Toward a better understanding of the relationship between impostor cognitions and occupational burnout

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Table of Contents

List of Tables

List of Figures

Abstract

This thesis sought to develop a better understanding of the role impostor cognitions play in the emergence of occupational burnout. Impostor cognitions refer to the phenomenon where intelligent and successful people fear that they are not as competent as other people believe them to be. While impostor cognitions are common in the workplace domain, there is limited understanding of the impact on work-related psychological outcomes. Thus, I aimed to: (1) clarify the relationship between impostor cognitions and occupational burnout proposed in the existing literature (2) examine the mediating role of peer comparisons in the relationship between impostor cognitions and burnout and (3) investigate whether the availability of information that normalises failure provided by peers contributes to a reduction in the negative psychological impact of impostor cognitions. Two studies were conducted to examine these three aims. Study 1 was intended to initially explore the proposed relationships in a cross-sectional study conducted amongst 214 Australian academics. Study 2 sought to confirm the findings of Study 1 with a two-wave repeated measures design in a broad range of 155 Australian working professionals. The results demonstrated that impostor cognitions were directly related to the emotional exhaustion and professional efficacy burnout dimensions, but not cynicism. Both studies demonstrated the relationship between impostor cognitions and emotional exhaustion and professional efficacy occurred indirectly via peer comparisons with colleagues. In contrast to predictions, information that normalises professional failures provided by peers did not moderate the relationship between impostor cognitions and peer comparisons. Implications for workplace interventions as well as suggestions for future research are discussed.

Statement

I certify that the work in this thesis has not previously been submitted for a higher degree nor has it been submitted as part of requirements for a degree to any other university or institution. This thesis was prepared by myself, Phoebe Stoddart, under the supervision of Dr. Monique Crane and Dr. Melissa Norberg. I certify that this thesis is my original work and all sources of information or assistance received have been appropriately acknowledged.

The research presented in this thesis was approved by the Macquarie University Human Research Ethics Committee (Study 1 REF: 5201300286; Study 2 REF: 5201400136; see Appendix I).

Signed: P. Stoddart

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Toward a better understanding of the relationship between impostor cognitions and occupational burnout

As is implied by the name, those with the impostor phenomenon (also referred to as impostorism or impostor cognitions) experience thoughts of feeling less capable or intelligent than others believe them to be (Clance, 1985). These cognitions occur despite achieving high levels of success by objective standards, which has led researchers in the area to believe that those with impostorism fail to internalise their accomplishments (Clance & Imes, 1978). Individuals experiencing impostor cognitions more readily consider their successes as underserved and attributable to external factors such as luck, rather than true ability, skills or intelligence (Imes, 1979; Topping & Kimmel, 1985) and have a tendency to overestimate the abilities of others and underestimate their own capability (Clance & O'Toole, 1988). Moreover, they are known to be pre-occupied with the concern that they might fail and that their lack of ability will be discovered, revealing them to be the fraud or the impostor they perceive themselves to be (Clance, 1985).

The impostor phenomenon can be detrimental for psychological wellbeing. It has been found to be associated with, but differentiated from, depressed mood, low self-esteem and social anxiety (Chrisman, Pieper, Clance, Holland, & Glickauf-Hughes, 1995; Henning, Ey, & Shaw, 1998; McGregor, Gee, & Posey, 2008). Impostorism has also been linked to low self-appraisals and general negative affect (e.g. Leary, Patton, Orlando, & Funk, 2000) and poor mental health (Sonnak & Towell, 2001).

It is estimated that up to 70% of individuals will experience the impostor phenomenon at one point in their life (Matthews & Clance, 1985) and typically manifests in the occupational or academic domains (Taylor, 2009). While most

research on the psychological impact of impostorism has been conducted amongst student samples, there is some evidence that impostor cognitions are associated with negative psychological outcomes for working adults (Vergauwe, Wille, Feys, Fruyt, & Anseel, 2014). For example, a recent cross-sectional study conducted amongst 201 Belgian employees found that impostorism was correlated with less self-reported job satisfaction and organisational citizenship behaviours (Vergauwe et al., 2014). Further, impostor cognitions have been associated with self-sabotaging behaviours in the workplace (Sakulku & Alexander, 2012) and a reluctance to accept promotions or premature retirement (Parkman & Beard, 2008). However, these assertions are based on observations rather than empirical evidence. Thus, the present understanding of the psychological implications for working adults is limited.

Thesis overview

It is important build on the current understanding of how impostorism impacts specifically on work-relevant measures of psychological distress to inform the development of strategies for preventing and managing this chronic form of self-doubt. In this present thesis, I focus on the link between impostor cognitions and occupational burnout in particular. Burnout is a common measure of psychological functioning in the workplace (Van Horn, Taris, Schaufeli, & Schreuers, 2004) and researchers have previously drawn theoretical links between these two variables (e.g., Whitman & Shanine, 2012). However, the current literature on impostor cognitions and burnout is limited and inconclusive. Thus, an initial aim of this thesis was to empirically explore the relationship between impostor cognitions and burnout with the broader aim of extending understanding of how impostor cognitions impact on the psychological wellbeing of employees.

The second aim of this thesis is to understand the psychological mechanisms underlying the expected relationship between impostor cognitions and burnout. In particular, I propose that impostor cognitions are associated with a cognitive bias whereby the abilities and skills of peers are overestimated in comparison to one's own skills and abilities. Thus, impostors are more likely to make less positive or negative peer comparisons. I argue that this negative bias in seeing one's self less positively or negatively relative to peers is responsible for the relationship between impostor cognitions and burnout. In sum, I proposed that impostor cognitions impact on burnout (1) directly and (2) indirectly via the impact impostor cognitions have on comparisons with one's peers.

The final aim of this thesis is to propose how managers in the workplace might challenge the hypothesised biased peer comparisons, subsequently reducing the symptoms of burnout amongst individuals experiencing impostor cognitions. Where managers provide information that instills more realistic performance norms of an employee's peers, it is anticipated that this will calibrate perceptions of how well others are performing relative to one's self. This is expected to subsequently reduce the extent to which individuals with impostor cognitions see themselves unfavourably in relation to their peer group and alleviate the negative psychological impact of impostor cognitions.

Review of the literature

Background to the impostor phenomenon. Dr. Pauline Clance and Dr. Suzanne Imes first coined the term "impostor syndrome" in 1978 to describe a pattern of thoughts and behaviours observed amongst female clinical patients who did not believe they were as successful or intelligent as other people perceived them to be. While initially observed amongst women, research now demonstrates the

phenomenon is equally likely to affect both men and women (e.g. Dingman, 1988; Harvey, 1981; Topping, 1983). Clance (1985) formulated three categories of cognitions characteristic of those experiencing the impostorism: fake (thoughts of being a fraud), discount (disregarding evidence of success and competence) and luck (attributing success to luck).

The impostor phenomenon was initially attributed to family dynamics and early childhood experiences (Clance & Imes, 1978). For example, a lack of parental care (Sonnak & Towell, 2001) and a family orientation that places a high emphasis on the value of achievement (King & Cooley, 1995) have been attributed to the development of impostor cognitions. Several personality factors have also been found to be associated with impostor cognitions, including lower extraversion and conscientiousness scores, as well as higher neuroticism (Ross, Stewart, Mugge, & Fultz, 2000).

Clance (1985) and Clance and Imes (1978) proposed several key characteristics of the impostor phenomenon based on initial observations amongst female clinical patients. Although some of these characteristics have received empirical support, most are described only theoretically (outlined below). Several of these characteristics are central to this thesis and are outlined in the following paragraphs.

Fear of failure. Failures, mistakes or performance that do not meet an impostor's exceptionally high personal standards are interpreted as indications of his or her perceived incompetence, resulting in feelings of shame and humiliation (Clance, 1985). Poor performance also risks uncovering impostors as the fraud they believe themselves to be. Thompson, Foreman, and Martin (2000) found that individuals with impostor cognitions had greater concern for mistakes and also tended

to overestimate the frequency of their own mistakes to a greater extent than those who did not have impostor cognitions. Those experiencing impostor cognitions have also been found to overgeneralise a single failure to their overall self-concept and react more negatively than non-impostors following failure (Thompson, Davis, & Davidson, 1998), indicating that failure is more psychologically detrimental to individuals with impostorism.

These attributes have led to impostorism being likened to perfectionism (Thompson et al., 1998). As well as displaying a similar fear of failure and response to mistake making, perfectionists also externalise success and are critical of their own inability to reach unrealistically high standards set for themselves (Sakulku & Alexander, 2011). However, in contrast to perfectionists who do not disclose their own flaws or mistakes (Frost et al., 1995), individuals with impostor cognitions will express their self-perceived inadequate performance to others (Ferrari & Thompson, 2006).

At first, this might seem paradoxical to the fear of revealing one's self to be an 'impostor'. Leary et al. (2000) investigated this anomaly, and found that individuals who scored high on impostor cognitions tended to self-report lower performance expectations only when their performance was going to be made public. The researchers interpreted finding as evidence that impostors might be publicly modest regarding their abilities to elicit support and encouragement from others. Sakulku and Alexander (2011) also argued that this reflected an interpersonal strategy to lower others' expectations and reduce the risk of failing to meet their perceived standards.

Denial of competence and discounting praise. Clance and Imes (1978) theorised that people experiencing impostor cognitions do not recognise their own capabilities and skills and are resistant to accept any evidence that suggests they are

competent. This means that while individuals with impostorism experience initial relief following accomplishments (as the anxiety regarding performance outcomes has subsided), they do not gain satisfaction from any resulting success, as achievements are not internalised (Clance, 1985). The tendency for those experiencing impostorism to attribute success to external factors, demonstrates one mechanism through which they effectively discount success as being a positive indicator of their own abilities (Thompson et al., 2000).

Overestimating others and underestimating one's self. Clance and O'Toole (1988) described that individuals with impostorism tended to overestimate others' abilities and underestimate their own capabilities. Clance (1985) noted that individuals with impostor cognitions reported believing that others excelled with minimal effort and to perfect standards, while perceiving themselves to perform much worse than others. This observation provides initial evidence that individuals with impostorism hold biased perceptions of the performance of their peers, which is positively inflated.

Importantly, it is unlikely that these perceptions are accurate. Individuals with impostorism have been found to perform similarly on university exams to those without impostor cognitions (Cozarelli & Major, 1990), despite students with impostorism holding lower performance expectations prior to partaking in the examination. Similarly, Want and Kleitman (2006) found that individuals with impostorism had less confidence in their ability to perform well in a cognitive task but did not differ in performance to individuals without impostor cognitions. This research gives support for the view that individuals with impostorism hold erroneously negative self-views.

Impostor Cycle. The impostor cycle refers to the maladaptive responses to an achievement-related task that were observed to be typical of those female clinical patients who displayed impostor cognitions (Clance, 1985; Clance & O'Toole, 1988). When first presented with a work or academic task that would be evaluated, these patients reported that they reacted with feelings of self-doubt and anxiety. These individuals described that they then usually either over-prepared for work tasks or initially procrastinated and then overworked. Clance (1985) proposed that these behavioural reactions perpetuate the impostor cycle as any resulting success is credited to luck if they procrastinated or to the impostor's hard work if they have over-worked from the beginning, rather than personal ability. Procrastination and overworking have been attributed to a fear of failure in individuals with perfectionism (Flett, Blankstein, Hewitt & Koledin, 1992), indicating the possible motivating factor of these behaviours.

Although the impostor cycle is theoretical, there is some evidence that individuals with impostor cognitions do exhibit the attributions and behaviours described. First, Thompson et al. (1998) found that undergraduate students who scored high on impostorism attributed success to external factors (i.e. aspects of the situation) rather than internal factors (i.e. aspects of the self) more than students who scored low on impostorism in response to academic success in a hypothetical scenario. Further, the link between overwork and impostorism was found in a study of undergraduates as impostor cognitions were related to greater hours spent on academic endeavours (King & Cooley, 1995). Finally, while no researchers have examined the relationship between impostor cognitions and procrastination, individuals with perfectionism, a construct that has similar features to impostor cognitions (Sakulku & Alexander, 2012), has been found to be associated with

procrastination (Flett et al., 1992; Flett, Hewitt, Davis, & Sherry, 2004; Seo, 2008). The impostor cycle is considered key to the potential development of burnout amongst those with impostor cognitions.

Impostor cognitions and occupational burnout. Burnout is a measure of occupational psychological wellbeing and is considered to occur as a result of chronic work-related stressors (Maslach & Jackson, 1981; Maslach, Shaufeli, & Leiter, 2001). It is comprised of three dimensions: emotional exhaustion, cynicism and lowered professional efficacy. The most critical and defining feature of burnout is emotional exhaustion (Shirom, 1989). Emotional exhaustion refers to a reduction of emotional resources and involves feeling physically and mentally exhausted (Maslach & Jackson, 1981). Cynicism is characterised by a negative and detached attitude to one's job and related responsibilities. Cynicism may be a strategy used to cope with exhaustion, as individuals seek to 'escape' continued work stressors by disengaging from their role (Leiter & Maslach, 1988; Maslach et al., 2001). Finally, burnt out individuals report a lowered sense of professional efficacy and a reduced sense of accomplishment (Maslach et al., 2001).

The Conservation of Resources (COR) model (Hobfoll, 1989; 2001) of stress can be applied to explain why impostor cognitions may lead directly to occupational burnout (Shanine & Whitman, 2012). Hobfoll (1989; 2001) proposed that individuals are motivated to gain, retain and protect personal resources. The COR model posits that persistent occupational stressors that result in resource depletion, the threat of loss of a resource, the lack of resource gain as a consequence of resource investment, or the perception that one's resources are insufficient to meet work demands, lead to emotional exhaustion over time (Hobfoll, 1989). Resources might include instrumental objects (e.g. Information Technology), conditions (e.g. a secure job),

personal characteristics (e.g. resilience) or social factors (e.g., social support) that serve as a means for attaining valued resources.

Whitman and Shanine (2012) theorised possible mechanisms through which impostor cognitions lead to burnout, based on the COR model. First, the researchers hypothesised those individuals with impostorism experience high levels of stress and anxiety due to the threat of being discovered to be less competent than others believe. As a consequence, excessive resources are invested in an effort to avoid failure, representing resource depletion. Second, the impostor cycle represents a failure to gain personal resources (e.g., pride, sense of accomplishment, positive self-esteem) after investing effort to avoid failure. Thus, for those high in impostor cognitions, resource investment is not offset by resource gain as a consequence of positive performance outcomes. When this failure to gain positive personal resources following the investment of effort happens consistently over time, an individual is likely to experience emotional exhaustion.

Impostor cognitions might lead to cynicism as a method of coping with the ongoing stress associated with feelings of fraudulence. Avoidance coping refers to the purposeful evasion of stress-evoking stimuli, events or situations as a means to cope with that stressor, for example avoiding situations with unfamiliar people to avoid experiencing social anxiety (Endler & Parker, 1994). As cynicism refers to psychological distancing and detaching from one's work in response to stress, it could be considered a form of avoidant coping. Research has identified that impostor cognitions are associated with this type of coping style. Ross and Krukowski (2002) found that impostor cognitions were associated with avoidant personality disorder as measured by the Schedule of Nonadaptive and Adaptive (SNAP) Personality Disorder

scale and that detachment was the trait most highly correlated with impostor cognitions of those traits measured using the SNAP trait-temperament scale.

Research on constructs similar to impostorism has also demonstrated links to cynicism. First, correlational data has demonstrated that perceived inadequacy, which is experienced by those with impostorism (Edwards et al., 1987), was positively related to cynicism amongst academic medical chairs (Gabbe, Melville, Mandel, & Walker, 2002). Further, a study on school board employees found that low perceived professional competence was associated with higher depersonalisation, which refers to adopting a cynical attitude specifically towards the people that an individual works with or provides services to (Fernet, Austin, Trépanier, & Dussault, 2013).

Impostor cognitions are also implicated in the third dimension of burnout: lowered professional efficacy. Self-efficacy refers to the belief that one can exert control over his or her motivations, behaviours and social environment (Bandura, 1990). Professional efficacy refers specifically to self-efficacy in the workplace and has two key components (Cherniss, 1993). The first is a sense of competence and mastery regarding one's professional abilities. The second is a sense of control or feeling that one can bring about desired work-related outcomes.

Individuals who experience impostor cognitions may have a susceptibility experiencing a lowered sense of professional efficacy. One of the key sources of an individual's sense of efficacy is past performance (Bandura, 1997). Because those with impostorism discount positive feedback regarding their performance, it is likely that even if they do succeed, they perceive their past performance unfavourably. Thus, it is likely that these individuals will have a reduced sense of being capable of performing a work-related task successfully. Second, attributing successes to luck

could lead to lowered professional efficacy as this reflects a sense of having low control over the outcomes of one's own behaviour.

Two studies support a relationship between impostor cognitions and lowered efficacy. First, Lapp-Rincker (2003) found a negative correlation between impostor cognitions and self-efficacy indicating that more severe impostor cognitions were associated with lower self-efficacy. Roskowski (2010) found a similar relationship amongst counseling students. Specifically, students who scored higher on impostorism perceived that their counseling skills would be less efficacious than individuals who had less severe impostor cognitions. This second study shows a clear link between impostor cognitions and *professional* efficacy in particular.

In summary, there is considerable tangential evidence of the role of impostor cognitions in the manifestation of occupational burnout. Yet, only two studies have directly examined a link between impostor cognitions and burnout and the findings were mixed. First, Leung (2006) found that impostor cognitions were significantly correlated with burnout, which was measured as a single construct amongst 139 full-time workers in the United States. However, the measurement of burnout as a single construct is problematic as it was designed to be measured as a multidimensional construct with three dimensions (see Brenninkmeijer, 2002). Each dimension of burnout is distinct and can vary at different stages of the syndrome (Brenninkmeijer, 2002). Thus, when combined as a uni-dimensional measure, the complexity of certain relationships can be overlooked. Specifically, from this study, it cannot be concluded whether impostor cognitions were associated with each burnout dimension individually.

In contrast, when assessing the three dimensions separately, Legassie et al. (2008) found that individuals who reported more impostor cognitions also reported a

lower sense of professional efficacy. Yet, impostorism was unrelated to emotional exhaustion or cynicism. As this study consisted of only 48 medical residents, the authors may not have had enough power to detect small to moderate relationships between impostor cognitions and the emotional exhaustion and cynicism dimensions (Button et al., 2013). Thus, while there is a theoretical rationale for the causal impact of impostor cognitions on the burnout dimensions, very little direct evidence has been provided to support this assertion.

The indirect relationship between impostor cognitions and burnout via peer comparisons. To develop strategies that reduce the expected negative impact of impostor cognitions on occupational burnout, it is important to understand possible mechanisms underlying this relationship. In the present research, I suggest that impostor cognitions lead to burnout via the impact impostorism has on the way people make comparisons between their own performance and their peers. Specifically, I argue that in addition to the direct effect of impostor cognitions on burnout, there is an indirect effect of impostor cognitions on burnout via peer comparisons.

According to Preacher and Hayes (2004), an indirect effect occurs when the effect of an independent variable (X) on an outcome variable (Y) is mediated by a third variable (M). That is, changes in the IV result in changes in M, which subsequently causes changes in Y. When there is both a direct effect and an indirect effect between X and Y, the direct effect indicates that changes in X result in changes in Y independent of X's influence on M. In terms of the present study (Figure 1), I predict that (1) increases in more severe impostor cognitions result directly in higher burnout independently of biased peer comparisons and (2) that an indirect relationship exists whereby higher impostor cognitions result in more negative comparisons of the self with peers, which in turn results in higher burnout. The following sections will

outline first how impostor cognitions might result in negative peer comparisons as well as how negative peer comparisons result in higher occupational burnout.

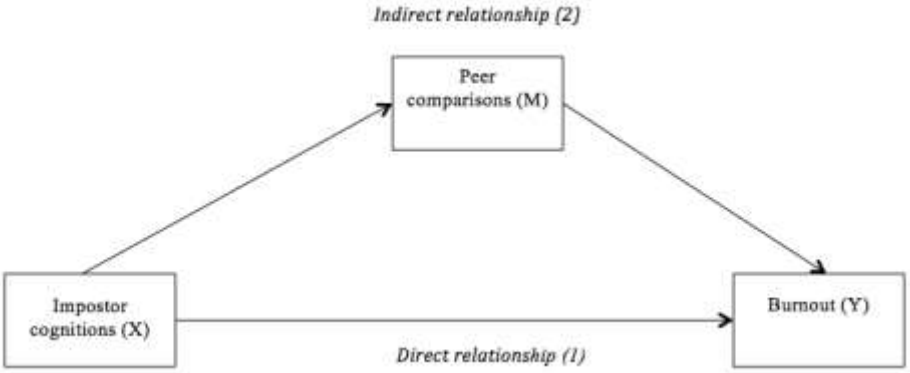

Figure 1. Model of hypothesised direct and indirect effects

Impostor cognitions and peer comparisons. Clance and O'Toole (1988) described that individuals with impostorism tended to overestimate others' abilities and underestimate their own capabilities. I argue that the implication of this is that individuals with impostorism perceive themselves as inferior to peers; they hold an inflated view of the performance norms of their peers and subsequently a negatively biased perception of their performance *in comparison* to peers. In this thesis, I focus on how impostor cognitions impact on how individuals see their performance relative to their workplace peers and colleagues in particular, given the focus on the workplace implications of impostor cognitions.

These peer comparisons are distinct from the three original characteristics of impostorism (Clance, 1985) because they reflect ratings of personal performance in comparison to others, rather than one's disappointment with personal performance against self-imposed standards. Impostor cognitions are self-referent, they refer to feelings of not meeting one's own perceptions of the standards that represent success. This is evidenced by the following items from the impostorism scale (Clance, 1985), "I rarely do a project or task as well as I'd like to do it" and "I'm disappointed at times

in my present accomplishments and I think I should have accomplished more". In contrast, feelings of inferiority refer to comparative ratings of performance relative to the perceived performance standards of peers. I propose feelings of inferiority expected to be experienced by those with impostorism is a potential mechanism through which impostor cognitions lead to burnout. That is, impostor cognitions result in burnout via the impact such thoughts have on peer comparisons.

Research suggests that people strive to maintain a stable self-concept, even if it is negative, and that they will engage in systematic strategies to process social information in a manner that is consistent with their self-concept. For example, people will choose to interact with people who perceive them similar to how they perceive themselves (Backman & Secord, 1962) and selectively seek out and attend to feedback that confirms their self-concept (Swann & Read, 1980). Further, when individuals receive information that challenges their self-concept, they interpret it in ways that lessen its impact (Markus, 1977; Shrauger & Lund, 1975).

It follows then that those who hold a negative self-concept will be more likely to seek out, attend to and interpret information, including social information, in a manner that maintains that negative self-concept. As such, the subjective process of evaluating one's self in comparison to others might be biased by the way in which we see ourselves. Applied to impostorism, those with impostor cognitions are then likely to compare themselves to others in a manner that is consistent with their self-view that they are not as capable as others perceive them to be.

To date, only two studies have examined peer comparisons amongst individuals with impostor cognitions, both amongst children in an academic context. Chayer and Bouffard (2010) conducted a cross-sectional study amongst 740 10- and 12-year old students. These researchers found that children with impostor cognitions

tended to draw more similarities between themselves and those children who were performing worse academically and contrast themselves to higher academic performers. That is, children with impostor cognitions perceived themselves to be more like poorer performers rather than higher performers in their peer group. This indicates that impostor cognitions are associated with seeing one's self in a generally negative manner in relation to others in their peer group. The finding also provides evidence that those with impostorism not only underestimate themselves, but that their comparative performance is seen as generally inferior to others.

A second key finding of the study conducted by Chayer and Bouffard (2010) was that children with impostor cognitions also had a higher propensity in general to compare themselves to their peers than children who did not engage in impostorism. This is consistent with Festinger's (1954) hypothesis that individuals who doubt their competence, as impostors do, are more likely to engage in social comparisons. Empirical work demonstrates that for individuals who more frequently engage in social comparisons, favourable social comparisons positively impact affect and psychological wellbeing, whereas unfavourable comparisons have a greater negative impact on these aspects (Buunk & Gibbons, 2006). This underscores the relevance of examining social comparisons amongst individuals with impostorism and how comparisons might impact on their psychological wellbeing.

While the interpretation of the causal direction of the relationship between impostor cognitions and peer comparisons found by Chayer and Bouffard (2010) was limited by the cross-sectional design, Bouffard, Vezaeu, Roy, & Lengele (2011) later examined the relationship employing a longitudinal design. This study examined the role of enduring self-evaluations in predicting impostor cognitions amongst 462 school-aged children. The study measured the types of comparisons children made of

themselves to classmates on academic-related dimensions over five years and then measured impostor cognitions at the final time point. Children who maintained a more positive bias when comparing themselves to other children had less severe impostor cognitions than children who tended to see themselves as more similar to children with negative characteristics. Further, children who were more positive when evaluating themselves to peers also had better psychosocial adjustment as measured by self-esteem, social acceptance and fulfilling parental expectations. This causal link between negative peer comparisons and negative outcomes further highlights the importance of considering the role that comparisons play in the relationship between impostorism and psychological wellbeing.

While it might initially appear that more positive peer comparisons resulted in lower impostor cognitions this study failed to control for impostor cognitions at the initial time point. Therefore, the effects of baseline impostor cognitions were not controlled for in this study. This means that the reverse relationship (i.e., impostor cognitions predict social comparisons) cannot be ruled out by this study design (Burkley & Blanton, 2008).

Taken together, these two studies suggest that impostor cognitions are associated with unfavourable social comparisons with peers. Yet, the direction of this relationship is yet to be convincingly determined. While Bouffard and colleagues assumed that impostor cognitions were an outcome of negative peer comparisons, I argue that negative perceptions of one's self in comparison to peers or colleagues occurs *as a result* of impostor cognitions. Specifically, I propose that the tendency for individuals with impostorism to underestimate themselves and overestimate others leads to inflated perceptions of the performance norms of one's peer group and subsequently, less positive (or negative) comparisons of the self to peers. I argue that

this is consistent with previous literature indicating that individuals will process social information in a manner that is consistent with their negative self-view.

Peer comparisons and burnout. As found by Bouffard et al. (2011), negative peer comparisons have important consequences for psychological wellbeing. Further, for those with impostorism, these negative consequences are likely to be particularly consequential given their tendency to engage in more frequent social comparisons (Chayer & Bouffard, 2010). Other research has shown that it is not just an individual's absolute level of performance that is important to one's subjective well-being, but that people are more satisfied when they perceive their performance to be better than most others in a particular referent group (Abou-Zeid & Ben-Akiva, 2011; Brickman & Campbell, 1971; Marsh & Parker, 1984; Smith, Diener, & Wedell, 1989). For example, people in close relationships reported higher satisfaction when they focused on why their relationship was better than most others in comparison to when they just described why their relationship was good (Buunk et al., 2001).

Research has demonstrated a relationship between social comparisons and the development of burnout in the workplace. First, Carmona, Buunk, Peiro, Rodriguez, and Bravo (2006) found that amongst 558 teachers, those who contrasted themselves with teachers who performed better and who saw themselves similarly to those who performed worse had higher levels of burnout, whereas those who saw themselves as similar to better performing teachers had lower burnout scores. The longitudinal findings of the same study were not as strong but the results indicated that identifying with teachers who were worse performing at Time 1 was associated with a significant increase in burnout at Time 2. Another paper from the same researchers found that perceptions of being of a lower status to others predicted burnout to a greater extent than stressors typically associated with burnout including relationships at work, work-

life balance and role problems (Buunk, Peiro, Rodriguez, & Bravo, 2007).

Performance norm information, impostor cognitions and peer comparisons. Finally, this thesis proposes one method that could be implemented by those managing employees with the style of thinking associated with impostorism. Employers or managers might suspect that their employees are experiencing impostor cognitions if they are expressing self-doubts, overworking, procrastinating, and are reluctant to accept additional responsibilities or promotions (Sakulku & Alexander, 2012). Existing strategies for treating impostor phenomenon have centered on group therapeutic settings (e.g. Clance & Imes, 1978). However, people can be reluctant to seek therapy due to social stigma concerns the fear of having an aversive experience, and concerns about having to discuss painful emotions (Komiya, Good, & Sherrod, 2000). Further, impostor cognitions are prevalent in the workplace and have workplace specific consequences. Workplaces in Australia are now required to take greater responsibility for preventing the risks associated with poor psychological health (Safe Work Australia, 2014). Therefore it is important that managers are given practical strategies to both prevent further detriment to employees already struggling with impostor cognitions and enhance the wellbeing of employees.

The final aim of this study is to explore a potential strategy to manage impostor cognitions in the workplace that may reduce the extent to which individuals with impostor cognitions engage in negative peer comparisons, and in turn the severity of burnout. Given that individuals experiencing impostor cognitions are likely to dismiss direct positive performance feedback, the proposed mechanism aims to circumvent this issue by examining the role of indirect performance feedback. In particular, I examine whether the availability of information that normalises professional failures creates a more realistic appraisal of one's performance relative to

others. It is anticipated that a more accurate perception of peer performance will challenge the tendency to engage in biased negative peer comparisons, thereby reducing the negative impact of impostor cognitions on burnout. It is suggested that information that (1) contains specific *content* and (2) is provided by a specific *source* may challenge the tendency to engage in negative social comparisons with colleagues amongst those with impostor cognitions.

The importance of content. Given that individuals experiencing impostor cognitions can effectively discount praise and positive performance feedback (Clance and Imes, 1978), it was necessary to consider forms of *indirect performance* feedback that could be provided to those with impostor cognitions. Other researchers who have investigated the impostor phenomenon have previously recommended that providing information that reframes the perceptions of performance norms might alleviate the symptoms of impostorism (e.g. Craddock, 2011; Henning et al., 1998). Building on this, I propose that information that addresses inaccurately inflated perceptions of the performance norms of others may be useful in reducing the extent to which impostors rate themselves negatively in comparison to peers.

The social identity perspective, comprised of social identity theory (SIT; Tajfel & Turner, 1979) and self-categorisation theory (SCT; (SCT: Turner, 1982, 1985; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) may lend some support to this proposition. As proposed by SIT, social identification refers to one's awareness of oneself as a member of a particular group (in-group), and the degree that group membership is internalised as part of one's self-concept (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990; Tajfel & Turner, 1979; Turner & Oakes, 1986). Social identities in the workplace may refer to an individual's work team, organisation or profession. When individuals internalise a particular social identity,

they are motivated to see that in-group as positively distinct to other social categories (out-groups) in contexts where group differences are salient (Tajfel & Turner, 1986). To illustrate, if an individual identifies strongly as a ward nurse (in-group), that individual might see his- or herself and other ward nurses as more caring and patient-focused than other healthcare professionals (out-groups) in the hospital.

According to self-categorisation theory, when a particular social identity is an important part of people's self-definition, they experience *depersonalisation*; they see all group members as similar and interchangeable (Turner et al, 1987). Perceptions of the shared characteristics that define the in-group, such as behaviours, attitudes, values and beliefs, are referred to as prototypes. Depersonalisation leads to assimilation of the self to the prototype of the in-group and subsequently produces conformity to in-group norms (Turner, 1985; Turner & Oakes, 1989). Norms refer to the beliefs that an individual has regarding a group's actual behaviours and attitudes. Conformity to norms does not reflect compliance but the process whereby individual behaviour alters to match the behaviours that characterise the in-group.

When a particular social identity is important to the self-concept, people are motivated to understand how prototypical they are, comparing themselves to how well they are meeting these standards or norms in comparison to others (Haslam, Oakes, McGarty, Turner, & Onorato, 1995). When we make social comparisons of ourselves to a group of peers or in-group members, we therefore rely on our perceptions of group norms to understand how others are behaving so that we can then compare ourselves to that behavioural standard (Hogg & Reid, 2006).

Because norms are based on an individual's own subjective perception, norms can be subject to personal biases leading to a misrepresentation of the actual norms (Lapinski & Rimal, 2005). A key characteristic of impostor cognitions is the tendency

to overinflate how well others are performing and to underestimate one's own performance. In this thesis, I have argued that this might lead those with impostorism to hold inaccurate perceptions of the performance norms of their colleagues and subsequently see themselves as less superior or inferior to their peer group. It is suggested that providing information to those with impostor cognitions that reframes these biased perceptions of performance norms will be helpful in alleviating the negative impact of impostor cognitions.

Specifically, I propose that information that normalises failure (from here on referred to as "failure normalising information") or information that communicates that the occasional failure is normal amongst colleagues, will be useful in calibrating perceived performance norms. Normalising failure in particular was selected as failure is a key concern for those experiencing impostorism (Clance, 1985; Thompson et al., 1998; Thompson et al., 2000). This type of information is expected to communicate that colleagues do not perform to the high standards that impostors inaccurately believe, and that mistake-making and failure is 'normal'. Peer comparisons based on more accurate norm representations might subsequently be less negative and the impact of impostor cognitions on peer comparisons (and subsequently burnout) would be alleviated.

Research on alcohol use amongst university students has identified the role that norms play in alcohol consumption (Cooke, Sniehotta, & Schulz, 2007; Livingston, Young, & Manstead, 2011). A key finding is that excessive alcohol consumption is associated with inflated perceptions of how much peers drink (e.g. Kypri & Langley, 2003; Perkins, 2002). This area of research has resulted in the development of interventions aimed at providing information regarding the actual consumption of their peers, which adjusts the perceived norm to be more accurate and

subsequently, reduces drinking behaviour (Perkins, 2002; Turner, Perkins, & Bauerle, 2008). This research shows that individual's biased perceptions of norms can be reframed by providing normative information. It also demonstrates that the norms can be reframed to the point of changing associated behaviours.

The importance of source. In terms of source, it is expected that those within one's profession would be more convincing and authoritative than individuals who are not within one's profession at reframing perceptions of performance norms. Therefore, managers may be in a unique position to challenge such biased social comparisons because of the legitimacy they have as both a member of the organisation, but also someone with oversight of employee distress.

It is argued that failure normalising information is most effective when provided by someone within one's professional group (in-group members) rather than a friend or family member outside the profession (non in-group members). According to the social identity approach, in-group members are considered to be the most reliable source of normative group information (Hogg & Reid, 2006). In-group members provide an understanding of the behaviours, attitudes and values that define the group; they are considered to embody the prescribed standards of group members (Hogg & Reid, 2006). Non in-group members on the other hand, are not legitimate sources of information about in-group norms. Therefore, failure normalising information from non in-group members (individuals outside of one's profession) is not anticipated to buffer the negative impacts of impostor cognitions.

Summary

It is a key aim of this thesis to explore the relationships between impostor cognitions, peer comparisons and burnout to assist in understanding the psychological consequences of impostor cognitions in the workplace. It is evident that the existing

literature is mixed regarding the relationship between impostor cognitions and burnout and limited to cross-sectional studies. Similarly, while overestimating others and underestimating one's self is a key characteristic of impostorism, the present understanding of the link between impostor cognitions and perceptions of performance *in relation* to others is largely theoretical and based on studies amongst young children at school. Given the link between social comparisons and burnout, I have proposed a model that aims to provide a clearer understanding of how these factors might by causally related. The thesis aims to address methodological limitations in previous research by assessing these relationships amongst an adult workforce population using both a cross-sectional (Study 1) and repeated measures design (Study 2).

The present studies

Given the empirical gaps within the impostor literature this research project, consisting of two studies (Table 1), will advance our understanding of the relationship between impostor cognitions and occupational burnout. The first study aims to be exploratory by assessing cross-sectional associations between the key variables (impostor cognitions, burnout and peer comparisons). The second study employs a repeated measures design (with two time points) with the aim of confirming associations in Study 1 and allowing for inferences to be made regarding causality and directionality of the relationships amongst these three key variables.

More specifically, the research project aims to first explore the association between impostor cognitions and burnout (Study 1) and then confirm the expected causal nature of this relationship over two time points (Study 2). Second, this thesis intends to clarify the existence of a negative relationship between impostor cognitions and peer comparisons (Study 1) and then confirm the directionality of this relationship

(Study 2). Third, this study will investigate the possible indirect effect of impostor cognitions on each burnout dimension via peer comparisons (Study 1 and 2). Fourth, I will investigate the possible role of failure normalising feedback from in-group and non in-group sources in moderating the relationship between impostor cognitions and peer comparisons (Study 1 and 2).

Table 1

Outline of Planned Studies

	Study 1	Study 2
Design	Cross-sectional online survey	Repeated measures within-subjects design (2 time points), online survey
Overall Aim	To initially explore the associations between impostor cognitions, peer comparisons and dimensions of burnout	To confirm the expected relationships between impostor cognitions, peer comparisons and dimensions of burnout and determine directionality between key variables
Specific Aims	1. Explore the association between impostor cognitions and burnout 2. Explore the association between impostor cognitions and peer comparisons 3. Explore the indirect effect of impostor cognitions on each burnout dimension via peer comparisons 4. Explore the moderating role of in-group failure normalising information in the relationship between impostor cognitions and peer comparisons	1. Confirm whether impostor cognitions predict burnout over time 2. Confirm whether impostor cognitions predict peer comparisons over time 3. Confirm the indirect effect of impostor cognitions on each burnout dimension via peer comparisons over time 4. Confirm the moderating role of in-group failure normalising information in the relationship between impostor cognitions and peer comparisons over time

Study 1

Study 1 sought to explore the associations between impostor cognitions, peer comparisons and burnout amongst a sample of Australian academics in a cross-sectional study design. Academics were selected as they have been found to be prone to impostor cognitions (Topping & Kimmel, 1985). Based on the preceding literature review, the following hypotheses were developed (Table 2).

Table 2

Summary of Study 1 Hypotheses

H	Description
H1	Impostor cognitions will be positively associated with the emotional exhaustion and cynicism dimensions of burnout (H1a) and will be negatively associated with professional efficacy (H1b).
H2	Impostor cognitions will be negatively associated with peer comparisons.
H3	In-group failure normalising will moderate the negative relationship between impostor cognitions and peer comparisons. The negative relationship between impostor cognitions and peer comparisons will be attenuated when failure normalising from the in-group is high and stronger when in-group failure normalising is low.
H4	Peer comparisons will be negatively associated with the emotional exhaustion and cynicism dimensions of burnout (H4a) and positively associated with professional efficacy (H4b).
H5	There will be a significant indirect effect indicating that impostor cognitions impact the three burnout dimensions via peer comparisons.
H6	The culmination of these hypotheses is a first stage moderated mediation whereby the anticipated indirect effect described in H5 will be conditional on exposure to in-group failure normalising information.

Note. **H = Hypothesis**

Method

Participants and design

A cross-sectional online questionnaire was administered to participants via survey platform Qualtrics. Participants were offered the chance to win an iPad mini as an incentive to participate in the research. A total of 222 Australian university academic staff completed the survey. Five respondents were removed from the analysis because they exceeded more than 5% missing data on variables of key interest. Thus, the total number of participants who were included in the analysis was 217.

Table 3.

Demographics of the Academic Sample

State or Territory of residence			Field of work*		
	Number	(%)		Number	(%)
NSW	33	(15.20)	Research only	41	(18.90)
ACT	78	(35.90)	Teaching only	6	(2.80)
QLD	23	(10.60)	Research and teaching	154	(71.00)
SA	21	(9.70)	Post-doctoral position	32	(14.70)
WA	18	(8.30)	Departmental or faculty management	13	(6.00)
Tas	10	(4.60)	Senior leadership	17	(7.80)
NT	8	(3.70)			
Vic	25	(11.50)			

Note.
* Participants were asked to nominate as many as applied

The sample was comprised of 97 (44.70%) males and 120 (55.30%) females whose ages ranged from 27 to 72 years (M = 46.04 years, SD = 10.57). The average

years served as an academic ranged from between less than a year to 45 years (*M* = 14.38, *SD* = 9.80). Of the sample, 84.3% of the academics worked full-time (*n* = 183), 11.1% worked part-time (*n* = 24), 3.7% worked on a casual basis (*n* = 8). Additional demographics of interest are provided in Table 3. According to a report investigating the nature of the academic workforce (Bexley, James & Arkoudis, 2011), the sample selected was generally representative of the Australian academic population.[1]

Materials and procedure

Academics were emailed an invitation to participate in the research. Participants accessed the survey via a link provided in the email. Participants were then asked to provide key demographic details age, gender, years spent working in academia, state or territory of residence and employment status. The survey took approximately 15 – 20 minutes to complete.

Impostor cognitions were assessed using the Clance Impostor Scale (Clance, 1985), which measures the extent that participants experienced impostor related cognitions. This measure is considered a psychometrically sound measure of impostor cognitions (Cozzarelli & Major, 1990). The scale consists of 20-items (e.g., "I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task", "It is hard for me to accept compliments or praise about my intelligence or accomplishments"). Participants were asked to indicate to what degree each of the statements applied to them over the previous 12 months on a Likert Scale from 1(Strongly disagree) to 5(Strongly agree). The internal reliability of this scale (α = .93) was similar to that found in previous research (e.g. Chrisman et al., 1995). Ratings were added together to form an overall score between 20 and 100.

[1] This study was conducted solely by the author and was not part of a broader study conducted by the supervisors.

Individuals who score higher on the scale demonstrate more severe impostor cognitions.

Failure normalising was measured using items developed by the researchers for the purpose of this study. Participants were asked to rate how often an in-group member (supervisor, mentor or other superior/ a peer or colleague) or non in-group member (a non-work friend or family member) had provided information that normalised failure in the last 3 months. Sample items included, "…has told me it is normal to sometimes "mess up" or underperform at work" "…has made me feel that it is OK to make a mistake or fail at work." Participants answered on a 5-point Likert scale from 1 (Never) to 5 (Frequently). The measure had adequate internal consistency; for in-group members ($\alpha = .82$) and for non in-group members ($\alpha = .81$).

Peer comparisons were measured using a modified version of the rank dimension of the Social Comparison Scale (Allan & Gilbert, 1995). This scale was developed to measure participant's perceptions of their social standing relative to their colleagues. The scale consists of four bipolar characteristics: Inferior-Superior, Incompetent-Competent, Untalented-More Talented and Less Intelligent-More Intelligent (replaced the original item Weaker-Stronger). Participants were asked to compare themselves to other academics and provide a rating of their proximity to each of the characteristics on a 10-point scale. Scores were averaged with scores closer to 10 representing a positive comparison to their colleagues and scores closer to 1 indicating a negative comparison to colleagues. Internal reliability was satisfactory ($\alpha = .86$).

Burnout was measured using the Maslach Burnout Inventory (General Survey; Schaufeli, Leiter, Maslach, & Jackson, 1996). The 16-item scale is widely used and is considered a valid measure of burnout (Shanafelt et al., 2009). The subscales include

emotional exhaustion (e.g., “I feel emotionally drained from my work”), cynicism (e.g., “I feel I treat some people I encounter at work as if they were impersonal 'objects'”) and professional efficacy (e.g., “At work, I feel confident that I am effective in getting things done”). Participants rate to what degree each statement applies to them currently from 1(Very Mild/Barely Noticeable) to 5(Very Strong). The General Survey version of the burnout inventory was selected rather than the Education version as the latter has a focus on teaching which is not appropriate for our sample given not all academics had teaching responsibilities. Scores were added to create an overall total for each subscale. The internal reliability for each subscale was as follows: emotional exhaustion $\alpha = .90$, cynicism $\alpha = .89$ and professional efficacy $\alpha = .84$.

Analytic approach

The hypotheses were tested using PROCESS (Hayes, 2012) a custom dialogue box that can be added to SPSS version 22. PROCESS was selected for the current study as it allows for the examination of multiple moderators and mediators simultaneously (Jensen, King, Carcioppolo, & Davis, 2012). Model 7 was used to test the model described in the hypotheses.

The model is presented as both a conceptual model (Figure 2a) and statistical model (Figure 2b). According to Hayes (2012), in Model 7 the interaction between X and W on Y is mediated by M. In the present study, there is an anticipated direct effect of impostor cognitions (X) on each burnout dimension (Y) (denoted c’1 Figure 2b). However, it is also predicted that there will be an indirect effect of impostor cognitions on each burnout dimension via peer comparisons (M). Further, it is hypothesised that the nature of this indirect effect will be conditional on the frequency

of in-group failure normalising information (W), which is represented by path a1J in Figure 2b.

I wished to explore whether non in-group failure normalising (e.g., failure normalising from friends and family outside the profession) also moderated the relationship between impostor cognitions and peer comparisons. As such, Model 9 was also run with non in-group failure normalising entered as an additional moderator. This was done in order to examine whether in-group failure normalising was specifically effective as a moderator as opposed to failure normalising more generally. On the basis of the previous discussion, it was anticipated that non-group failure normalising would not function as a significant moderator when in-group failure normalising is included in the model.

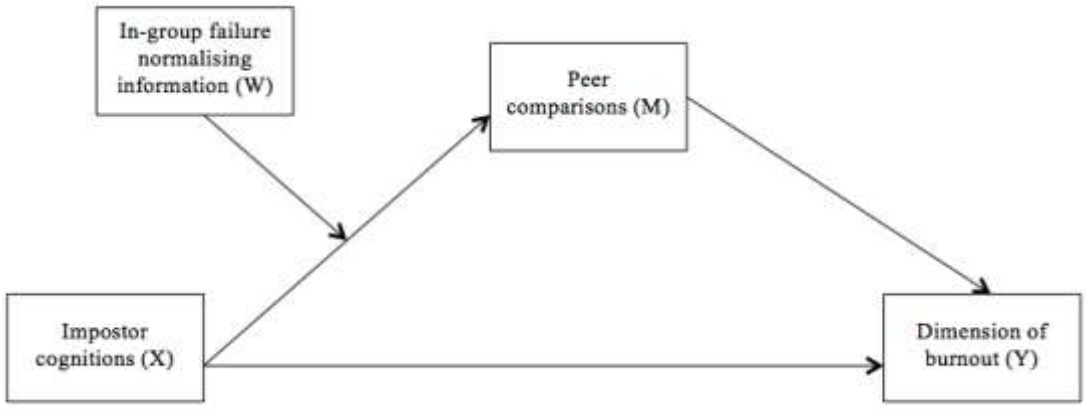

Figure 2a. Conceptual model of the hypothesised moderated mediation model on the dimensions of burnout (Model 7: Hayes, 2012)

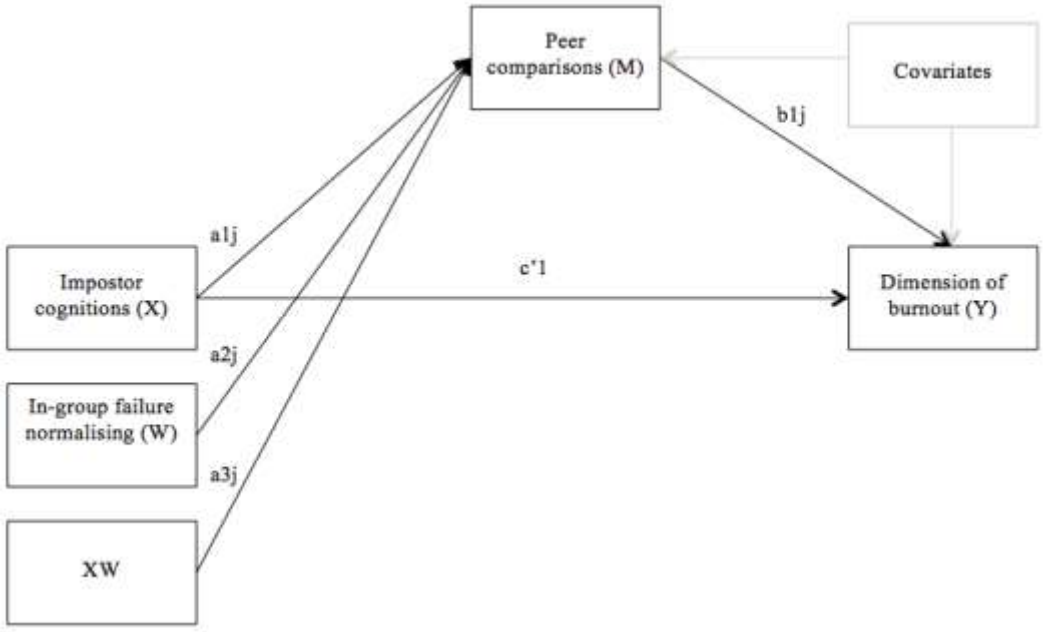

Figure 2b. Statistical model of the hypothesised moderated mediation model on the dimensions of burnout (Model 7: Hayes, 2012)

Results

Preliminary analysis

A Little's MCAR test was not statistically significant, indicating that the data was missing at random ($\chi^2(25)=24.70$, $p=.482$). Missing cases were replaced using the expectation maximisation (EM) algorithm (Enders, 2001). Three univariate outliers for professional efficacy were removed with z-scores greater or less than +/- 3.29 (Tabachnik & Fiddel, 2007). Thus, 214 participants remained in the analyses. Calculations of z-scores for skewness and kurtosis, as well as visual examination of histograms showed that normality was met for all variables. Scatterplots demonstrated linear relationships between all predictor and predicted variables.

There was no evidence of multicollinearity amongst predictor variables, although control variables age and years of experience as an academic were highly correlated ($r=.72$, $p<.001$). Thus, age was removed as a control variable in the analysis and years experience was retained. This is because experience, rather than

age, has a demonstrated relationship with lowered imposter cognitions (Thompson et al., 1997). Plots of residual and predicted values were examined and indicated that the assumption of homoscedasticity was met for all variables. All of the analyses that tested hypotheses were conducted with centered variables as this makes the regression coefficients for the focal predictor and the moderator more meaningful in a moderation model (Hayes, 2013).

Correlations and Descriptive Statistics

Bivariate correlations and descriptive statistics for all key variables and covariates are listed in Table 4. Impostor cognitions were not found to be associated with sex (p=.870), but were negatively correlated with years of experience as an academic (r=-.17, p=.012), and age (r=-.21, p=.002) indicating that both older and more experienced academics scored lower on the measure of impostor cognitions. Impostor cognitions were also positively associated with higher emotional exhaustion (r=.25, p<.001) and cynicism scores (r=.28, p<.001) and negatively associated with professional efficacy scores (r=-.38, p<.001). A significant negative relationship between impostor cognitions and peer comparisons (r=-.45, p<.001) also emerged.

Peer comparisons were not significantly correlated with emotional exhaustion (p=.370) but were significantly negatively correlated with cynicism (r=-.20, p<.001) and positively correlated with professional efficacy (r=.43, p<.001). Finally, in-group failure normalising information was found to be significantly positively associated with impostor cognitions (r=.21, p=.002) but was not correlated with peer comparisons (p=.251). Non in-group failure normalising was not correlated with impostor cognitions (p=.734) or peer comparisons (p=.629).

Table 4

Descriptive Statistics and Bivariate Correlations

			Correlations								
Variable	*M*	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Sex (0=male, 1=female)	-	-	-								
2. Age	46.04	10.57	-.15*	-							
3. Yrs as an academic	14.38	9.80	-.29**	.72**	-						
4. Impostor cognitions	58.15	14.77	.01	-.21**	-.17*	-					
5. Exhaustion	13.63	5.23	.09	.07	.13 $^{\eta}$	.25**	-				
6. Cynicism	12.35	5.45	-.07	-.03	.11	.28**	.54**	-			
7. Professional efficacy	19.06	3.47	.02	.13 $^{\eta}$	.10	-.38**	-.22**	-.31**	-		
8. PC	7.04	1.19	-.12 $^{\eta}$	.32**	.32**	-.45**	-.06	-.20**	.43**	-	
9. In-group FN	2.19	1.08	-.06	-.26**	-.13 $^{\eta}$	.21**	-.01	-.03	.15*	-.08	-
10. Non in-group FN	1.96	.80	.04	-.21**	-.05	.02	.17*	.00	.03	.03	.56**

Note.

PC = Peer comparisons FN = Failure Normalising

$^{\eta}$ Approaching significance * $p<.05$ (two-tailed) ** $p<.01$ (two-tailed)

Moderated mediation models to examine hypotheses

PROCESS model 7 (Hayes, 2012) was used to examine the proposed moderated mediation. Three models were produced; one for each burnout dimension. In each model, impostor cognitions was entered as the predictor variable (X), failure normalising from the in-group (W) was entered as the moderator, peer comparisons was the mediator (M) and emotional exhaustion, cynicism and professional efficacy were entered as the predicted variables (Y) in separate models. Years at work, sex and the two burnout dimensions that were not entered as the focal predicted variable were entered as covariates. The analysis was conducted with the default 1000 bootstrap samples.

Emotional exhaustion. The overall model predicting exhaustion was significant $F(6, 206)=18.00$, $p<.001$ $R^2=.34$. Relevant statistics are presented in Table 5. In support of predictions (H1a), the direct effect of impostor cognitions on emotional exhaustion was statistically significant in the positive direction ($B = .05$, $t=2.37$, $p=.019$, CI 95% .01, .10), indicating the more severe impostor cognitions were associated with higher self-reported emotional exhaustion. In support of predictions, there was a significant negative association between impostor cognitions and peer comparisons ($B=-.02$, $t=-3.89$, $p<.001$, CI 95% -.03, -.01), indicating that more severe impostor cognitions were associated with less positive peer comparisons (H2). The expected moderating role of in-group failure normalising (H3) in the relationship between impostor cognitions and peer comparisons was not statistically significant ($p=.294$). There was also no moderating role for non in-group failure normalising ($p=.301$).

Table 5.

Ordinary Least Squares Model Coefficients (*B*), Standard Errors (*SE*) and *t*-values for Model Paths Examining Emotional Exhaustion

	Variable to PC (M)				Variable to EE (M)			
Predictor	Path	*B*	*SE*	*t*	Path	*B*	*SE*	*t*
Constant	-	-.08	.09	-.88	-	14.42	.41	35.28**
Sex	covariate	-.15	.14	-1.07	covariate	1.78	.62	2.84**
Years at work	covariate	.03	.01	3.66**	covariate	.06	.03	1.90 $^{\eta}$
Cynicism	covariate	-.01	.01	-.88	covariate	.48	.06	8.06**
Professional efficacy	covariate	.10	.02	4.53**	covariate	-.11	.10	-1.05
IC (X)	a1j	-.02	.01	-3.89**	c'1j	.06	.02	2.37*
In-group failure normalising (W)	a2j	-.08	.11	-.74	-			
IC * in-group failure normalising (XW)	a3j	.01	.01	1.05	-			
PC	-				b1j	.54	.31	1.74 $^{\eta}$

Note.
IC = Impostor cognitions; PC = Peer comparisons; EE = Emotional exhaustion
$^{\eta}$ Approaching significance * $p<.05$ ** $p<.001$

The relationship between peer comparisons and emotional exhaustion was expected to be negative (H4a) but was approaching statistical significance (*B*=.54, *t*=.31, *p*=.083, CI 95% -.07, 1.14) in the positive direction. Consistent with predictions (H5), the indirect effect of impostor cognitions on emotional exhaustion via peer comparisons was significant (*B* =-.01, CI 95% -.03, >.01). This model is presented in Figure 3. Given the moderating role of in-group failure normalising was not statistically significant, there was no support for the anticipated moderation of this indirect effect (H6).

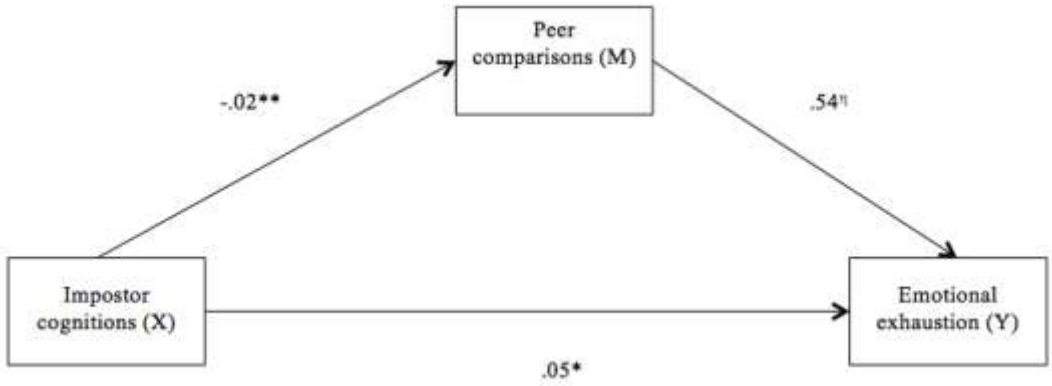

Figure 3. Standardised regression coefficients (*B*) for the relationship between impostor cognitions and emotional exhaustion indirectly via peer comparisons

Note. η Approaching significance * $p<.05$ ** $p<.001$

Cynicism. The same analysis as above was repeated with cynicism as the predicted variable (Table 6). The overall model predicting cynicism was found to be significant $F(6, 206)=19.43$, $p<.001$, $R^2=.36$. In contrast to predictions (H1a), the direct effect of impostor cognitions on cynicism was not statistically significant ($p=.266$). However, significant direct effects are not a necessary prerequisite for a statistically significant indirect effect and so the analysis was continued as planned (Zhao, Lynch, & Chen, 2010). Similar to the previous model, a significant negative relationship was evident between impostor cognitions and peer comparisons ($B=-.02$, $t=-4.33$, $p<.001$, CI 95% -.03, -.01). The predicted two-way interaction between impostor cognitions and failure normalising from the in-group (H3) was not statistically significant ($p=.343$). Non in-group failure normalising was also not found to significantly moderate this relationship ($p=.185$).

Table 6

Ordinary Least Squares Model Coefficients (*B*), Standard Errors (*SE*) and *t*-values for Model Paths Examining Cynicism

	Variable to PC (M)				Variable to Cynicism (M)			
Predictor	Path	*B*	*SE*	*t*	Path	*B*	*SE*	*t*
Constant	-	-.09	.09	-.95	-	11.85	.42	28.07
Sex	covariate	-.17	.14	-1.19	covariate	-1.13	.65	-1.74 [η]
Years at work	covariate	.02	.01	3.24*	covariate	.04	.03	1.26
Emotional exhaustion	covariate	.01	.01	1.04	covariate	.50	.06	8.06**
Professional efficacy	covariate	.11	.02	5.00**	covariate	-.21	.10	-2.03*
IC (X)	a1j	-.02	.01	-4.33**	c'1j	.03	.02	1.11
In-group failure normalising (W)	a2j	-.06	.11	-.51	-			
IC * in-group failure normalising (XW)	a3j	.01	.01	.95	-			
PC	-				b1j	-.55	.32	-1.74 [η]

Note. IC = Impostor cognitions; PC = Peer comparisons
[η] Approaching significance * $p<.05$; ** $p<.001$

Consistent with predictions (H4a), the relationship between peer comparisons and cynicism was approaching significance in the negative direction (*B*=-.55, *t*=-1.74, *p*=.083, CI 95% -1.17, .07). In support of H5, a significant indirect effect emerged whereby impostor cognitions were associated with cynicism via peer comparisons CI 95%(<.01, .03), depicted by Figure 4. Again, as this indirect effect was not moderated by in-group failure normalising, no support was found for H6.

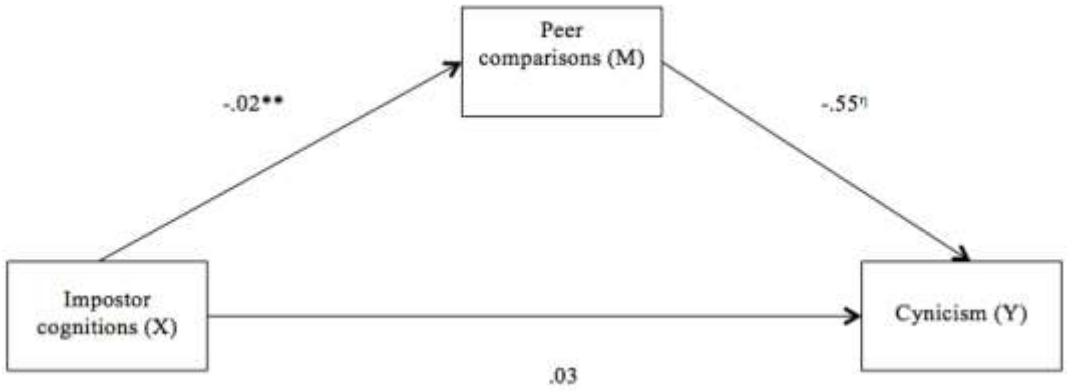

Figure 4. Standardised regression coefficients (*B*) for the relationship between impostor cognitions and cynicism indirectly via peer comparisons

Note. η Approaching significance **p<.001

Professional efficacy. The same analysis used above was conducted with professional efficacy as the predicted variable (Table 7). As gender and emotional exhaustion were not found to significantly contribute to the prediction of peer comparisons or professional efficacy, they were removed from the final model, which was found to be significant $F(4, 208)=18.80$, $p<.001$, $R^2=.27$. The expected (H1b) direct effect of impostor cognitions on professional efficacy was significant in the negative direction (*B*=-.04, *t*=-2.78, *p*=.006, CI 95% -.08, -.01). As expected (H2), a significant negative relationship also emerged between impostor cognitions and peer comparisons (*B*=-.03, *t*=-5.25, *p*<.001, CI 95% -.04, -.02). In contrast to predictions (H3), the relationship between impostor cognitions and peer comparisons was not moderated by in-group failure normalising (*p*=.229) nor by non in-group failure normalising information (*p*=.669). Consistent with the hypothesis (H4b), peer comparisons were found to be positively related to professional efficacy (*B*=.91, *t*=4.49, *p*<.001, CI 95% .51, 1.32).

Table 7

Ordinary Least Squares Model Coefficients (*B*), Standard Errors (*SE*) and *t*-values for Model Paths Examining Professional Efficacy

	Variable to PC (M)				Variable to PE (M)			
Predictor	Path	*B*	*SE*	*t*	Path	*B*	*SE*	*t*
Constant	-	-.02	.07	-.23	-	19.05	.21	92.49**
Years at work	covariate	.03	.01	4.41**	covariate	>-.01	.02	-.19
Cynicism	covariate	-.03	.01	1.92	covariate	-.12	.04	-3.00*
IC (X)	a1j	-.03	.01	5.25**	c'1j	-.04	.02	-2.78*
In-group failure normalising (W)	a2j	-.02	.11	-.19	-			
IC * in-group failure normalising (XW)	a3j	.01	.01	1.21	-			
Peer comparisons	-				b1j	.91	.20	4.49**

Note. IC = Impostor cognitions; PC = Peer comparisons; PE = Professional efficacy
$p<.05$; **$p<.001$

The anticipated (H5) indirect effect of impostor cognitions and professional efficacy via peer comparisons was found to be significant CI 95%(-.04, -.02) and is represented in Figure 5. However, given that the interaction between impostor cognitions and in-group failure normalising was not significant, this indirect effect was not moderated.

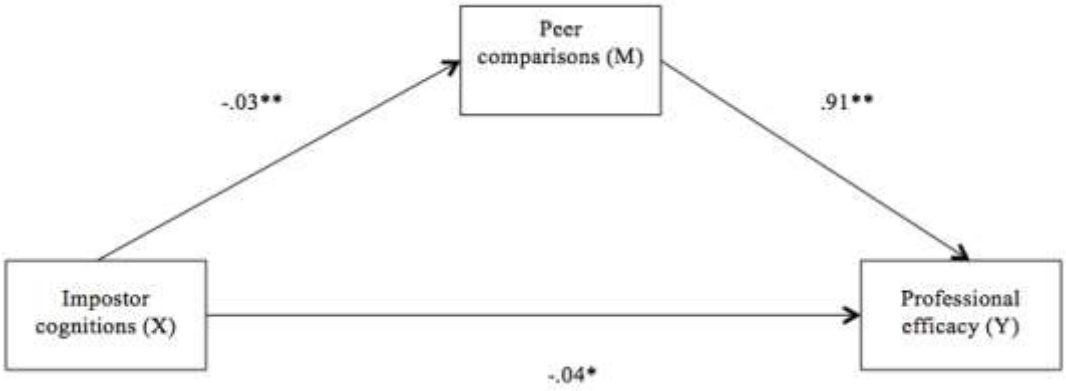

Figure 5. Standardised regression coefficients (*B*) for the relationship between impostor cognitions and professional efficacy indirectly via peer comparisons

Note. $^{\eta}$ Approaching significance * $p<.05$; ** $p<.001$

Discussion

The aims of Study 1 were to: (1) explore the direct relationship between impostor cognitions and each of the three dimensions of burnout, (2) clarify whether impostor cognitions and peer comparisons were negatively associated, (3) investigate the proposed indirect effect of impostor cognitions on the burnout dimensions via peer comparisons, and (4) explore the proposed first-stage moderating role of in-group failure normalising in the indirect effects model.

Partial support was found for H1, as impostor cognitions were associated with the emotional exhaustion and professional efficacy dimensions of burnout, but not cynicism. Specifically, more severe impostor cognitions were associated with higher self-reported emotional exhaustion and a lowered sense of professional efficacy. This is somewhat consistent with a previous correlational study conducted by Legassie et al. (2008), which found that impostor cognitions were negatively associated with the professional efficacy dimension of burnout. This provides initial support for a direct

effect between impostor cognitions and emotional exhaustion and professional efficacy.

Support was found for the anticipated negative relationship between impostor cognitions and peer comparisons (H2). The results showed that more severe impostor cognitions were associated with less positive peer comparisons. This finding is similar to previous research amongst children (Chayer & Bouffard, 2010; Bouffard et al., 2011) and provides novel evidence that adults with impostor cognitions have inflated perceptions of how well others are performing relative to themselves.

The expected moderating role of in-group failure normalising in the relationship between impostor cognitions and peer comparisons (H3) was not statistically significant, and therefore no support was found for the overall moderated mediation model (H6). This is in contrast to the prediction that in-group failure normalising would alleviate the negative relationship between impostor cognitions and peer comparisons.

The hypothesis that peer comparisons would be related to each burnout dimension (H4) was generally supported by the results. More positive peer comparisons were associated with lower self-reported cynicism (H4a) and a higher sense of professional efficacy (H4b). This finding is consistent with previous research amongst teachers (e.g. Carmona et al., 2006) that found that seeing one's self as inferior to one's peers resulted in higher levels of burnout. However, while a statistically significant association was found between peer comparisons and emotional exhaustion, the relationship was such that more peer comparisons was associated with higher self-reported emotional exhaustion. The direction of this relationship is opposite to the expected negative relationship between these two variables.

There are several possible reasons for this relationship. First, a third variable not included in this analysis could be related to both more positive peer comparisons and high emotional exhaustion. For example, high scores on both of these measures might be explained by seniority in the academic profession. In comparison to those earlier in their career, more senior academics report having poorer work-life balance and greater administrative responsibilities and are more likely to see their job as a significant source of stress (Bexley et al., 2011). This indicates that senior academics might experience more severe stressors than less senior academics, thereby increasing the likelihood they will experience emotional exhaustion. However, senior academics might also be more likely to compare themselves positively to peers because of the status gained from the seniority of their position.

Another reason for a positive association between peer comparisons and emotional exhaustion is that academics might exert additional effort to achieve or maintain positive peer comparisons. Rating one's self positively in comparison to peers could represent a personal resource (Xanthopoulou et al., 2007). The increasingly competitive nature of the academic profession (Rust & Kim, 2012) might result in the threat of losing this perceived status particularly salient. Thus, it is possible that academics who see themselves superior to their peers are motivated to expel additional effort to maintain this resource and reduce the threat of losing it. According to COR, sustained effort to reduce the threat of losing this sense of superiority would then lead to emotional exhaustion over time.

Finally, the expected indirect effect of impostor cognitions on each burnout dimension via peer comparisons (H5) was found. This provides initial evidence that impostor cognitions affect burnout indirectly through peer comparisons. Consistent with the hypotheses, higher impostor cognitions were associated with more positive

peer comparisons, which in turn was associated with higher cynicism and lower professional efficacy. However, while impostor cognitions did affect emotional exhaustion via peer comparisons, the relationship between peer comparisons and emotional exhaustion was opposite to what was expected.

The cross-sectional nature of the study has important implications for interpreting the above findings, as it does not permit conclusions to be draw about directionality of the relationships among variables. In particular, while I have proposed that higher impostor cognitions predict less positive peer comparisons, this relationship could plausibly occur in the opposite direction. That is, the tendency to make less positive (i.e., more negative) social comparisons may predispose individuals to view themselves negatively in such a way that those with impostorism do as Bouffard and colleagues concluded from their study.

Tangential evidence suggests that negative attentional biases can impact on how individuals perceive themselves. For example, Rapee and Heimberg's (1997) cognitive-behavioural model of social phobia proposes that the tendency to attend to negative cues and threats in the social environment maintains social fears because these attentional biases lead to negative self-evaluation. Similarly, it can be inferred that having a negative bias when comparing one's self to colleagues could possibly result in the negative self-evaluation and self-doubt experienced by those with impostorism. Thus, to confirm the direction of the relationship between impostor cognitions and peer comparisons, a two-wave repeated measures design was used in Study 2.

The failure to find a significant moderating effect might be attributable to the limited scope of the two-items used to measure failure normalising. The measure only assessed two types of failure normalising information that might possibly be provided.

As such, other common forms of failure normalising information were unlikely captured by this measure. Study 2 will therefore include a more robust measure of failure normalising information to overcome the potential limitations associated with using a two-item measure in the present study. The new measure included additional items intended to measure other likely ways that people might communicate that failure is normal in a workplace context. Therefore it is more likely to be capturing a wider range of possible forms of failure normalising information that might be provided.

Finally, as the present study was limited to academic staff, the results have restricted generalisability beyond this profession. In particular, while academics in the present study did not report their hours worked, assessments of the Australian academic workforce has revealed that academics in Australia work longer hours than academics in most other countries and that their work hours are higher in comparison to the domestic workforce in Australia (Coates et al., 2009). Long hours of work have been shown to result in stress that leads to burnout (e.g. Barnett, Gareis, & Brennan, 1999; Sease & Scales, 1998). Thus, the relationship between impostor cognitions and burnout might be convoluted or masked in the sample of academics. In Study 2, the average number of hours worked will be controlled for in the analysis so that the effects of this factor are accounted for. Study 2 will also consider a broader range of professions so that the results can be generalised to a greater proportion of the workforce.

Study 2

Study 2 aimed to replicate the Study 1 findings and also clarify the causal direction of the relationship of impostor cognitions with peer comparisons and the three burnout dimensions. A secondary aim was to explore the proposed role of in-

group failure normalising in alleviating the negative relationship between impostor cognitions and peer comparisons. The study employed a repeated-measures design with two time points (TI and T2) three months apart amongst a broad range of Australian professionals. Professionals were considered to be those who are working in an occupation that requires specialised educational training. The hypotheses for Study 2 are listed in Table 8.

Table 8.

Summary of Study 2 Hypotheses

H	Description
H1	Higher impostor cognitions at T1 will predict higher emotional exhaustion and cynicism (H1a) and lower professional efficacy (H1b) at T2 (independent of the predicted impact of T1 impostor cognitions on T2 peer comparisons).
H2	Higher T1 impostor cognitions will predict less positive peer comparisons at T2.
H3	In-group failure normalising at T1 will moderate the negative relationship between T1 impostor cognitions and peer comparisons at T2. The negative relationship between T1 impostor cognitions and T2 peer comparisons will be attenuated when failure normalising from the in-group is high and stronger when in-group failure normalising is low.
H4	T2 peer comparisons will be negatively associated with the emotional exhaustion and cynicism dimensions of burnout at T2 (H4a) and positively associated with professional efficacy at T2 (H4b).
H5	There will be a significant indirect effect indicating that T1 impostor cognitions affect the three burnout dimensions at T2 via T2 peer comparisons.
H6	The culmination of these hypotheses is a moderated mediation whereby the anticipated indirect effect described in H5 will be conditional on exposure to in-group failure normalising information.

Method

Participants and design

A mailing list was compiled from publicly available email addresses of Australian professionals and online invitations were sent via email. To assess the direction of relationships amongst key variables, a two-wave repeated-measures design was employed. At T1, 297 surveys were completed. Three months later at T2, 178 surveys were completed, indicating a response rate of 59.93%. Participants were required to create a unique individual code at T1 (i.e., the first letter of their surname and the final three digits of their mobile phone number) and re-submit this code at T2 to enable their data to be matched. Twenty-three cases could not be matched between time points or included too much (>5%) missing data on critical variables and were therefore removed from the analysis. Thus, the total number of participants who were included in the analysis was 155, comprising 68 (43.9%) males and 86 (55.5%) females (1 unspecified) whose ages ranged from 19 to 77 years (M = 47.18 years, SD = 13.71). Participants were from most Australian States and Territories (n=58 (37.4%) from New South Wales; n=43 (27.7%) from Queensland; n=31 (20%) from Victoria; n=13 (8.4%) from Western Australia, n=3 from South Australia (1.9%); n=2(1.3%) from the Australian Capital Territory and 1 (.6%) from the Northern Territory). Of the sample, 108 (69.7%) were working full time, 33 (21.3%) were working part time, 9 (5.8%) as a contractor and 5 (3.2%) on a casual basis. The average hours worked per week was approximately 40 hours (M = 39.44, SD = 14.22). All participants had tertiary education or training. The number of individuals in each profession type is listed in Table 9. The average reported tenure in the participant's current role was M = 12.34 years, SD = 11.62.

Table 9:

Frequency of professions of study participants

Profession	Number (%)	Profession	Number (%)
Accounting and Finance	21 (13.55)	Legal	6 (3.87)
Architects, town and urban planning	19 (12.33)	Dietitian	7 (4.52)
Psychology	38 (24.52)	Physiotherapy	9 (5.81)
Director / Owner / Management	8 (5.16)	Orthodontist	15 (9.68)
Administration	5 (3.22)	Other professions not previously specified	27 (17.42)

Materials and procedure

An online questionnaire survey was administered to participants via email. Participants were offered the chance to win one of three iPad minis as an incentive to participate in the research. Participants were then asked to create a unique survey code so that the responses to from T1 could be anonymously matched to the T2 survey. Participants were asked to provide key demographic information (i.e., sex, age, hours worked, employment status, profession, state or territory of residence, highest level of education, and tenure in current role). Participants were also asked to provide a contact email address so that invitations could be sent at three months after they completed the T1 survey. Email addresses were completed on a separate survey form to ensure that the raw data remained anonymous.

The surveys at both time points included the same scales used in Study 1. Each scale demonstrated sufficient reliability: impostor cognitions (T1 α = .94, T2 α = .93), peer comparisons (T1 α = .84, T2 α = .81), and the burnout dimensions (emotional exhaustion T1 α = .92, T2 α = .92; cynicism T1 α = .83, T2 α = .83; and professional efficacy T1 α = .75, T2 α = .67). However, the failure normalising scale

was modified for Study 2. Participants were asked to rate how often an in-group member (someone in their own profession) or non in-group member (someone outside of their profession) provided specific failure normalising information. However, five additional items were included beyond the items used in Study 1, including, "…have reassured me that others in my profession sometimes make mistakes at work", "…have told me that they have previously failed at achieving a goal at work", **"…**have said that others in my profession have made mistakes at some point in their career", "…have told me that others in my profession do not always produce perfect work" and "…have let me know that the occasional mistake is normal in my profession." These items were generated by the researcher. The internal consistency was acceptable for in-group members ($\alpha = .78$) and non in-group members ($\alpha = .70$). Higher scores represented higher frequency of failure normalising information.

Analytic approach

Prior to testing the moderated mediation model, the Generalised Estimating Equations (GEE) method was used to examine the possible causal direction of the relationship between impostor cognitions and peer comparisons. GEE is suitable for longitudinal data and accounts for variance attributable to within-subjects. GEE is able to focus on between-subject effects by partialing out the variance attributable to T1 measures from the same participants. This analysis was suitable for the research question because I was interested in examining predictive relationships, rather than within-subjects change. Given that the outcome variables were normally distributed a linear function was applied.

In order to examine the moderated mediation model, PROCESS Model 7 (Hayes, 2012) was again used. The hypothesised statistical model for Study 2 is summarised in Figure 6. Model 9 was also used to test whether non in-group failure

normalising significantly moderated the relationship between impostor cognitions and peer comparisons.

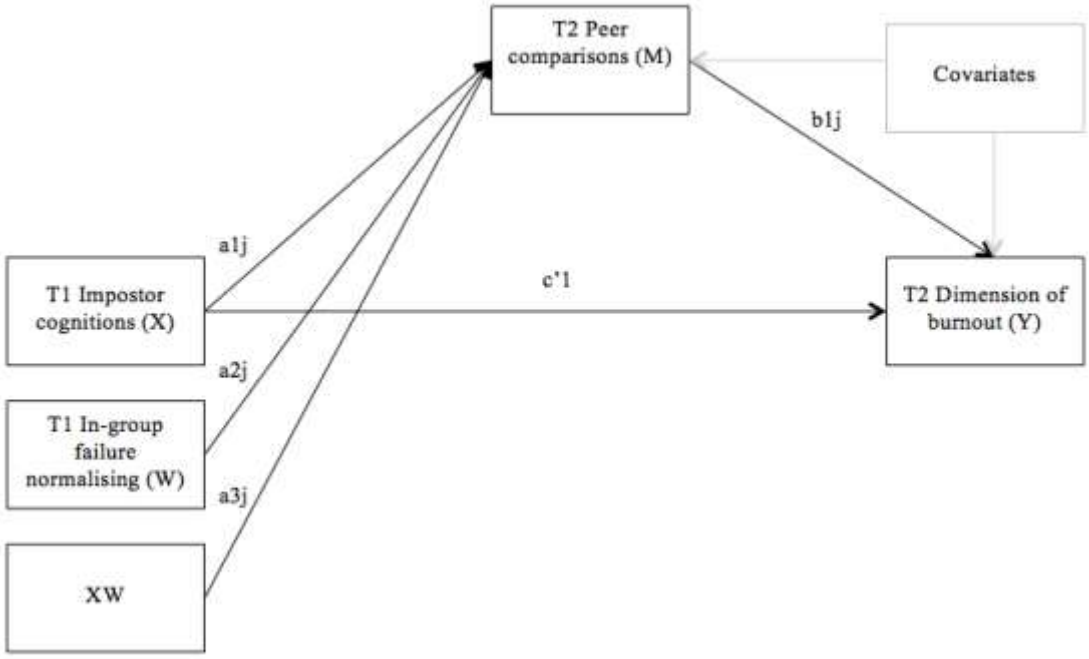

Figure 6. Statistical model of the hypothesised moderated mediation model on the dimensions of burnout (Model 7: Hayes, 2012)

Results

Preliminary analyses

Participants who completed 5% or less of the T1 or T2 surveys were initially removed from the analysis. One-hundred and fifty-five participants completed surveys sufficiently at both time points. Little's MCAR test indicated that data was missing at random ($\chi^2(25)=24.70$, $p=.482$). Missing cases were therefore replaced using the EM algorithm. In order to increase the accuracy of predicted values EM was performed on the items for each scale separately for each time point. Ten univariate outliers were removed that had z-scores over +/- 3.29; three for T1 peer comparisons, two outliers for T2 peer comparisons, three for T1 accomplishment and two for T2 accomplishment. One hundred and forty-five participants remained in the analysis.

Calculations of z-scores for skewness and kurtosis, as well as the visual examination of histograms showed that normality was met for all key variables once univariate outliers were removed. An examination of residual and predicted values plots revealed that the assumption of homoscedasticity was met for all variables. Linearity of the relationships between predictor variables and predicted variables was confirmed using scatterplots. Assessment of the bivariate correlations indicated no multicollinearity amongst predictor variables. As in Study 1, mean centered variables were used for all predictor variables in the analyses testing the key hypotheses.

Bivariate correlations and descriptive statistics As listed in Table 10, T1 impostor cognitions were not significantly correlated with sex (p=.117) but T2 impostor cognitions were positively correlated with sex (r=.22, p=.009), indicating that higher impostor cognitions at T2 were associated with being female at this time point. This is in contrast to Study 1 where no correlation was found between impostor cognitions and sex. This finding suggests that being female may be predictive of greater self-reported impostor cognitions. Impostor cognitions were negatively associated with age (T1: r=-.26, p=.002; T2: r=-.28, p=.001) and tenure (T1: r=-.20, p=.025; T2: r=-.21, p=.001), indicating that younger professionals and those with fewer months experience in their current role reported more severe impostor cognitions. Impostorism was not correlated with average hours worked (T1: p=.188 T2: p=.325).

There were strong positive correlations between T1 and T2 impostor cognitions (r=.82, p<.001) and T1 and T2 emotional exhaustion scores (r=.79, p<.001).[2] Moderate correlations emerged between T1 and T2 cynicism (r=.67, p<.001), T1 and T2 professional efficacy (r=.49, p<.001), and T1 and T2 peer

[2] Strength of the correlations were rated according to recommendations by Cohen (1992).

comparisons (r=.65, p<.001). These findings indicate strong to moderate levels of stability over time, with T1 variables explaining 24-67% of the variance in their T2 counterparts.

T1 impostor cognitions were significantly positively correlated with T2 emotional exhaustion (r=.49, p<.001) and T2 cynicism (r=.44, p<.001) and negatively correlated with T2 professional efficacy (r=-.21, p=.013). These correlations show that higher T1 impostor cognitions predicted higher T2 emotional exhaustion and T2 cynicism scores and lower T2 professional efficacy scores. A significant negative correlation between T1 impostor cognitions and T2 peer comparisons (r=-.45, p<.001) was observed. T2 peer comparisons were negatively associated with T2 emotional exhaustion (r=-.29, p<.001) and T2 cynicism (r=-.29, p<.001) and positively associated with T2 professional (r=.35, p<.001).

Analysis of the relationship between impostor cognitions and peer comparisons

GEE was used to examine the causal direction of the relationship between impostor cognitions and peer comparisons. First, I examined whether T1 impostor cognitions predicted T2 peer comparisons. In this analysis, T1 impostor cognitions were entered as the focal predictor variable and T2 peer comparisons the dependent variable. The model controlled for T2 impostor cognitions and T1 peer comparisons. A significant positive relationship between T1 peer comparisons and T2 peer comparisons emerged ($X(1)$= 41.71, B = .62, $SE\ B$ = .10, p<.001). T2 impostor cognitions were not significantly associated with T2 peer comparisons (p=.485). As predicted (H2), T1 impostor cognitions negatively predicted T2 peer comparisons ($X(1)$= 6.02, B = -.03, $SE\ B$ = .01, p<.014).

Table 10.

Descriptive Statistics and Bivariate Correlations

Variable	*M*	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1. Sex (0=male, 1=female)	-	-	-																
2. Age	46.97	13.42	-.25**	-															
3. Tenure (total months)	11.74	10.89	-.28**	.59**	-														
4. Hours	39.69	14.39	-.21*	-.08	-.03	-													
5. T1 IC	53.86	13.95	.13	-.26**	-.20*	.11	-												
6. T2 IC	54.81	15.41	.22*	-.28**	-.21*	.08	.82**	-											
7. T1 Exhaustion	16.87	7.99	.02	-.33**	-.16	.08	.49**	.46**	-										
8. T2 Exhaustion	16.29	7.61	>-.01	-.34**	-.19*	>-.01	.43**	.48**	.79**	-									
9. T1 Cynicism	14.84	7.06	.05	-.26**	-.14	.05	.48**	.42**	.61**	.50**	-								
10. T2 Cynicism	14.38	6.95	.02	-.14	-.10	.04	.44**	.50**	.53**	.63**	.67**	-							
11. T1 PE	34.81	4.52	>-.01	.23**	.19*	-.05	-.44**	-.39**	-.23**	-.20*	-.32**	-.27**	-						
12. T2 PE	33.83	4.48	-.17*	.09	.19*	.10	-.21**	-.22**	-.05	-.15	-.11	-.24**	.49*	-					
13. T1 PC	7.56	1.09	-.11	.23*	.12	>-.01	-.43**	-.35**	-.15	-.16	-.19*	-.16	.40**	.23**	-				
14. T2 PC	7.32	1.26	-.10	.20*	.18*	-.07	-.45**	-.35**	-.18*	-.29**	-.18*	-.29**	.35**	.35**	.65**	-			
15. T1 In-group FN	3.44	.60	-.05	-.13	-.03	-.02	.03	-.04	-.09	-.08	-.06	-.16	-.07	-.03	-.08	-.01	-		
16. T2 In-group FN	3.43	.59	-.01	-.14	-.07	-.01	-.05	-.09	.03	.03	-.03	-.20*	.04	.06	.01	.07	.62**	-	
17. T1 Non in-grp FN	3.62	.51	.29**	-.17*	-.13	-.04	.35**	.38**	.06	.10	.03	.05	-.05	-.06	-.10	.09	.41**	.26**	-
18. T2 Non in-grp FN	3.52	.57	.13	-.22*	.10	-.02	.17*	.30*	.11	.11	.14	.02	-.07	.07	-.07	.01	.15	.23**	.48**

Note. IC = Impostor Cognitions, PC = Peer comparisons PE = Professional efficacy FN = Frequency of Failure Normalising In-Grp=In-group

* p<.05 (two-tailed) ** p<.01 (two-tailed)

Next, I examined the alternative causal direction whereby T1 peer comparisons predicted T2 impostor cognitions. T1 peer comparisons were entered as the focal predictor variable and T2 impostor cognitions were the dependent variable. This model controlled for T2 peer comparisons and T1 impostor cognitions. The analysis revealed a significant relationship between T1 impostor cognitions and T2 impostor cognitions ($X(1)$=252.11, B = .91, $SE\ B$ = .06, p<.001). No significant relationship was found between T2 peer comparisons and T2 impostor cognitions (p=.503). Consistent with predictions, no significant relationship was found between T1 peer comparisons and T2 impostor cognitions (p=.538). Thus, this set of analyses revealed that T1 impostor cognitions were predictive of T2 peer comparisons, whereby greater impostor cognitions anticipated less positive peer comparisons three months later.

Moderated mediation models to examine hypotheses

PROCESS model 7 was run three times for each of the three burnout dimensions. In each model, T1 impostor cognitions was entered as the predictor variable (X), T1 failure normalising from the in-group (W) was entered as the moderator, T2 peer comparisons was the mediator (M) and T2 emotional exhaustion, T2 cynicism and T2 professional efficacy were entered as the predicted variables (Y) in separate models. The following were entered as covariates: sex, tenure, age, hours, T2 impostor cognitions, T1 peer comparisons, the T1 measure of the burnout dimension entered as the predicted variable and the T2 measures of the two burnout dimensions that were not entered as the predicted variable. The analysis was conducted with 1000 bootstrap samples.

Emotional exhaustion. Tenure was removed from the final model because it failed to be associated with the mediator or outcome variable. The results for the final model of T2 emotional exhaustion (Table 11) revealed that the overall model was significant $F(10, 134)=32.87$, $p<.001$, $R^2=.71$.

Table 11.

Ordinary Least Squares Model Coefficients (*B*), Standard Errors (*SE*) and *t*-values Model Paths Examining T2 Emotional Exhaustion

	Variable to T2 PC (M)				Variable to T2 EE (M)			
Predictor	Path	*B*	*SE*	*t*	Path	*B*	*SE*	*t*
Constant	-	-.08	.17	-.50	-	17.02	.56	30.43**
Sex	covariate	-.10	.23	-.43	covariate	-1.57	.77	-2.02*
Age	covariate	.01	.01	1.02	covariate	-.07	.03	-2.21*
Hours	covariate	>-.01	.01	-.46	covariate	-.04	.03	-1.69
T2 IC	covariate	.02	.01	1.35	covariate	.10	.04	2.28*
T1 PC	covariate	.28	.08	3.53**	covariate	.21	.28	.74
T1 EE	covariate	.02	.02	1.21	covariate	.60	.06	10.30**
T2 Cynicism	covariate	-.02	.02	1.13	covariate	.26	.07	3.94**
T2 Professional efficacy	covariate	.05	.02	2.27*	covariate	-.04	.08	-.47
T1 IC (X)	a1j	-.04	.01	-2.98*	c'1j	-.11	.05	-2.13*
T1 In-group FN (W)	a2j	.11	.21	.52	-			
T1 IC * T1 In-group FN (XW)	a3j	>-.01	.01	-.04	-			
T2 PC	-				b1j	-.47	.30	-1.59

Note. IC = Impostor cognitions; PC = Peer comparisons; EE = Emotional exhaustion; FN = Failure normalising
* $p<.05$; ** $p<.001$

In contrast to the predicted positive relationship between impostor cognitions and emotional exhaustion (H1a), T1 impostor cognitions negatively predicted T2 emotional exhaustion (*B*=-.11, *t*=-2.13, *p*=.035, CI 95% -.22, -.01). Consistent with predictions (H2), a significant negative relationship emerged between T1 impostor cognitions and T2 peer comparisons (*B*=-.04, *t*=-2.98, *p*=.004, CI 95% -.07, -.01), indicating that more severe impostor cognitions predicted less positive peer comparisons at T2 (H2). The expected moderating role of in-group failure normalising (H3) in the relationship between T1 impostor cognitions and T2 peer comparisons was not statistically significant (*p*=.968). Model 9 also revealed no statistically significant moderating role for non in-group failure normalising (*p*=.127). The predicted negative relationship between T2 peer comparisons and T2 emotional exhaustion (H4a) was not found (*p*=.115). In support of prediction (H5), there was an indirect effect of T1 impostor cognitions on T2 emotional exhaustion via T2 peer comparisons CI 95% (<.01, .07), depicted in Figure 7. As in-group failure normalising was not found to significantly moderate the relationship between T1 impostor cognitions and T2 peer comparisons, no support was found for the predicted moderated indirect effect (H6).

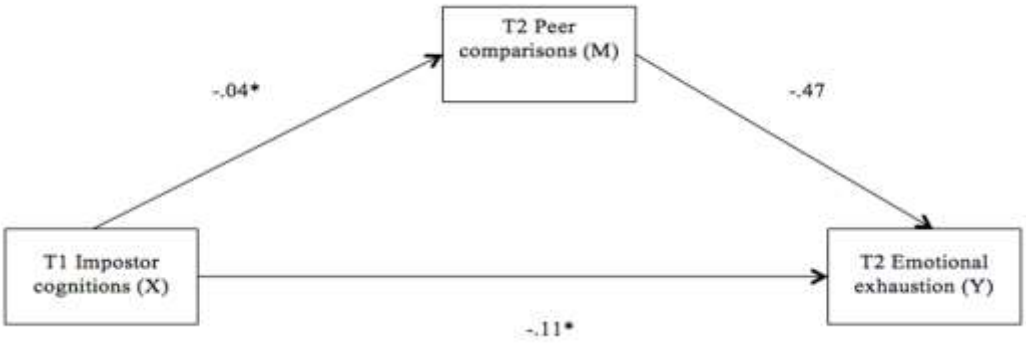

Figure 7. Standardised regression coefficients (*B*) for the relationship between T1 impostor cognitions and T2 emotional exhaustion as mediated by T2 peer comparisons

Note. * *p*<.05

Cynicism. A similar model to that described above was applied to examine cynicism (Table 12). However, in this initial model, hours per week, sex and tenure were not found to be significant predictors and were therefore removed from the final model. The overall model predicting cynicism was significant $F(8, 136)=25.49$, $p<.001$, $R^2=.60$.

Table 12.

Ordinary Least Squares Model Coefficients (*B*), Standard Errors (*SE*) and *t*-values for Model Paths Examining T2 Cynicism

	Variable to T2 PC (M)				Variable to T2 Cynicism (M)			
Predictor	Path	*B*	*SE*	*t*	Path	*B*	*SE*	*t*
Constant	-	-.14	.11	-1.33	-	13.98	.37	37.65**
Age	covariate	.01	.01	.96	covariate	.08	.03	2.62*
T2 IC	covariate	.02	.01	1.38	covariate	.11	.04	2.55*
T1 PC	covariate	.28	.08	3.60**	covariate	.15	.29	.51
T2 EE	covariate	-.02	.02	-.93	covariate	.32	.06	5.56**
T1 Cynicism	covariate	.03	.02	1.35	covariate	.45	.07	6.93**
T2 Professional efficacy	covariate	.06	.02	2.71*	covariate	-.16	.08	-1.93 $^{\eta}$
T1 IC (X)	a1j	-.05	.01	-3.21*	c'1j	-.06	.05	-1.22
T1 In-group FN (W)	a2j	.14	.21	.70	-			
T1 IC * T1 In-group FN (XW)	a3j	-.01	.01	-.49	-			
T2 PC	-				b1j	-.32	.31	-1.02

Note. IC = Impostor cognitions; PC = Peer comparisons; EE = Emotional exhaustion; FN = Failure normalising

$^{\eta}$ Approaching significance; * $p<.05$; ** $p<.001$

Contrary to the hypothesis (H1a), the direct effect of T1 impostor cognitions on T2 cynicism was not significant (p=.223). Consistent with predictions (H2), a significant negative relationship emerged between T1 impostor cognitions and T2 peer comparisons (B=-.05, t=-3.21, p=.001, CI 95% -.07, -.02). This relationship was not significantly moderated by either in-group (p=.626) and non in-group (p=.096) failure normalising (H3). The anticipated relationship between T2 peer comparisons and T2 cynicism (H4a) was not found (p=.309). The results did not provide support for the predicted (H5) indirect effect of T1 impostor cognitions on T2 cynicism via T2 peer comparisons CI 95%(>-.01, .06). Therefore, the predicted moderated indirect effects model (H6) was also not supported by the analysis.

Professional efficacy. The final analysis examined the proposed moderated mediation model in the prediction of professional efficacy (Table 13). Average hours per week was not significantly related to the dependent or mediator variable and was therefore removed from the final model. The final model of professional efficacy was significant, F(10, 134)=7.37, p<.001, R^2=.35. In contrast to prediction (H1b), the direct effect of T1 impostor cognitions on T2 professional efficacy was not statistically significant (p=.123). As found in the two previous models and consistent with predictions (H2), T1 impostor cognitions significantly predicted T2 peer comparisons in the negative direction (B=-.04, t=-2.78, p=.006, CI 95% -.07, -.01). The expected moderating role of in-group failure normalising (H3) in the relationship between T1 impostor cognitions and T2 peer comparisons was not statistically significant (p=.897). The interaction between T1 impostor cognitions and non in-group failure normalising in the prediction of T2 peer comparisons was also not statistically significant (p=.190). The expected positive relationship between T2 peer comparisons and T2 professional efficacy (H4b) was statistically significant (B=.71,

t=2.61, *p*=.010, CI 95% .17, 1.25), indicating that more positive peer comparisons were correlated with a higher sense of professional efficacy.

Table 13.

Ordinary Least Squares Model Coefficients (*B*), Standard Errors (*SE*) and *t*-values for Model Paths Examining T2 Professional Efficacy

	Variable to T2 PC (M)				Variable to T2 PE (M)			
Predictor	Path	*B*	*SE*	*t*	Path	*B*	*SE*	*t*
Constant	-	>.01	.17	.01	-	34.90	.52	67.12**
Age	covariate	.01	.01	.80	covariate	-.07	.03	-2.36*
Sex	covariate	-.25	.23	-1.08	covariate	-1.73	.72	-2.40*
Tenure	covariate	-.01	.01	-.84	covariate	.06	.04	1.66 [η]
T2 IC	covariate	.02	.01	1.28	covariate	-.02	.04	-.47
T1 PC	covariate	.29	.08	3.52**	covariate	-.08	.27	-.31
T2 EE	covariate	-.01	.02	-.28	covariate	-.01	.06	-.12
T2 Cynicism	covariate	-.02	.02	-.81	covariate	-.08	.07	-1.24
T1 Professional efficacy	covariate	.01	.03	.45	covariate	.52	.09	6.07
T1 IC (X)	a1j	-.04	.01	-2.78*	c'1j	.07	.05	1.55
T1 In-group FN (W)	a2j	.08	.21	.36	-			
T1 IC * T1 In-group FN (XW)	a3j	>-.01	.01	-.13	-			
T2 PC	-				b1j	.71	.27	2.61*

Note. IC = Impostor cognitions; PC = Peer comparisons; EE = Emotional exhaustion; FN = Failure normalising
[η] Approaching significance; * *p*<.05; **p<.001

In support of prediction (H5), there was a significant indirect effect (Figure 8). T1 impostor cognitions predicted T2 professional efficacy via T2 peer comparisons CI 95%(-.07, >-.01). As in-group failure normalising was not found to significantly

moderate the relationship between T1 impostor cognitions and T2 peer comparisons, no support was found for the anticipated moderation of the indirect effect (H6).

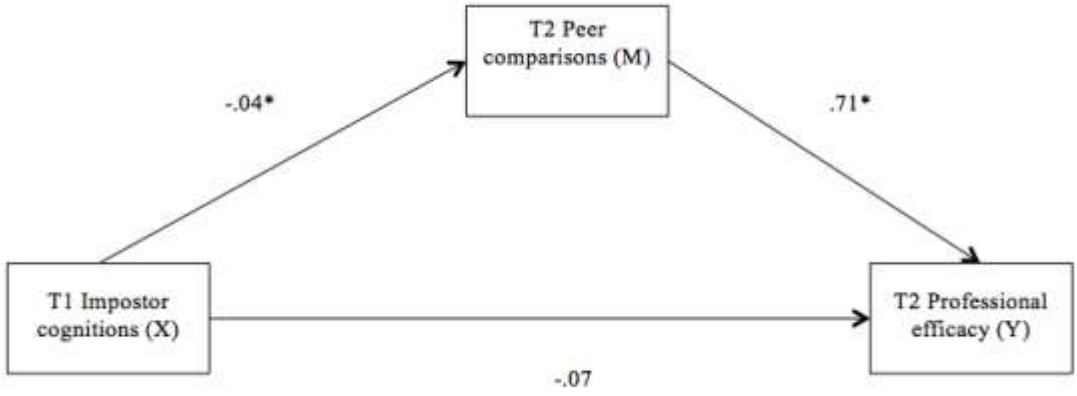

Figure 8. Standardised regression coefficients (*B*) for the relationship between T1 impostor cognitions and T2 professional efficacy occurred indirectly via T2 peer comparisons

Note. * $p<.05$

Discussion

In Study 2, I aimed to clarify and extend on the findings of Study 1 by assessing the predicted moderated mediation model over two time points amongst a broad range of professionals. In particular, Study 2 intended to clarify the causal direction of the relationships of impostor cognitions with peer comparisons and each of dimensions of burnout. I also sought to assess whether in-group failure normalising information would moderate the relationship between impostor cognitions and peer comparisons.

The findings did not support the anticipated direct relationships between impostor cognitions and burnout (H1), indicating that impostor cognitions were not directly predictive of higher burnout three months later. First, higher T1 impostor cognitions were actually predictive of less T2 emotional exhaustion, a finding that is in contrast to the predicted negative relationship between these two variables. The

positive relationship between impostor cognitions and emotional exhaustion might indicate that additional variables extraneous to the proposed model account for how impostor cognitions relate to emotional exhaustion. An example of one such variable could be coping style. Recent research has demonstrated that the relationship between perfectionism, a construct that has similar features to impostorism, and burnout is mediated by coping style (Chang, 2012; Hill, Hall, & Appleton, 2010; Li, Hou, Chi, Liu, & Hager, 2014). In particular, Li et al. (2014) found that amongst 462 Chinese Information Technology employees, more active coping, which refers to direct attempts to manage a stressor or reduce its negative effects (Carver, Scheier, & Weintraub, 1989), predicted less burnout and less active coping predicted higher burnout. Further, coping mediated the relationship between perfectionism and burnout.

Impostor cognitions were not found to directly predict T2 cynicism or T2 professional efficacy. The lack of a statistically significant direct effect between impostor cognitions and cynicism in the present study is consistent with results from previous research by Legassie et al. (2008) who also failed to find an association between impostor cognitions and cynicism. However, Legassie et al. (2008) did find a statistically significant association between impostor cognitions and professional efficacy in their cross-sectional study. The discrepancy could be attributed to the differences in study design, indicating that while the impostor cognitions and professional efficacy are correlated, impostor cognitions are not predictive of professional efficacy over three months.

Consistent with predictions (H2), T1 impostor cognitions predicted T2 peer comparisons, when controlling for T1 peer comparisons and T2 impostor cognitions. In further support of H2, T2 peer comparisons did not predict T2 impostor cognitions.

These results clarify that a unidirectional relationship exists between these two variables whereby higher impostor cognitions predict less positive peer comparisons three months later.

These findings corroborate previous research that found a similar pattern amongst school-aged children with impostor cognitions (Chayer & Bouffard, 2010). However, it contradicts research conducted by Bouffard et al. (2011) who concluded that amongst children, maintaining a positive bias when comparing one's self to school peers led to lower scores on impostorism. In contrast, the present study found that the relationship occurred in the opposite direction. This discrepancy might be explained by the methodological limitations of the study conducted by Bouffard et al. (2011). In particular, this study did not control for impostor cognitions at the initial time points and did not examine the possibility of the opposite direction. The present study did control for impostor cognitions at T1 and also assessed both possible directions of the relationship and therefore more reliably demonstrated the directionality of the relationship between impostor cognitions and peer comparisons.

In contrast to predictions (H3), in-group failure normalising was not found to moderate the relationship between impostor cognitions and peer comparisons. No moderating role was found for non in-group failure normalising either. Thus, no evidence was found to support the proposition that failure normalising would alleviate the negative impact of impostor cognitions on peer comparisons. The anticipated moderated mediation model was therefore also not supported (H6).

Limited support was found for the expected relationship between peer comparisons and burnout (H4). Specifically, T2 peer comparisons were not found to be associated with T2 emotional exhaustion and T2 cynicism. However, less positive T2 peer comparisons were related to higher T2 professional efficacy, indicating that

those participants who rated themselves more positively in comparison to peers also had a higher sense of competence and sense of control in their professional role. Taken together, these results fail to provide strong support for the prediction that peer comparisons are associated with burnout. This finding is inconsistent with previous research suggesting that a sense of inferiority to peers is associated with burnout (e.g. Carmona et al., 2006).

Partial support was found for the expected mediating role of peer comparisons in the relationship between impostor cognitions and burnout (H5). First, a significant indirect effect of T1 impostor cognitions on T2 emotional exhaustion via T2 peer comparisons emerged. Summarised from the findings above, the indirect effect was such that higher T1 impostor cognitions predicted less positive peer comparisons at T2 which in turn was associated with less emotional exhaustion at T2. Peer comparisons were also found to mediate the relationship between impostor cognitions and professional efficacy. This mediation indicated that higher T1 impostor cognitions predicted less favourable T2 peer comparisons, which in turn was associated with a lowered sense of T2 professional efficacy. The proposed mediation model in the prediction of cynicism was not found to be statistically significant. This finding provides the first evidence that peer comparisons are a mechanism through which impostor cognitions result in emotional exhaustion and professional efficacy.

General Discussion

This thesis broadly aimed to understand how impostorism impacts on psychological distress in the workplace. Specifically, I sought to develop a better understanding of the role impostor cognitions play in the emergence of occupational burnout. Previous research has failed to provide conclusive evidence that higher impostor cognitions are associated with occupational burnout, despite plausible

theoretical explanations for a relationship. The mixed evidence in previous research suggested that perhaps other factors were at play in the relationship between impostor cognitions and the dimensions of burnout. Thus, the present research set out to examine the role of one possible moderator and mediator in the relationship between impostor cognitions and burnout. In particular, I aimed to: (1) assess the direct relationship between impostor cognitions and occupational burnout (2) examine the indirect relationship between impostor cognitions and burnout via peer comparisons and (3) investigate whether more frequent failure normalising information provided by an individual's peers contributes to a reduction in the negative psychological impact of impostor cognitions.

Summary of findings

Overall, the results regarding the expected negative impact of impostor cognitions on burnout was mixed. According to Hobfoll's (1989; 2001) COR model, emotional exhaustion (and subsequently higher cynicism and lower professional efficacy) occurs as a result of exerting effort over time or due to the failure to obtain resources following resource investment. Based on this theory, it was predicted that individuals with impostorism would experience burnout as a result of (1) the excessive effort they exert to avoid failure and (2) due to the failure to gain a positive sense of self after investing effort to accomplish a task. Consistent with this expectation, Study 1 results showed that higher impostorism was associated with higher self-reported emotional exhaustion. However, more severe impostor cognitions actually predicted less emotional exhaustion in Study 2. which was contrary to expectations. Second, no direct relationship was found between impostor cognitions and cynicism in either study. Finally, higher impostor cognitions were associated with lower professional efficacy scores in Study 1. However, Study 2 failed to find a

statistically significant relationship between impostor cognitions and professional efficacy.

As discussed previously, the finding that more severe impostor cognitions predicted less emotional exhaustion three months later might suggest that additional mediators or moderators need to be considered to explain this relationship. For example, active coping is one possible factor that could be considered that could assist in better understanding the link between impostor cognitions and burnout. Whitman and Shanine (2012) also proposed that perceived social support in the workplace could also impact on the relationship between impostor cognitions and emotional exhaustion. Specifically, they suggest that higher perceived social support could enhance an individual's likelihood of engaging in active coping to deal with stress associated with impostorism. In this way, perceived social support could assist in alleviating the expected negative effects of impostor cognitions on emotional exhaustion. Past research has demonstrated that social support is effective at buffering individuals against burnout caused by work-related stressors (e.g. Thoits, 1995).With reference to the COR model, perceived social support is assumed to act as a personal resource as it is instrumental in assisting individuals to manage a stressor.

The failure to find a direct relationship between impostor cognitions and cynicism and professional efficacy might also be attributable to the complex nature of the causal relationships amongst the burnout dimensions. While research is inconclusive regarding the actual causal relationships between each of the burnout dimensions (Zapf, Dormann, & Frese, 1996), there is evidence that cynicism and professional efficacy occur as a result of emotional exhaustion (e.g. Taris, Le Blanc, Schaufeli, & Schreurs, 2005). As alluded to in the introduction, cynicism has been conceptualised as an ineffective coping strategy that develops in response to

emotional exhaustion (Leiter & Maslach, 1988). Professional efficacy might also occur as a result of emotional exhaustion or cynicism, or both (Byrne, 1994; Lee & Ashforth, 1996). As such, impostor cognitions may affect cynicism and professional efficacy via the effect on emotional exhaustion.

Despite failing to find statistically significant direct effects between impostor cognitions and burnout, the present thesis provided partial support for the prediction that impostor cognitions affect burnout via peer comparisons. The nature of the proposed indirect effect was such that more severe impostor cognitions would lead to less positive peer comparisons, and less positive peer comparisons would in turn be associated with higher emotional exhaustion and cynicism and lowered professional efficacy.

Both studies demonstrated that impostor cognitions had a robust negative impact on peer comparisons. Study 1 found significant negative correlation between impostor cognitions and peer comparisons. Study 2 demonstrated that it was impostor cognitions that led to less positive peer comparisons three months later. Importantly, peer comparisons were not found to be predictive of impostor cognitions. The findings suggest that employees experiencing more severe impostor cognitions are much more likely to engage in negative peer comparisons, whereby they consider themselves to be less able on several professionally relevant dimensions (e.g., competence and intelligence).

Determining the direction of the relationship between impostor cognitions and peer comparisons extends on and clarifies previous research (e.g. Chayer & Bouffard, 2010; Bouffard et al., 2011). This finding indicates that impostor cognitions are not only associated with a perceived sense of inadequacy derived from the exceptionally high internal performance standards, but also with feelings of inferiority when

comparing one's self to peers and colleagues in the workplace. It is assumed that this is attributable to the tendency amongst those experiencing impostorism to overestimate others and underestimate themselves, which results in inflated perceptions of the performance standards of others. This is further evidence of how those with impostorism process information, in this instance social information, in a biased manner that is influenced by their negative self-view.

It is important to note that the regression coefficients for impostor cognitions in the prediction of peer comparisons, were consistently low in each model (Tabachnik & Fiddel, 2007). Standardised regression weights close to 0 (such as these) indicate that the contribution of impostor cognitions to the prediction of peer comparisons, while statistically significant, might actually have limited meaningful contribution in reality. This might mean that in reality, other factors will have a more substantial impact on peer comparisons. Caution should be applied when considering the practical implications of this relationship. In particular, employing strategies to reduce the impact of impostor cognitions on peer comparisons might not be particularly effective if the other factors that impact on peer comparisons are not concurrently addressed.

Findings from Study 1 and 2 also demonstrated that impostor cognitions had a significant indirect effect on emotional exhaustion and professional efficacy via peer comparisons. This indicates that the effect of impostor cognitions on these two burnout dimensions occurs because of its role in biasing the way individuals perceive themselves with respect to their professional peer group. This corroborates previous research amongst teachers that unfavourable social comparisons predict burnout (e.g. Carmona et al., 2006). This finding is also consistent with previous literature that suggests perceptions of one's relative standing to others is particularly consequential

for psychological wellbeing, even more so than one's own internal appraisal of performance against self-referenced standards (e.g. Buunk et al., 2001).

Finally, it was hypothesised that the indirect effect of impostor cognitions on burnout via peer comparisons would be conditional on the frequency of failure normalising information received from peers and colleagues but not received by non-work friends and family. However, the results suggested that in-group failure normalising did not successfully alleviate the negative impact of impostor cognitions on peer comparisons. This might be attributable to the measurement of this variable. In particular, the researcher developed a novel measure to operationalise failure normalising information as no established scale currently exists to assess this construct. It is possible that the items generated did not effectively capture all types of failure normalising information likely to be provided to an individual in the workplace and thus it might not have been a valid measure of failure normalising. Future research would benefit from using a scale that has established reliability and validity.

Alternatively, additional information might be more effective at calibrating performance perceptions amongst those with impostor cognitions and subsequently reducing the negative impact of impostor cognitions on peer comparisons. It is possible that failure normalising does not adequately reframe performance perceptions because it is too specific. That is, perceiving that others are performing without mistakes might be one belief or assumption held by those with impostorism that contribute to biased social comparisons. Clance and O'Toole (1988) also noted that individuals with impostorism erroneously believe that others are performing with greater ease and less effort than one's self. Thus, information that accurately reflects the effort invested by peers to achieve success might be helpful in calibrating

performance norms amongst individuals with impostorism in addition to failure normalising information.

Implications of the findings

While the results failed to find a direct relationship between impostor cognitions and burnout, the results did indicate one mechanism through which impostor cognitions impact on burnout. That is, the current research indicated that impostorism affects emotional exhaustion and professional efficacy via the negative impact that impostor cognitions have on peer comparisons.

The indirect effect of impostor cognitions on emotional exhaustion and professional efficacy highlights the need to develop strategies for managing impostorism and preventing its negative impact on the individual and the organisation. Emotional exhaustion is associated with higher turnover and absenteeism (Jackson, Schwab, & Schuler, 1986) as well as lower commitment to the organisation (Maslach & Leiter, 1997). Further, emotional exhaustion has been found to be negatively correlated with job performance (Wright & Bonnett, 1997; Wright & Cropanzano, 1998). With regards to professional efficacy, research has consistently demonstrated that lowered efficacy results in poorer performance and productivity due to lowered motivation (Bandura & Locke, 2003).

Managers could be instrumental in assisting individuals with impostorism enhance their professional efficacy in particular. In addition to past performance, emotional cues are a principal source of efficacy (Bandura, 1997). Research has demonstrated that when managers set challenging goals for their staff, it communicates confidence in the employee's ability to meet this challenge (Locke & Latham, 2002). This can subsequently enhance confidence in one's own abilities (Lunenburg, 2011). Amongst individuals with impostorism, the communication of

confidence might need to be particularly direct and straightforward to reduce the likelihood that they experience anxiety in response to being set a challenging task.

Understanding that impostor cognitions lead to negative peer comparisons with colleagues also has important implications for how workplaces might manage employees who display attributes of the impostor phenomenon. First, the results demonstrate that individuals with impostorism are susceptible to seeing themselves as less capable than peers. It could be helpful for managers to ensure that those with impostorism are therefore provided with opportunities to have visibility of the performance standards of others, allowing them to calibrate their self-comparisons more easily. Managers could also provide objective evidence of how well individuals with impostorism are performing relative to others on specific competencies, especially when starting a new role when performance expectations and norms might be more ambiguous. When providing negative performance feedback, they might consider avoiding direct comparisons to peers.

Generalisability of the results

The findings of the present thesis could be appropriately generalised to the Australian working population of professionals. While Study 1 was conducted amongst a population of academics, Study 2 examined the proposed model amongst a wide range of professionals from different industries including the health, legal and finance sectors. The sample in Study 2 was also comprised of an approximately equal number of males and females and included individuals from a variety of ages and years of experience. These characteristics of the sample enhance the generalisability of the findings to the professional population. Further, the email invitations did not specify that the study was specifically investigating the impostor phenomenon and

burnout. Thus, it is unlikely that participants self-selected on the basis of identifying with these constructs.

Methodological Limitations

A potential limitation was that there was insufficient time between T1 and T2 in Study 2 for the impact of impostor cognitions on peer comparisons and burnout to be particularly evident. Typically, longitudinal burnout studies have used time lags of approximately 1 year (Zapf et al., 1996). This short time period might explain the failure to find a relationship between impostor cognitions and burnout (Zapf et al., 1996). This time period might also explain the low regression weights for the relationship between impostor cognitions and peer comparisons.

A further limitation regards the measure of peer comparisons. It is possible that individuals who reported less positive peer comparisons might actually have made accurate ratings of their performance relative to peers. Choosing to examine a wide range of working adults to enhance generalisability meant forgoing the ability to measure performance in a consistent, fair, objective and reliable manner across different professionals. However, omitting this measure meant that the accuracy of individual's self-ratings could not be assessed. Thus, it has been assumed that the less favourable ratings reported by individuals with impostor cognitions were inaccurate and therefore indicative of a cognitive bias. Despite excluding this measure, previous research has demonstrated that individuals with impostorism do underestimate themselves regardless of their actual performance (Cozzarelli & Major, 1990; Want & Kleitman, 2006). Future studies might endeavor to control for actual performance so that this assumption can be validated.

The relationship between peer comparisons and burnout was only assessed cross-sectionally in both studies. Thus, inferences cannot be conclusively made

regarding the causality between these two variables. According to Hayes (2013), however, the application of theory and past research can overcome such methodological limitations. Given that past longitidunal research has clearly indicated that negative peer comparisons contribute to burnout over time (e.g. Carmona et al., 2006), it is reasonable to assume that this relationship is causal.

A final point is that attempting to address the thoughts that individual's with impostorism hold regarding failure overlooks the complexity of impostorism. First, there are potentially a number of factors that contribute to the development of impostor cognitions such as early childhood experiences, parental and social influences and personality dispositions. Second, individuals with impostorism also experience strong emotions as well as cognitions. These points indicate that the development and maintenance of impostorism is multifaceted, as are the associated thoughts and emotions. Thus, specifically addressing the thoughts associated with failure in the present study, would likely not have been a complex enough intervention to really challenge impostor cognitions and the related emotions and behaviours.

Given the multifaceted nature of impostorism, it is likely that any successful intervention would also need to be complex to sufficiently address and challenge the cognitions, emotions and behaviours exhibited by those with impostorism. Future research should consider incorporating a wider range of strategies to address the various facets of impostorism, of which failure normalising could potentially be included. Potential strategies could involve cognitive-behavioural techniques that target thoughts, behaviours and emotions (Beck, 1991). Specifically, such techniques could address emotional processing and involve proactive challenging of the underlying beliefs and thoughts associated with impostorism.

Conclusions

This thesis has ascertained that impostor cognitions can result in negative social comparisons with workplace peers and that this is in turn, is associated with aspects of burnout symptomology. Impostor cognitions reflect an internalised model of one's failure to meet personal standards of performance within one's role or profession. The relationship between impostor cognitions and negatively biased peer comparisons demonstrates that impostor cognitions are associated with both the sense that one fails to meet internalised standards of success as well as the perception that one is inferior to peers. This sense of inferiority is assumed to be derived from positively inflated views of the performance norms of one's peers. The findings can be interpreted as being indicative of how the sense of inferiority experienced by those with impostorism is particularly damaging to one's psychological wellbeing. While the proposed strategy for alleviating the negative impact of impostor cognitions was not found to be effective, the results of this thesis highlight that workplace strategies aimed at alleviating the negative impact of impostor cognitions should be targeted at reframing performance norms to reduce the extent to which individuals with impostorism negatively evaluate their performance relative to others. The consideration of multifaceted interventions that include cognitive-behavioural therapy techniques is also strongly advised.

Further investigations should also consider the possible causal relationships amongst the burnout dimensions when considering how to model the relationship between impostor cognitions and burnout. Specifically, researchers could assess whether impostor cognitions affect cynicism via emotional exhaustion. The potential role of active coping and perceived social support in alleviating the negative effect of impostor cognitions on burnout could also be considered.

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Appendix I. Ethics Approval Letters

MACQUARIE UNIVERSITY

PHOEBE STODDART <phoebe.stoddart@students.mq.edu.au>

Approved- Ethics application- Crane (Ref No: 5201300286)
2 messages

Ethics Secretariat <ethics.secretariat@mq.edu.au> Fri, May 17, 2013 at 9:25 AM
To: Dr Monique Crane <monique.crane@mq.edu.au>
Cc: Phoebe Stoddart <phoebe.stoddart@students.mq.edu.au>

Dear Dr Crane

Re: "Feeling like an impostor: Perceived inadequacy, professional identity and wellbeing in academics" (Ethics Ref: 5201300286)

Thank you for your recent correspondence. Your response has addressed the issues raised by the Human Research Ethics Committee (Human Sciences and Humanities), effective17-May-13. This email constitutes ethical approval only.
This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Dr Monique Crane
Phoebe Stoddart

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).

2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 17 May 2014
Progress Report 2 Due: 17 May 2015
Progress Report 3 Due: 17 May 2016
Progress Report 4 Due: 17 May 2017
Final Report Due: 17 May 2018

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5. Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

http://www.mq.edu.au/policy/

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

Please retain a copy of this email as this is your official notification of ethics approval.

Yours sincerely
Dr Karolyn White
Director of Research Ethics
Chair, Human Research Ethics Committee

Office of the Deputy Vice Chancellor (Research)

Ethics Secretariat

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03 March 2014

Dr Monique Crane
Department of Psychology
Faculty of Human Sciences
Macquarie University
NSW 2109

Dear Dr Crane

Re: The protective role of multiple group memberships in the relationship between impostor syndrome and psychological wellbeing

Thank you for your application for the above project. The Human Research Ethics Committee (Human Sciences and Humanities) considered your application at its meeting held on 28 February 2014.

This research meets the requirements set out in the *National Statement on Ethical Conduct in Human Research* (2007) and your application has been approved.

Details of this approval are as follows:

Reference No: 5201400136

Approval Date: 28 February 2014

This letter constitutes ethical approval only.

The following documentation has been reviewed and approved by the HREC (Human Sciences and Humanities):

Documents reviewed	Version no.	Date
Macquarie University Human Research Ethics Application	2.3	Jul 2013
Email invitation to potential participants (Study 2)	No Version	Undated
SONA advertisement (Study 3)	No Version	Undated
University noticeboard advertisement (Study 3)	No Version	Undated
Flyer (Study 3)	No Version	Undated
Information and consent form (Study 2)	No Version	Undated
Survey (Study 2)	No Version	Undated
Debrief (Study 2)	No Version	Undated
Information and consent form (Study 3)	No Version	Undated
Survey (Study 3)	No Version	Undated

Debrief (Study 3)	No Version	Undated
Email requesting advertisements at Macquarie University	No Version	Undated

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. Approval is for five (5) years, subject to the submission of annual reports. Please submit your reports on the anniversary of the approval of this protocol.

3. All adverse events must be reported to the HREC within 72 hours.

4. Proposed changes to the protocol 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.

Please do not hesitate to contact the Ethics Secretariat should you have any questions regarding your ethics application.

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.