumpily accept the changes and do the shifts.

18. Julie hasn't seen Ka for ages and looks forward to their weekend trip away. However, Ka has changed a lot and Julie finds that she is no longer an interesting companion.
What action would be the most effective for Julie?
(a) Cancel the trip and go home.
(b) Realize that it is time to give up the friendship and move on.
(c) Understand that people change, so move on, but remember the good times.
(d) Concentrate on her other, more rewarding friendships.

Brief Situational Test of Emotional Understanding (Brief STEU-B) – Chapter 3

Allen, V. D., Weissman, A., Hellwig, S., MacCann, C., & Roberts, R. D. (2014). Development of the short form of the Situational Test of Emotional Understanding-Brief (STEU-B) using item response theory. *Personality and Individual Differences, 65,* 3–
7. https://doi.org/10.1016/j.paid.2014.01.051

The following questions each describe a situation, and ask you to choose which of five emotions is most likely to result from that situation.

Here is an example:
Clara receives a gift. Clara is most likely to feel?
(a) happy (b) angry (c) frightened (d) bored (e) hungry

If you think Clara would feel happy, you would mark option A and then move to the next question.

1. Xavier completes a difficult task on time and under budget. *Xavier is most likely to feel?*
(a) Surprise (b) Pride (c) Relief (d) Hope (e) Joy

2. If the current situation continues, Denise's employer will probably be able to move her job to a location much closer to her home, which she really wants. *Denise is most likely to feel?*
(a) Distress (b) Joy (c) Surprise (d) Hope (e) Fear

3. Song finds out that a friend of hers has borrowed money from others to pay urgent bills, but has in fact used the money for less serious purposes. *Song is most likely to feel?*
(a) Anger (b) Excitement (c) Contempt (d) Shame (e) Horror

4. Charles is meeting a friend to see a movie. The friend is very late and they are not in time to make it to the movie. *Charles is most likely to feel?*
(a) Depressed (b) Frustrated (c) Angry (d) Contemptuous (e) Distressed

5. Someone believes that another person harmed them on purpose. There is not a lot that can be done to make things better. *The person involved is most likely to feel?*
(a) Dislike (b) Rage (c) Jealousy (d) Surprise (e) Anxiety

6. Jim enjoys spending Saturdays playing with his children in the park. This year they have sporting activities on Saturdays and cannot go to the park with him any more. *Jim is most likely to feel?*
(a) Angry (b) Sad (c) Frustrated (d) Distressed (e) Ashamed

7. Megan is looking to buy a house. Something happened and she felt regret. *What is most likely to have happened?*
(a) She didn't make an offer on a house she wanted, and now she is trying to find out if it is too late.
(b) She found a house she liked that she didn't think she would find.
(c) She couldn't make an offer on a house she liked because the bank didn't get her the money in time.
(d) She didn't make an offer on a house she liked and now someone else has bought it.
(e) She made an offer on a house and is waiting to see if it is accepted.

8. Mary was working at her desk. Something happened that caused her to feel surprised. *What is most likely to have happened?*
(a) Her work-mate told a silly joke.
(b) She was working on a new task she hadn't dealt with before.
(c) She found some results that were different from what she thought they would be.
(d) She realized she would not be able to complete her work.
(e) She had to do a task she didn't normally do at work.

9. Someone thinks that another person has deliberately caused something good to happen to them. *They are most likely to feel?*
(a) Hope (b) Pride (c) Gratitude (d) Surprise (e) Relief

10. By their own actions, a person reaches a goal they wanted to reach. *The person is most likely to feel?*
(a) Joy (b) Hope (c) Relief (d) Pride (e) Surprise

11. An unwanted situation becomes less likely or stops altogether. *The person involved is most likely to feel?*
(a) Regret (b) Hope (c) Joy (d) Sadness (e) Relief

12. Hasad tries to use his new mobile phone. He has always been able to work out how to use different appliances, but he cannot get the phone to function. *Hasad is most likely to feel?*
(a) Distressed (b) Confused (c) Surprised (d) Relieved (e) Frustrated

13. Dorian's friend is ill and coughs all over him without bothering to turn away or cover his mouth. *Dorian is most likely to feel?*
(a) Anxiety (b) Dislike (c) Surprise (d) Jealousy (e) Rage

14. Quan and his wife are talking about what happened to them that day. Something happened that caused Quan to feel surprised. *What is most likely to have happened?*
(a) His wife talked a lot, which did not usually happen.
(b) His wife talked about things that were different to what they usually discussed.
(c) His wife told him that she might have some bad news.
(d) His wife told Quan some news that was not what he thought it would be.
(e) His wife told a funny story.

15. A supervisor who is unpleasant to work for leaves Alfonso's work. *Alfonso is most likely to feel?*
(a) Joy (b) Hope (c) Regret (d) Relief (e) Sadness

16. The nature of Sara's job changes due to unpredictable factors and she no longer gets to do the portions of her work that she most enjoyed. *Sara is most likely to feel?*
(a) Ashamed (b) Sad (c) Angry (d) Distressed (e) Frustrated

17. Leila has been unable to sleep well lately and there are no changes in her life that might indicate why. *Leila is most likely to feel?*
(a) Angry (b) Scared (c) Sad (d) Distressed (e) Guilty

18. Someone believes another person has deliberately caused something good to stop happening to them. However, they feel they can do something about it. *They are most likely to feel?*
(a) Angry (b) Contemptuous (c) Distress (d) Depressed (e) Frustrated

19. Matthew has been at his current job for six months. Something happened that caused him to feel regret. *What is most likely to have happened?*
(a) He did not apply for a position he wanted, and has found out that someone else less qualified got the job.
(b) He did not apply for a position he wanted, and has started looking for a similar position.
(c) He found out that opportunities for promotion have dried up.
(d) He found out that he didn't get a position he thought he would get.
(e) He didn't hear about a position he could have applied for and now it is too late.

Career Entrapment

Career Entrenchment Scale – Chapter 4 (reworded to suit the medical context)

Carson, K. D., Carson, P. P., & Bedeian, A. G. (1995). Development and construct validation of a career entrenchment measure. *Journal of Occupational and Organizational Psychology, 68*(4), 301-320. https://doi.org/10.1111/j.2044-8325.1995.tb00589.x

To what extent do you agree with the following statements?

1. I have too much time invested in medicine to change
2. I have too much money invested in medicine to change at this time
3. For me to enter another career field would mean giving up substantial investment in training
4. I would enjoy changing to another career since I have so little invested in medicine
5. There would be a great emotional price involved in changing my career from medicine
6. It would be emotionally difficult to change my career
7. Leaving medicine would cause little emotional trauma in my life
8. A change from medicine would require an emotional cost that I am not willing to make
9. Given my experience and background, there are attractive alternatives available to me in careers other than medicine
10. I would have many options if I decided to change my career
11. If I left medicine, I would feel like I had no reasonable career options

Non-work Social Support

Multidimensional Scale of Perceived Support – Chapter 5

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment, 52*(1), 30–41. https://doi.org/10.1207/s15327752jpa5201_2

Indicate how much you agree with the following:

1. There is a special person who is around when I am in need
2. My family really tries to help me
3. My friends really try to help me

4. There is a special person with whom I can share my joys and sorrows
5. I get emotional help and support I need from my family
6. I have friends with whom I can share my joys and sorrows
7. I can talk about my problems with my family
8. I have a special person who is a real source of comfort to me
9. I can count on my friends when things go wrong

Appendix E: Training Received

Training Received

1. Organisational Psychology Registrar Program (Endorsement) – The registrar program is a period of supervised practiced in a selected area of endorsement (in this case organisational psychology) upon completion of an approved postgraduate qualification in the same area of practice (Master of Organisational Psychology). This program allows registered general psychologists to develop the competencies that one needs to be endorsed in a specialised area of practice and consists of three components namely a) psychological practice, b) supervision with a Board-approved supervisor who holds endorsements in that area of practice, and c) continuing professional development.
2. Research Training Units – As part of the Doctor of Philosophy, I had to complete three compulsory research training units. These units included:
    a. Research Training 1
        i. Completion of the Central Commencement Program
        ii. Attendance at the Faculty Commencement Program
        iii. Attendance at Department Commencement Induction
        iv. Submission and successful completion of the Faculty Commencement Report (FCR)
        v. Attendance at research seminars
    b. Research Training 2
        i. Preparation of a research grant application using the Department of Psychology Higher Degree Research Grant (HDRG) infrastructure form OR the Macquarie University Postgraduate Research Fund Grant (PGRF) application form
        ii. Attendance at research seminars
    c. Research Training 3
        i. Presentation of a paper or poster at an external conference
        ii. Preparation of a journal article for submission
        iii. Attendance at research seminars
3. Mplus online statistical software training – This course was an online 5-day course that consisted of online lectures and practical interactive examples.
4. Attendance at two conferences (One international and one local)
    a. APS 13th Industrial and Organisational Psychology (IOP) Conference, Adelaide, South Australia (July, 2019)
    b. An International Association for Medical Education in Europe (AMEE), Vienna, Austria, (August, 2019)
5. Thesis Formatting Workshop – A one day, virtual and interactive thesis formatting workshop (e.g., document compilations, structure, look and feel)

Appendix F: Ethics Approval Letters

Medicine & Health Sciences Subcommittee - 2481 - Griffin - Ethics application - Amendment approved

donotreply@infonetica.net <donotreply@infonetica.net>
Tue 19/02/2019 11:28 AM

To: Barbara Griffin <barbara.griffin@mq.edu.au>
Cc: Catherine Dean <catherine.dean@mq.edu.au>; Angela Stark <angela.stark@mq.edu.au>; Hayley Harris <hayley.harris@mq.edu.au>; Thripura Hariharan (HDR) <thripura.hariharan@hdr.mq.edu.au>; Barbara Griffin <barbara.griffin@mq.edu.au>

Dear Professor Griffin,

Project ID: 2481
RE: 5201924817249 - Emotional intelligence, stress and educational performance in medicine and health students

The above amendment for your application has been approved.

You may access the application by logging into the Human Research Ethics Management system at https://ethics-and-biosafety-form.mq.edu.au.

Kind regards,

Faculty Ethics Officer
Macquarie University | North Ryde
NSW 2109, Australia

Human Ethics contacts

Human Ethics wiki

MACQUARIE University
SYDNEY·AUSTRALIA

Office of the Deputy Vice-Chancellor (Research)
Research Office
C5C Research HUB East, Level 3, Room 324
MACQUARIE UNIVERSITY NSW 2109 AUSTRALIA
Phone **+61 (0)2 9850 4194**
Fax +61 (0)2 9850 4465
Email ethics.secretariat@mq.edu.au

21 February 2014

Associate Professor Barbara Griffin
Department of Psychology
Faculty of Human Sciences
Macquarie University
NSW 2109

Dear Associate Professor Griffin

Re: Medical student propensity to work in a medically under-served area (Ref: 5201400087)

The above application was considered by the Executive of the Human Research Ethics Committee (Human Sciences and Humanities). In accordance with s 5.3 of the *National Statement on Ethical Conduct in Human Research* (2007) (the National Statement) the Executive has noted the approval from the University of Western Sydney Human Research Ethics Committee (HREC).

Any modifications to the above study must be submitted to, and approved by, the University of Western Sydney HREC. A copy of the approved modification, progress reports or any new approved documents must be submitted to the Ethics Secretariat for this HREC's records.

Please do not hesitate to contact the Ethics Secretariat if you have any questions.

The HREC (Human Sciences and Humanities) wishes you every success in your research.

Yours sincerely

Dr Karolyn White
Director, Research Ethics & Integrity
Chair, Human Research Ethics Committee (Human Sciences and Humanities)

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) National Statement on Ethical Conduct in Human Research (2007) (the National Statement) and the CPMP/ICH Note for Guidance on Good Clinical Practice.

Locked Bag 1797
Penrith NSW 2751 Australia
Office of Research Services

ORS Reference: H10434

University of Western Sydney

HUMAN RESEARCH ETHICS COMMITTEE

1 November 2013

Professor Wendy Hu
School of Medicine

Dear Wendy,

I wish to formally advise you that the Human Research Ethics Committee has approved your research proposal H10434 "Medical student propensity to work in a medically under-served area", until 31 October 2018 with the provision of a progress report annually and a final report on completion.

Conditions of Approval

1. A progress report will be due annually on the anniversary of your approval date.

2. A final report will be due at the expiration of your approval period as detailed in the approval letter.

3. Any amendments to the project must be approved by the Human Research Ethics Committee prior to the project continuing. Amendments must be requested using the HREC Amendment Request Form:
http://www.uws.edu.au/__data/assets/pdf_file/0018/491130/HREC_Amendment_Request_Form.pdf

4. Any serious or unexpected adverse events on participants must be reported to the Human Ethics Committee as a matter of priority.

5. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the Committee as a matter of priority

6. Consent forms are to be retained within the archives of the School or Research Institute and made available to the Committee upon request

Please quote the registration number and title as indicated above in the subject line on all future correspondence related to this project. All correspondence should be sent to the email address humanethics@uws.edu.au.

This protocol covers the following researchers:
Wendy Hu, Barbara Griffin

Yours sincerely

A/Professors Debbie Horsfall and Federico Girosi

Deputy Chairs,
Human Researcher Ethics Committee

Office of the Deputy Vice-Chancellor (Research)

Research Services
Research Hub, 17 Wally's Walk
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NSW 2109 Australia
T: +61 (2) 9850 7987
http://www.research.mq.edu.au/
ABN 90 952 801 237
CRICOS Provider No 00002J

MACQUARIE University
SYDNEY·AUSTRALIA

19/06/2019

Dear Professor Barbara Griffin,

Reference No:5201953689278

Title: 5368 Junior Medical Officers Workplace Experience Survey

Thank you for submitting the above application for ethical and scientific review. Macquarie University Human Research Ethics Committee HREC Humanities & Social Sciences Committee considered your application.

I am pleased to advise that ethical and scientific approval has been granted for this project to be conducted by Professor Barbara Griffin and other personnel: Miss Thripura Hariharan.

Approval Date: 19/06/2019

This research meets the requirements set out in the *National Statement on Ethical Conduct in Human Research* (2007, updated July 2018) (the *National Statement*).

Standard Conditions of Approval:

1. Continuing compliance with the requirements of the *National Statement*, which is available at the following website: http://www.nhmrc.gov.au/book/national-statement-ethical-conduct-human-research
2. This approval is valid for five (5) years, subject to the submission of annual reports. Please submit your reports on the anniversary of the approval for this protocol.
3. All adverse events, including events which might affect the continued ethical and scientific acceptability of the project, must be reported to the HREC within 72 hours.
4. Proposed changes to the protocol and associated documents must be submitted to the Committee for approval before implementation.

It is the responsibility of the Chief investigator to retain a copy of all documentation related to this project and to forward a copy of this approval letter to all personnel listed on the project.

Should you have any queries regarding your project, please contact the Ethics Secretariat on 9850 4194 or by email ethics.secretariat@mq.edu.au

The HREC Humanities & Social Sciences Committee Terms of Reference and Standard Operating Procedures are available from the Research Office website at: https://www.mq.edu.au/research/ethics-integrity-and-policies/ethics/human-ethics

The HREC Humanities & Social Sciences Committee wishes you every success in your research.

Yours sincerely,

Dr Karolyn White
Chair, HREC Humanities & Social Sciences Committee

ACT Government | ACT Health

Research Ethics and Governance Office

Professor Barbara Griffin
Department of Psychology
C3A Building Level 5
Macquarie University
NSW 2109 Australia

ACT	2019.STE.00157
Other	Macquarie University: 5201953689278
Title	Junior Medical Officers Workplace Experience Survey

Dear Professor Griffin,

Thank you for your submission, on 30 July 2019, of the above referenced research proposal for site governance review.

ACT Health recognises the ethical and scientific review and approval of registered Human Research Ethics Committees (HREC). In this case I note the ethical review and approval from the Macquarie University HREC, dated 19 June 2019.

The above named study is approved to commence at ACT Health sites as per the submissions approved by the lead reviewing HREC.

There are no site specific documents to be approved however, endorsement of Dr Paul Dugdale and Ms Janelle Corey is noted.

Please see conditions of approval on the following page.

This correspondence will be reported to the next available meeting of the ACT Health HREC.

Yours sincerely,

August Marchesi
Director
Research Ethics and Governance

31 July 2019

ACT Government | ACT Health

Research Ethics and Governance Office

Outcome of Consideration of Protocol

ACT	2019.STE.00157
Title	Junior Medical Officers Workplace Experience Survey
Principal Investigator	Professor Barbara Griffin
Date of Approval	31 July 2019

Approval Period: in accordance with lead site approval this study is approved from 31 July 2019 to 31 July 2022. Continued approval is contingent upon submission of evidence of approval from the lead HREC.

First Annual Review due: 31 July 2020

Conditions of Approval

The following items are required for noting:

- All items submitted to and approved by the lead reviewing HREC to be notified to ACT Health Research Ethics and Governance Office, including but not limited to:
  - Protocol amendments
  - Investigator brochure updates
  - Patient recruitment and retention materials intended for use at ACT Health sites
- All safety monitoring reports submitted to the lead reviewing HREC to be notified to ACT Health Research Ethics and Governance Office, including but not limited to:
  - Data Safety and Monitoring Board reports
  - unforeseen events that may affect the continued ethical acceptability of the project

The following items are required for review:

- Annual project progress report on the conduct of the study at ACT Health sites
- Current insurance certificate, annually or as required
- Any items or reports required by regulation or ACT Health policy

August Marchesi
Director
Research Ethics and Governance
31 July 2019