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Journal article

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Ubiquitous Emotional Exhaustion in School Principals: Stable Trait, Enduring Autoregressive Trend, or Occasion Specific State?

Principal strain and burnout is a major issue in desperate need of further investigation and solutions. Deepening our understanding of emotional exhaustion, the central dimension of burnout, would greatly further this pursuit. Using a large, longitudinal, representative sample of Australian school principals, the present study decomposed emotional exhaustion into occasion specific state, enduring autoregressive, and stable trait components using the STARTS (Stable Trait, Auto Regressive Trait, and State) model. The results showed evidence for variance in all three components, indicating that principals' emotional exhaustion is approximately evenly split between the enduring autoregressive component and stable trait component, with slightly less variance being observed for the occasion specific state. Heterogeneity in this profile was mainly associated with individual characteristics of the principals themselves (i.e., experience and gender) rather than characteristics of the job (school sector and level). The results revealed that less experienced and male principals have more malleable (enduring autoregressive and state-like) emotional exhaustion while more experienced and female principals have more trait-like emotional exhaustion. This emphasizes a likely development of emotional exhaustion from acute to chronic under persistent exposure to burnout-inducing situations, with additional evidence for a possible dispositional tendency towards emotional exhaustion. Thus, measures to tackle emotional exhaustion need to be based on the type of emotional exhaustion the principal is experiencing and ideally include elements that target both the situational/contextual and the individual factors that cause emotional exhaustion in school principals.

Educational Impact and Implications Statement

Principal emotional exhaustion is a major educational concern. To help inform interventions aimed at mitigating this concern, we examined how emotional exhaustion manifests itself in school principals. Results from a large representative sample of Australian school principals

revealed there to be three aspects of emotional exhaustion: an acute/occasion specific state, a chronic/stable trait, as well as an enduring component that is slow to change but not fixed.

Less experienced and male principals had more state-like emotional exhaustion, while more experienced and female principals had more trait-like emotional exhaustion. These findings show how emotional exhaustion develops from an acute to a chronic issue when confronted with persistently stressful circumstances, and how female principals are more inclined to be emotionally exhausted. We need interventions tailored towards the type of emotional exhaustion the principal is experiencing.

School principals increasingly report high levels of strain, resulting in a shortage of qualified school leaders (Darmody & Smyth, 2016; Dewa et al., 2009; Grissom et al., 2015; Riley, 2018; Riley et al., 2019). Indeed, changes in the educational system in response to globalization, new technologies, and changes in workforce demographics have led to a repositioning of the role of school principals (Dewa et al., 2009) who are already challenged by a very diverse skill-set needed to successfully fulfil their leadership role. School principals are required to be visionaries and direction givers, people developers, organization designers, and teaching and learning program managers (Dadaczynski & Paulus, 2015; Liebowitz & Porter, 2019). These role changes have resulted in more responsibility, particularly in managerial tasks (Green et al., 2001), higher time pressure (Grissom et al., 2015), and reduced autonomy (Riley, 2018). At the same time, principals have less resources to deal with these increased demands, leading to the high levels of strain and attrition and consequently a lack of qualified principals (Riley, 2015). It is not surprising that principal strain and burnout is a major issue in desperate need of solutions to improve our school leaders' health and wellbeing (Dicke, Marsh, et al., 2018; Wells & Klocko, 2018). In our research we investigate the popular and well-researched emotional exhaustion dimension of the burnout construct (Bakker & Costa, 2014), which we will show can be regarded as the central component of burnout (Cropanzano et al., 2003; Christina Maslach et al., 2001). Although emotional exhaustion has been the focus of a large number of studies on educator burnout (for an overview see e.g., Dicke, Stebner, et al., 2018; Klusmann et al., 2008), there is a need for further research. More specifically, leaders in the field of burnout

have been inconsistent in whether to describe it as a more trait- or state-like characteristic, as we will show below. In particular, there is a need to understand if principal emotional exhaustion is an acute, a slowly

changing, or a chronic underlying issue, or even all three, and the degree to which these components (see below for a more detailed description) differentially define the emotional exhaustion of different types of principals (e.g., less or more experienced, male or female, primary or secondary school etc.). Adequate description provides an avenue to more targeted interventions. For example, should emotional exhaustion have large state and enduring elements, event-based time-critical interventions may be essential. The current study uses eight waves of data from a representative sample of from $N = 5,509$ Australian principals to decompose principal emotional exhaustion into occasion specific state, slowly changing or enduring, and stable trait components. We further consider heterogeneity in this profile by examining critical demographic characteristics of gender, school sector (independent vs. public schools), school level (primary vs. secondary), and level of experience. Overall, the present study investigates the wellbeing of an at-risk occupational group, that is school principals, by decomposing their emotional exhaustion into an acute, relatively enduring, and chronic component and possible individual differences in the size of these components.

Why Principal Burnout Matters for Students Success

Increasing levels of principal burnout and emotional exhaustion is not only alarming in itself, but also because effective leadership is crucial to a successful school environment that fosters students' learning (Day, 2011; Leithwood & Seashore-Louis, 2011). School principals recognise, promote, and build the leadership capacity of staff, students, parents, and the community, and research has demonstrated the importance of school principals for teachers' well-being (Dicke et al., 2019; Dicke, Stebner, et al., 2018). In turn, teacher well-being is related to student achievement (Klusmann et al., 2016) and motivation (Dicke et al., 2019; Shen et al., 2015). Research indicates a relation between principals' behaviours and students' well-being (Sebastian & Allensworth, 2012), which in turn impacts student outcomes, such as achievement (Darmody & Smyth, 2016; Dicke et al., 2019). Indeed,

principals are the second most important influence on student learning outcomes, after teachers (Day, 2011; Leithwood & Seashore-Louis, 2011). Moreover, some studies have found indirect relations between principal leadership styles and behaviors, via school environment indicators or teacher variables (Leithwood & Seashore-Louis, 2011; Sebastian & Allensworth, 2012). These findings are supported by two recent meta-analyses that both found strong empirical evidence for a direct relation between principal leadership and behaviors, and student achievement (Liebowitz and Porter 2019; Wu 2020). Other studies have also found a direct relation between principal wellbeing, that is job satisfaction, and student achievement (Dicke et al. 2019). Thus, emotional exhaustion, which is so prevalent in principals (Dicke, Marsh, et al., 2018; Wells & Klocko, 2018; Riley, 2018), is also likely to significantly affect student learning. As principals' wellbeing is related to teacher and student outcomes, this paper provides insight into how best to approach principals' emotional exhaustion in the hope of not only improving their occupational health, but also providing a means to improve the general school climate for teachers and students (Liebowitz & Porter, 2019).

State vs Trait vs Enduring

The concepts of states and traits, as well as the distinctions between them, have been the subject of debate between researchers for several decades (e.g., Cattell, 1966; Eysenck, 1983; Spielberger, 1972). Some researchers have argued for and presented differential criteria for the distinction of states and traits (Fridhandler, 1986; for an overview see also Hamaker et al. 2007), some of which we will cover in the following: The most well known criterion is temporal duration, where states are assumed to be of short duration, while traits are defined as highly stable conditions, even life-long (Cattell, 1966). Another important criterion is situational vs. personality causality. Here a state is assumed to be caused by the situation, while the trait is caused by factors that lie within a person. Furthermore, Fridhandler (1986)

suggests a criterion called “concrete versus abstract entities”, which refers to states having to be observable, or immediately available to introspection (i.e., concrete). Traits on the other hand are abstract and thus, hard to detect, feel, or observe. Put simply, states can be defined as a momentary condition that someone or something experiences at a specific time, for example as a single event, such as a critical incident triggering emotional exhaustion symptoms. Traits on the other hand can loosely be defined as a person specific enduring characteristic, which in our case would reflect an underlying disposition for higher levels of emotional exhaustion, such as a genetic predisposition or a chronic aspect of the person unchanged by the job interaction. This does not entail that traits are biological. In fact, Kenny and Zautra (2001) emphasize that trait variance could be the result of a stable environment x person interaction. Others however, have claimed the distinction of states and traits to be arbitrary (Allen & Potkay, 1981). Importantly, Hertzog and Nesselroade (1987) suggested that most psychological attributes will neither be, strictly speaking, traits or states. That is, individuals’ attributes can have both trait and state components (for an extended review see also Anusic & Schimmack, 2016). Moreover, resulting from recent statistical developments (Kenny & Zautra, 2001; Steyer et al., 2015), it now seems clear that individual attributes can also consist of a third component which lies in-between state and trait; the autoregressive trait. This autoregressive trait component is also referred to as enduring (Wagner et al., 2016), and we will use the term enduring autoregressive component hereafter. This is because it is neither constant like a trait nor transitory like a state, and for the present study it could be translated as the development of job-related emotional exhaustion over time. Jansen et al. (2020) describe the component as variance that “refers to individual differences that can be attributed to influences that change over time (i.e., they do not show the same effect across all measurement points) but are still partly stable (i.e., they endure across several measurement points)”. With regard to the aforementioned criteria, this autoregressive component is

enduring, but can change slowly over time (Mund et al., 2020), and can even disappear over time. It would most likely result as an interaction of the situation and person, but not immediately, rather as a result of ongoing stimulus and a disposition to react to that stimulus. It is concrete, at least in the beginning, but might transition into becoming an abstract entity as the person becomes “used to it”. For example, a policy change may lead to changes in the principal’s job that have ongoing effects on emotional exhaustion over many years. Enduring aspects of emotional exhaustion are often an inherent part of the job where, for example, large-scale educational policy changes tend to be aligned to multi-year election cycles. In the beginning, the effects of the policy change cause several isolated stress reactions, over time this continuous exposure changes into an enduring or lingering experience of strain. Another change to policy might, however, change or even nullify that experience. To summarize, there is still an ongoing discussion on the distinction of states and traits, which has recently been enriched by the proposal of a third slowly changing, but malleable component, which lies in-between state and trait.

Burnout, Emotional Exhaustion and their Manifestation as State or Trait, or Enduring Phenomenon

To date, research on burnout, and thus emotional exhaustion, has found evidence for burnout appearing as state-like, trait-like, or both, depending on individual differences. According to the manual of the most used instrument to assess burnout in the workplace—the Maslach Burnout inventory (Maslach et al., 1996)—burnout has been defined as a malleable state that manifests itself as exhaustion, with cynical and self-doubting experiences. One year later, the Maslach Burnout inventory (Maslach et al., 1997) updated their terminology to “enduring state” (rather than a state) which suggests that any change would be slow. Shortly after, the most popular definition of burnout was coined: “Burnout is a prolonged response to

chronic emotional and interpersonal stressors on the job, and is defined by the three dimensions of exhaustion, cynicism, and inefficacy” (Maslach et al., 2001; p.397). This defines burnout as something that seems to be ongoing or continuous, so more trait-like, and consists of three dimensions: *emotional exhaustion*, meaning feelings of being emotionally drained and fatigued; *depersonalization*, meaning a callous or cynical attitude—in this case, mostly towards the teacher’s students; and reduced *personal accomplishment*, meaning a person’s negative evaluation of their own abilities and achievements.

In the early years of burnout research there was another emerging conceptualization of burnout by Golembiewski and colleagues (1985; 1988) that agreed with the Maslach model. This new conceptualization defined the same three dimensions, but proposed a different process. Further, this model also differentiated between acute and chronic burnout, which could resemble a state and trait-like distinction (Golembiewski, 1985; 1988). It is this model by Golembiewski that is the motivation for this research in decomposing burnout into state, enduring, and trait components.

Regarding the distinction between acute and chronic burnout, Golembiewski et al. (1985; 1988) argue that acute burnout is a result of a sudden severe exposure to stress and thus, more likely to be a result of personal trauma, while chronic burnout is a steady gradual process that arises through long-term exposure to work stress. Golembiewski et al. (1985; 1988) claim that their model represents chronic burnout, while the Maslach Model represents acute burnout (see Lee & Ashford, 1993). Indeed, in most recent publications, burnout is repeatedly referred to as “state” (e.g., Maslach & Leiter, 2016). Bakker and Costa (2014), however, show that burnout can last over long periods of time and, surprisingly, deter the use of the term chronic burnout, which would imply that there is also acute burnout similar to the assumptions of Golembiewski et al. (1985; 1988).

In the present study we will focus on emotional exhaustion which “is the central quality

of burnout, the most obvious manifestation of this complex syndrome, the most widely reported, and the most thoroughly analyzed.” (Pogere et al., 2019, p.270). This is particularly true in research on educator wellbeing (for an overview see Arens & Morin, 2016).

Cropanzano et al. (2003) and Maslach et al. (2001) both suggest that emotional exhaustion has stronger relations to important outcome variables than the other dimensions of burnout (see also Lee & Ashforth, 1993; Schaufeli, 1998). This evidence is supported by recent research linking biological responses to psychological phenomena which demonstrates the significant role of emotional exhaustion in relations with psychophysiological variables (for an overview, see Kanthak et al., 2017). In addition, conceptually, Cropanzano et al. (2003) reported the work of Schaufeli and Enzmann (1998), who found that individuals who state they are “burnt out” are mostly referring to feelings of emotional exhaustion. Overall, the development of burnout and particularly the manifestation of its central component emotional exhaustion as more state, or trait-like are still unclear and, thus, further research is much needed.

Why is it important to decompose Emotional Exhaustion into State, Trait and Enduring Variance?

Researchers have been increasingly calling for more research on the relative contributions of state and trait measures on organizational outcomes for some time now (e.g., Simbula, 2010; Sonnentag, 2005; Wright et al., 2003). Investigating the decomposition of emotional exhaustion into state and trait-like components is important for three reasons: theoretical reasons; empirical reasons; and practical reasons. Ultimately, the most important practical goal is to develop a sufficient understanding of emotional exhaustion in order to prevent its development and to inform its treatments. A strong theoretical foundation and appropriate empirical and methodological approaches are important prerequisites for adequate practical implications and translation of research into practice. Hence, in the following, we

will describe how the present study will contribute to all three aspects: theory, empirical measurement of emotional exhaustion, and finally practical implications.

Theoretically, although our study focuses on emotional exhaustion, we will also be able to derive important conclusions to refine the overall definition of burnout. One aspect of this is to clarify the temporal nature of emotional exhaustion (and thereby burnout) as an acute state-like, or a chronic trait-like syndrome, or a mix of both that would appear as an enduring slowly changing (autoregressive) concept as discussed above. Related to this, we collect evidence for internal (trait) or external (state) causation. This would be of great value for further developing the conceptual models dealing with the antecedents of emotional exhaustion. The most popular and recent models (Maslach & Leiter, 2016) in this regard are the Job-Demand Resources (JD-R) model (Bakker & Demerouti, 2014) and the Conservation of Resources (COR) Model (Hobfoll, 2001). Both models assume that burnout is a result of an imbalance of demands and resources. More precisely, in case of the JD-R model, burnout develops as a result of too many demands that lead to strain, the so-called health impairment process, and too few resources to deal with these and reduce them. The COR model proclaims that burnout develops due to threat and loss of resources. Both of these models make the most sense under the assumption that burnout is more state-like and caused by a situational causal context of resource-demand imbalance (Bakker & Costa, 2014). However, Maslach and Leiter (2016) also state that the factors causing burnout can be both situational and individual (see also Wright et al., 2003). Indeed, the JD-R model explicitly includes personal and job resources. These theoretical insights are critical for *developing* appropriate and targeted interventions to prevent and/or treat high levels of emotional exhaustion as needed (see below for more details).

Empirically, there has been some discussion on how to measure and empirically model states or traits. For assessing a state, it is suggested that items should ask for something the

participant feels right now or today, while traits are reflected by items that ask how a participant feels about something in general. Moreover, researchers suggest that a trait cannot be assessed by a single occasion or one-time measurement but rather by an aggregation of several measurement occasions (Fridhandler, 1986; Steyer et al., 2012). This is because traits are very complex and abstract (see above distinction for states and traits) and are never “here and now”. Measuring the occurrence of a phenomenon once, does not allow for an inference of whether a construct is state or trait. Technically, variation in both trait and state may contribute to construct variation, which is confounded and cannot be sufficiently teased apart based on one-time measurement (Hamaker et al., 2007; Hamaker et al., 2015).

There are, however, an increasing number of researchers that have also tested models, mostly using diary studies or experience sampling, that use very frequent measures (i.e., daily) of occupational well-being, including emotional exhaustion (e.g., Aldrup et al., 2017; Klusmann et al., 2020; Simbula, 2010). These models focus on the within-person development of emotional exhaustion over time. Putting these two research traditions, that is focussing on traits or states, together, along with the development of more advanced statistical models, allows us to model both trait and state simultaneously. Interestingly, most studies investigating emotional exhaustion so far have operationalized emotional exhaustion as a state-trait hybrid like construct which is repeatedly measured over time, but with long time periods between measurement points (Bakker et al., 2014; Bakker & Demerouti, 2007; Dicke, Elling, et al., 2015; Dicke, Stebner, et al., 2018) and primarily focusing on between-person differences (Simbula, 2010; Sonnentag, 2005). Thus, in most research emotional exhaustion is neither constant like a trait nor transitory like a state and instead reflects slow change over time which matches the aforementioned definition of burnout as an “enduring state” (Maslach et al., 1997). In the present study, we will also measure a variance component that reflects this slow change over time, namely an enduring autoregressive component (see Wagner et al.,

2016; see also Method section for more details). The adequate measurement and identification of the variance components of emotional exhaustion is also immediately important for practical implications, to appropriately *diagnose and identify the needs* of individuals experiencing emotional exhaustion. Further, focusing on the within person development of emotional exhaustion instead of between person differences gives valuable insights for the effectiveness of measures targeting emotional exhaustion.

Practically, preventing and treating emotional exhaustion, its symptoms, and the consequences thereof would differ largely depending on it being an occasion-specific or momentary condition (state), or a person-specific enduring characteristic (trait). Likewise, exploration of profiles of variance for different types of principals may help develop more targeted interventions. If emotional exhaustion is predominantly state-based due to an overload of demands (Huang et al., 2011) it could be resolved by short-term investment of resources to address acute demand/resource imbalances (Bakker & Demerouti, 2014). For principals this could mean a decrease in the sheer quantity of work, increasing job specific self-efficacy, and/or increasing social support of colleagues (Dicke, Marsh, et al., 2018; Dicke et al., 2019). If burnout is predominantly chronic or trait-like, clinical interventions which aim to change persistent inherent characteristics of the individual may be more appropriate (Steyer et al., 2015). Enduring aspects may require both timely investment of resources as well as longer-term personal interventions to manage the legacy of acute events. Thus, further investigating the experience of emotional exhaustion as more state, or trait-like, or anything in-between would be of major benefit for theoretical clarity and adequate empirical measurement of the construct (and possibly of all its components). Most importantly, more information on the nature of how emotional exhaustion manifests itself is needed for deriving effective measures that could prevent or treat any experience of emotional exhaustion.

Hypothesis and Research Questions

In the present study we will investigate the composition of school principals emotional exhaustion by modelling a series of STARTS (Stable Trait, Auto Regressive Trait, and State; Kenny & Zautra, 2001; Kenny & Zautra, 1995) models using data from a large, longitudinal and representative sample of Australian school principals. The STARTS model enables researchers to model three different sources of variance in repeated measures: 1) a stable trait component which is assumed to be time-invariant (ST); 2) an auto-regressive component, which is assumed to be time-varying (ART); and 3) a state component which is assumed to be completely occasion-specific (S; no stability over time; Kenny & Zautra, 2001). Wagner et al., (2016) describe this enduring autoregressive component as a time-varying factor that depends on the previous time-point and a random component (see Method section for more details). Our review of burnout theory and empirical studies on emotional exhaustion indicated that emotional exhaustion should consist of all three variance components; variance that can be assigned to 1) a time-invariant stable trait component, i.e., an underlying disposition to emotional exhaustion; 2) a time-varying, but enduring autoregressive component i.e., the development of job related emotional exhaustion over time; and 3) an occasion-specific state component, i.e., as single event, such as a critical incident triggering emotional exhaustion symptoms (Kenny & Zautra, 2001). However, so far most research has focussed on emotional exhaustion as an enduring autoregressive construct (Bakker et al., 2014). This leads to our first hypothesis:

Hypothesis 1 (H1) : We expect emotional exhaustion to show variance attributable to all three components, that is stable trait, enduring autoregressive component, and occasion specific state.

Our second group of hypotheses/research questions are based on the inconsistent

assumption and operationalisation of emotional exhaustion as state, enduring, or trait-like, and are about how heterogeneity in these components of emotional exhaustion manifests itself. Such heterogeneity may be associated with important individual characteristics. In the present study we investigated potential differences in the sizes of occupation specific state, enduring component, and stable trait due to experience, gender, school level, and school sector.

Identifying such differences is important for identifying potential personal or occupational risk factors associated with all three variance components of emotional exhaustion. If for example a certain school sector is more prone to develop more trait-like emotional exhaustion, then interventions for that sector should be targeted towards treatment of a more chronic manifestation of emotional exhaustion (see discussion section for more details).

Regarding effects of job experience there is evidence that the stability of characteristics might change with maturation (age and/or experience). The leading research in this area is based on personality traits (Prenoveau et al., 2011), followed by research in relation to depression. In the seminal work on personality traits by (Costa & McCrae, 1988) it was assumed that personality traits change until individuals reach the age of 30, but remain stable thereafter. A study that looked at personality traits as well as anxiety disorders and depression revealed similar results (Prenoveau et al., 2011). However, this study found that depression, which is considered to be similar to emotional exhaustion (Brenninkmeyer et al., 2001), showed more state-like tendencies in adults than either anxiety disorders or personality traits. Emotional exhaustion, and depression for that matter, are not personality traits and their increasing stability might be better described by symptoms manifesting from an acute state to a chronic disease as discussed by Bakker and Costa (2014) and Golembiewski and Munzenrider (1988). Thus, the trait variance could be the result of a very demanding and stable environment x person interaction. In the same manner, research shows that PTSD will

most likely develop in those most frequently involved in distressing incidents and the highest levels of cumulative trauma and risk exposure (Milligan-Saville et al., 2018). More experienced principals could, furthermore, be caught in a negative burnout cycle, where already depleted resources are drained to battle ongoing demands (Bakker & Costa, 2014; Bakker & Demerouti, 2014; Hobfoll, 2001). Applying these findings to the present study would indicate that emotional exhaustion should show higher state variance for less experienced principals, while it should show more enduring variance, and in particular stable trait variance, in more experienced principals.

Regarding gender, so far there seem to be no studies that have looked at differences in the makeup of emotional exhaustion as to its state, enduring, or trait components. Instead research has mainly investigated gender differences in the mean levels of emotional exhaustion, which is not directly comparable to differences in variance components, but could give a rough indication for formulating hypotheses. Results of a large meta-analysis including 409 effect sizes from 183 studies showed that women tend to report higher levels of emotional exhaustion than men (Purvanova & Muros, 2010). Studies focusing on principals however, are inconclusive with some studies showing that female school principals report higher levels of mental health-related problems including emotional exhaustion (Dadaczynski & Paulus, 2015; Weber et al., 2005) similar to the general population, while others do not find such (or only negligible) differences (Darmody & Smyth, 2016; Dewa et al., 2009; Friedman, 2002).

Similarly, research has only examined mean differences in emotional exhaustion for school levels and school sectors. However, this research has focused on teachers, not principals. Further, research on mean levels of burnout and emotional exhaustion regarding school level is inconsistent. While Klassen and Chiu (2010) presented findings that support less teacher strain working with younger students, other researchers could not support these findings (Antoniou et al., 2000; Dicke et al., 2016). One of the rare studies that sampled

principals did not find big differences between the burnout levels of elementary and secondary school principals either (Friedman, 2002). Research on the effects of school type or sector on the mean level of school principal burnout is scarce. The studies we could find indicated no meaningful differences (Riley, 2018). Based on these findings we formulated a hypothesis and several research questions:

Hypothesis/Research Question 2(H2):

- a. For less experienced principals we expect the state component to be the largest, followed by the enduring autoregressive component, and then a small trait component. Simultaneously, we expect the opposite pattern for principals with more experience in leadership, and a slightly more balanced (even distribution) pattern for principals with five to ten years of leadership experience.

We leave as a research question if there are any differences in the sizes of the stable trait, enduring autoregressive component, and occasion specific state components of emotional exhaustion variance between:

- b. female and male principals.
- c. principals working in different school sectors.
- d. principals working in different school levels.

Overall, we expect to find evidence for all three components in our sample of school principals. We expect the trait components to increase and the malleable components to decrease with increasing levels of experience while we leave as research questions all other individual differences.

Method

Participants

Participants were school principals working in Australia during 2011–2018. The sample ($N = 5,509$) comprised 41.7% male and 58.3% female participants: 70.3% principals, 24.5% assistant/deputy principals, 2.0% campus principals of a multi-campus school, and 3.8% other¹. The mean age of school principals in our sample was 58.22 ($SD = 8.17$) years. Regarding the school levels the principals managed, 58.5% were primary schools, 26.3% were secondary schools, and 13.3% were combination schools (both primary and secondary). Further, 74.7% of the sample worked at public schools, while 14.2% worked at catholic and 11.1% worked at independent schools. The mean years of experience (in 2011- our first wave) in their current position was 6.44 years (range = 0-37) and 15.26 years in leadership roles generally (range = 0-47).

Data on these school principals were collected as part of a large research project on principal health and wellbeing (Dicke, Marsh, et al., 2018; Riley, 2014, 2017), where principals filled in a large survey annually over eight waves in 2011–2018. The emotional exhaustion scale was completed by a total of 5,509 principals at least once and on average by $n = 2,329$ principals a year (see Table 1 for details). Other publications in peer-reviewed journals based on this data are Beusaert et al. (2016), Dicke et al. (2018) and Maxwell and Riley (2017).

Measures

Emotional Exhaustion

We used the emotional exhaustion scale of the Copenhagen Psychosocial Questionnaire (COPSOQ-II) developed by a consortium of occupational health and wellbeing researchers led by Tage S. Kristensen (Kristensen et al., 2005) as a tool for practice and research (see Dicke et al., 2018 for an overview). The scale consisted of four Likert scaled

¹ Supplemental Materials revealed no significant differences in the decomposition of emotional exhaustion for principals vs. deputy/assistant principals. For details see Supplemental Material Table S3.

items (on a five-point scale ranging on a continuum from 1- all the time to 5- not at all; for histograms of response distribution please see Table S2 in Supplemental Material). Items were: “How often have you felt worn out?”, “How often have you been physically exhausted?”, “How often have you been emotionally exhausted?”, “How often have you felt tired?”. This scale showed an average mean of $M = 2.8$ (see Table 1). McDonald’s (1999) Omega, which reflects the proportion of variance in the scale scores accounted for by a general latent factor, is reported as a measure of internal consistency (see also Zinbarg et al., 2006). Omega coefficients were .92 on average. All time points had omega values above .91 (see Table 1 for details).

Covariates

We included several individual characteristics as grouping variables. These included gender, average time in leadership positions (less than five years, five to ten years, more than ten years; based on principals’ levels of experience in 2011), school sector (public vs catholic and independent), and school level (primary vs secondary). The cut-off values for leadership experience (up to 5 years, up to ten years, more than ten years of leadership experience) were based on the fact that educator strain and attrition is usually highest in the first five years of working in the profession, then shows a slight decline (reflected in our 5-10 years of experience group) and then increases steadily again towards the end of the career (Dicke, Parker, et al., 2015); and specifically for principals see (Goldring, 2014, 2018; Hanselman et al., 2016). We merged the catholic and independent schools to one “non-public schools” group (see Supplemental Material for more details on the differences and similarities of public and non-public schools in Australia) and excluded the groups of principals responsible for primary as well as secondary students as they were very small in size (see participants; see Table 2).

Statistical Analysis

STARTS Model

For investigating our research questions we used the STARTS (Stable Trait, Auto Regressive Trait, and State; Kenny & Zautra, 1995; Kenny & Zautra, 2001) model which accounts for three different sources of variance in repeated measures: 1) a stable trait component which is assumed to be time-invariant (ST), hence correlations of the stable trait factors over time are all one; 2) an enduring auto-regressive component, which is assumed to be time-varying (ART), with a correlation structure that is assumed have larger correlations over shorter time periods and smaller correlations over longer time periods (i.e., a simplex); and 3) a state component which is assumed to be completely occasion-specific (S), thus, having no stability over time (Kenny & Zautra, 2001). Similarly, for coefficients in relation to stability the stable traits coefficient is 1, the coefficient of the enduring autoregressive component b can reach any value between 0 and 1, and the states coefficient is 0. In brief we will investigate the following components in all our models: V_{ST} the stable trait variance component, V_{ART} the enduring autoregressive variance component, V_S the occasion specific state variance component, and we will estimate b as a measure of the stability of the enduring autoregressive factors. We will report the relative variances, where, for example, the occasion specific state variance is calculated as a proportion of the sum of state, stable trait, and enduring autoregressive components variance, such that $V_S/(V_{ST} + V_{ART} + V_S)$.

It is important to emphasize that the time intervals used for STARTS models affect the interpretation and differentiation of the STARTS components (Anusic et al., 2012). This means that as we used a one year interval our occasion specific state component included all influences from that year. As our overall study had a duration of eight years, the STARTS model will thus be able to clearly differentiate between all three components (Anusic et al., 2012). However, it also means that our occasion specific state is not necessarily comparable to the state-like measures of burnout in other literature based on shorter time intervals, such as

those present in diary of experience momentary assessments (e.g., Aldrup et al., 2017; Simbula, 2010). For the present study, which did not focus on the specific events or circumstances leading to or increasing the levels of emotional exhaustion, but rather the decomposition of emotional exhaustion, a time interval of one year was thus appropriate. It is important to note that although the waves are measured a year apart they are still situated in a particular time and thus the state component captures the here and now of the principal's experience in the moment where they are filling out the survey.

In order to identify the STARTS model certain constraints are necessary. Assuming that the waves are equally spaced, Kenny and Zautra (2001) suggest constraining the rate of change to be the same between all pairs of adjacent waves. Further, stationarity is assumed, which means that the overall size of the variance and the partitioning of the variance into the three components is stable over time. In order to maintain consistency of variance partitioning across time, the variance of the the disturbance of the first enduring autoregressive factor was constrained to equal $V_{ART}(1 - b^2)$ (Donnellan et al., 2012; Kenny & Zautra, 1995). In cases where there are enough measurement occasions some of these constraints can be relaxed. In the early versions of the STARTS model, based on a single manifest variable, the latter occasion specific state component or time specific effects were conflated with measurement error. Thus, we modelled a latent (second order) version of the model where every time point was based on a multiple indicator factor that explicitly accounts for measurement error (Alessandri et al., 2016; Donnellan et al., 2012; Mund et al., 2020; Wagner et al., 2016). This means variables in the STARTS model were purged of measurement error and none of the reported variance is attributed to error (for an overview of items residuals of our basic STARTS model please see Table S2 in the Supplemental Material). The latent STARTS model is essentially a more restricted model of the (Marsh & Grayson, 1994) general longitudinal model that includes all possible correlations between latent factors at all each

wave (see Donnellan et al., 2011 for more details; see also Kenny & Zautra, 1995).

Multigroup Models

To investigate factors that could explain differences in the variance components we tested several multigroup models where we could compare the distribution of variance components between groups. The advantage of using the multigroup approach over covariates is that we will be able to simultaneously decompose the variance components of the STARTS model for all groups (Mund et al., 2020; Wagner et al., 2016). Difference tests between components were conducted with the DELTA method using MPlus' model constraint command. To ensure time invariance of our grouping variables, we excluded principals that had changed either school sector ($N= 17$) or school level ($N= 42$).

Longitudinal models such as the STARTS models rely on the assumption that the measure consistently functions in the same way, i.e. ranks the people in the same way at each occasion. Hence an important prerequisite for testing our models was to establish metric invariance in the overall sample over time and across samples in the multi-group models. In our data, measurement invariance was tested in all models by comparing fit of models with freely estimated factor loadings to corresponding models with factor loading constrained across time or groups (where feasible). In all cases results revealed strong evidence for measurement invariance (see Supplemental Material Table S1).

Missing Data

For the present analyses, we include all participants who responded in at least one of eight years, 2011-2018. Principals are invited to participate in each wave, even if they did not respond to the previous wave(s). It is important to note that in this sample dropout does not follow the same pattern as in many other studies; instead of principals dropping out not returning, most principals drop-out occasionally and return to the survey sometime in the following years. In 2018, approximately 94.5% of participants have participated in the survey

multiple times (Riley et al., 2019). The response rates for each wave are between 34.5%-52% with an average of 41% across all waves (total N of 5,509; for details see Table 1). As such, we applied multiple imputation to our data. Thus, we were able to use the data of all 5,509 principals at each wave. As there are about ~10,000 principals in Australia (Riley et al., 2019), our sample represents around half of Australian principals at each wave (with just under a quarter having provided data at each wave). There was no systematic or meaningful pattern of relationship between survey non-response and levels of emotional exhaustion (see Supplemental Material for more details).

Multiple imputation provides a powerful tool for dealing with missing values by producing valid parameter estimates that are less biased than ad hoc procedures such as listwise deletion, even in cases where data are not missing at random (Schafer & Graham, 2002). Multiple imputation has been found to result in trustworthy, unbiased estimates for missing values even when large numbers of values are missing (Enders, 2010) and to be an adequate method to manage missing data in large longitudinal studies (Jelčić et al., 2009). More specifically, as emphasized in classic discussions of missing data (e.g., Newman, 2014), under the missing-at-random (MAR) assumption that is the basis of multiple imputation, missingness is allowed to be conditional on all variables included in the analyses, but does not depend on the values of variables that are missing. In a longitudinal panel design, this implies that missing values can be conditional on the values of the same variable collected in a different wave. This makes it unlikely that MAR assumptions are seriously violated, as the key situation of not MAR is when missingness is related to the variable itself. Hence, having multiple waves of parallel data provides strong protection against this violation of the MAR assumption. We also specified the missing data model assuming multivariate normality. We used the built in Mplus data imputation command where the IMPUTE option is used to specify the analysis variables for which missing values will be imputed. This handling of the

missing data is consistent with the STARTS model (substantive model compatible) because the STARTS model is only based on the covariance structure and this is reflected in the imputation model in Mplus. In effect, only variables that are part of the analyses are included in the imputation procedure. There were no additional auxiliary variables included for the imputation process. The reported models are based on 100 imputed datasets. The final parameter estimates were obtained through the aggregation procedure implemented in Mplus, following Rubin's (1987) rules.

Multiple imputation in Mplus is carried out using Bayesian estimation. Data are imputed using an unrestricted (saturated) model, which is the model of unrestricted means, variances, and covariances for all continuous items of emotional exhaustion. Imputation models were estimated with 10,000 Markov chain Monte Carlo (MCMC) iterations with two Markov Chains (Muthén & Muthén, 1998–2017). Convergence of imputation models is evaluated by the potential scale reduction (PSR; Asparouhov & Muthén, 2010). PSR is the ratio of total variance across chains and pooled variance within a chain. We used $PSR < 1.05$ as an appropriate convergence criterion (Gelman & Rubin, 1992). Every 100th iteration in the draws from the posterior distribution are used for imputed values.

Model Fit

For all structural equation modeling we used Mplus (Version 7; Muthén & Muthén, 2012). Given the known sensitivity of the chi-square test to minor deviations from multivariate normality, and to minor misspecifications in large sample sizes, applied SEM research focuses on indices that are relatively sample-size independent (Hu & Bentler, 1999; Marsh et al., 2004). This includes the Root Mean Square Error of Approximation (RMSEA), the Tucker-Lewis Index (TLI), and the Comparative Fit Index (CFI). Population values of TLI and CFI vary along a 0-to-1 continuum, in which values greater than .90 and .95 typically reflect acceptable and excellent fits to the data respectively. Values smaller than .08 and .06

for the RMSEA support acceptable and good model fits respectively (e.g., Browne & Cudeck, 1992; Hu & Bentler, 1999).

For investigating our research questions and hypotheses we present an a priori series of sequential models:

1. The basic STARTS model of emotional exhaustion (H1)
2. Several multigroup STARTS models of emotional exhaustion, based on Model 1a, for identifying differences in the variance components based on group membership (H2)

Results

We will first test our basic STARTS models with the entire sample before moving on to looking at a STARTS model including covariates that might predict differences in the variance components. Then we will test multi-group models, based on those covariates, for investigating differences in the variance components over groups, similarly to the strategy used by Wagner et al. (2016). As a prerequisite for our analyses, we tested longitudinal invariance of emotional exhaustion. Results comparing model fit indices revealed that fit of the more restricted model, where factor loadings were being held invariant, was not worse with regard to fit indices (see Supplemental Material Table S1). The model with invariant factor loadings also provided latent correlations over time (see Table 2) with coefficients reflecting test-retest correlations.

In our basic STARTS model we modeled all variance components: a) a stable trait factor; b) eight enduring autoregressive factors; c) eight occasion specific state factors; and d) measurement factors for the eight waves as latent variables (see Figure 1).

Basic STARTS Model (H1)

In this basic model we assumed stationarity² of total variance in addition to the proportion of variances to be invariant over time. Results revealed excellent model fit (see Table 2). Inspection of the variance components showed that almost equal parts of the burnout variance could be attributed to the enduring autoregressive component (39%), the stable trait component (33%), and the remaining 27% being attributable to the occasion-specific state variance. All of these components were statistically significant³.

The autoregressive path coefficient, which represents the 1-year stability of the enduring autoregressive factor, was high (.86). Following Donnellan et al. (2012), we used this estimate to calculate the connection between the enduring autoregressive components in 2011 and 2018, by raising the value of the path coefficient (.86) by the 8th (2011-2018 = 8 years) power resulting in a correlation of .29, which is moderate to small, but suggests that some part of the test-retest correlation between the emotional exhaustion scores of 2011 and 2018 ($r = .50$; $SE = 0.03$; see Table 2) reflects a significant enduring autoregressive effect (Donnellan et al., 2012), while the rest of this correlation is driven by the stable trait factor (by definition the occasion specific state factor can not have shared influences).

Overall, these results suggest that, for the entire sample, principals' emotional exhaustion could be ascribed to enduring (autoregressive) or steady changes, but also depended in large part on very stable characteristics as well as occasion specific conditions.

Multigroup Models (H2)

All multigroup models (Models 2a-d) were based on Model 1 but included a grouping variable based on several time invariant characteristics that we assumed might have potential

² We conducted additional analyses (see Supplemental Material) where we tested for quasi-stationarity and freed the autoregressive coefficients over time. As these models revealed negligible differences to this basic model, we decided that there was no benefit in either freeing the overall size of the variance or autoregressive coefficients over time. Thus, all consequent models are based on the more parsimonious model assuming stationarity and invariant autoregressive coefficients.

³ Results reported here are based on ML. Running the models with MLR revealed very similar results with differences of less than .01 in the size of the variance components.

effects on the variance components of emotional exhaustion. These variables were years in leadership position (Model 2a; 5 years and less, five to ten years, and more than ten years of experience in leadership positions), gender (Model 2b), school sector (Model 2c; i.e., public vs. independent and catholic schools), and school level (Model 2d; i.e., primary or secondary school). All models fit the data well (see Table 3). The variance components however, varied in size depending on group memberships.

Leadership experience

Results revealed a pattern in line with our hypothesis (see Table 4 and Figure 2). Both groups with lower levels of experience showed much larger malleable components (enduring autoregressive and occasion specific state). For both groups, the enduring autoregressive component was largest less than five years: 59%; five to ten years: 57%) followed by the occasion specific state (less than five years: 31%; five to ten years: 29%). The stable trait component for both groups with less leadership experience was smallest and, in fact, not statistically significant (see Table 4).

For the group with more than ten years of experience the stable trait component made up 44% of their variance in emotional exhaustion. Nevertheless, only the differences in occasion specific state and stable trait of the group with up to five years of experience, and over ten years of experience were statistically significant. The autoregressive path estimate was high in all three groups, and there were no significant differences between the groups in either the autoregressive path estimates nor the autoregressive component. Overall, for more experienced principals, emotional exhaustion could be ascribed to very stable characteristics, while for less experienced principals emotional exhaustion depended in a large part on malleable conditions.

Gender

Examining gender specific patterns in the variance components of emotional

exhaustion revealed that, for women, a larger part of emotional exhaustion variance was attributed to the stable trait component (48%, occasion specific state was 21%, autoregressive trait was 31%), while for men the variance attributed to autoregressive trait was highest (45%), followed by occasion specific state variance (30%), with slightly smaller stable trait variance (25%; see Figure 2). Only the difference in the state component was statistically significant between women and men among three components. The autoregressive path estimates were again high in both groups, and there were no significant differences. Overall, for female principals, emotional exhaustion could largely be ascribed to very stable characteristics, while for male principals emotional exhaustion depended on malleable conditions.

School sector

Results based on school sector (public vs. non-public) showed the enduring autoregressive trait to be largest in both groups (public 45%, and non-public 47%). Stable trait and occasion specific state components for the public-school principals were almost the same size (29% vs. 26%, respectively; see Figure 2) while the occasion specific state component (32%) in non-public school principals was a bit larger than the stable trait (22%), which additionally was not statistically significant. Autoregressive path estimates were high. There were no statistically significant differences in any components or the path estimates between these groups (see Table 4). Overall, there were no differences in the size of the variance components for principals of public or non-public (private/independent) schools.

School level

The variance components for principals from different school levels (primary vs. secondary) showed a very similar pattern, with principals of secondary schools showing very similar sized stable trait (39%) and enduring autoregressive trait (38%) components and a smaller occasion specific state component (see Figure 2). Principals of primary schools

showed a slightly larger enduring autoregressive trait (41%), followed by the stable trait (31%) component and occasion specific state component (28%). The stable trait and enduring autoregressive trait for both groups was not statistically significant. The autoregressive path estimates were high and similar in size. There were no significant differences between groups in any of the components or the autoregressive path estimates. Overall, there were no differences in the size of the variance components for principals of primary or secondary schools.

Discussion

The major aim of the present study was to investigate a decomposition of emotional exhaustion into its occasion specific state, enduring autoregressive, and stable trait components. Results revealed that, for principals, emotional exhaustion is approximately evenly split between the enduring autoregressive component, stable trait component, and occasion specific state component. The heterogeneity in profiles, with regard to the variables included in the present study, was mainly associated with individual characteristics of the principal themselves (i.e., gender and experience) rather than characteristics of the job (i.e., school sector and level). This finding is consistent with findings from Klusmann et al. (2008) who found that school-level characteristics, as opposed to individual teacher differences, accounted for only a small amount of the variance in teachers' emotional exhaustion.

Theoretical Implications for a Multi-Componential Emotional Exhaustion

The strength of using the STARTS model is that it also allows testing for an occasion specific state, a stable trait, and a third enduring autoregressive, but still malleable component. Our results show that emotional exhaustion has meaningful levels of all three components: occasion-specific state, enduring autoregressive component, and stable trait. This leads to the question of whether the components represent stages of how emotional exhaustion manifests from an acute state to a chronic disease as suggested by other researchers (Bakker & Costa,

2014; Golembiewski & Munzenrider, 1988), and as is similar to findings in the trauma and PTSD literature (Milligan-Saville et al., 2018). Our results suggest this is true for emotional exhaustion, given the change in variance components favoring trait in experienced principals. We found the biggest differences in the components resulted from the principals' level of experience. Here, it was unsurprising that inexperienced principals' emotional exhaustion variance was almost completely explained by state and enduring autoregressive components, while more experienced principals showed a larger trait component. In effect, emotional exhaustion seems to be an ongoing process that unfolds over time in line with assumptions by Bakker and Costa (2014). Based on the COR model this manifested emotional exhaustion is the result of a loss spiral, where the ongoing depletion of resources leads to increasing levels of emotional exhaustion. A possible cause for this spiral is the so-called process of undermining (Linden et al., 2005). Undermining assumes that exhausted employees make mistakes costing them even more effort and time to fix, which in turn leads to more exhaustion and consequently even more mistakes (Linden et al., 2005). In addition, the differences of experience level could reflect a maturation effect similar to those found in personality traits and depression (Costa & McCrae, 1988; Debast et al., 2014; Prenoveau et al., 2011), where it is assumed that these constructs display their biggest changes until individuals reach early adulthood, when change slows down significantly. Although our current sample is beyond early adulthood, we would still expect greater changes in less experienced principals.

Other constructs with distinct components are emotions which also consist of state and trait-like components (Zelenski & Larsen, 2000). For example trait anxiety is dispositional, enduring from birth or early childhood, and presents across settings, while state anxiety is more simply conceptualised around a highly anxiety provoking stimulus (e.g., Spielberger, 1972). The nature of emotional exhaustion is, however, very different than that of anxiety in

that even when it is considered trait-like, it is likely that individuals are not born with emotional exhaustion or carry it from a young age, but rather that trait-like emotional exhaustion is the result of a burnout specific constellation of chronic demands and resources. Similarly, for state-like emotional exhaustion, which cannot be provoked through one single stimulus, as can for instance state-anxiety by an anxiety-inducing stimulus, but can only occur in burnout-specific situations (i.e., the interaction of a demanding situation and a lack of either job related or personal resources to overcome these (Bakker & Demerouti, 2014; Hobfoll, 2001). These findings show the importance of understanding emotional exhaustion as a reaction to an imbalance of demands and resources as in JD-theory (Bakker and Demerouti 2017), but also as a self-reinforcing process as in COR (Hobfoll 2001). This means there might be a threshold, after which the continuing experience of emotional exhaustion could lead to a manifestation of the experience of emotional exhaustion.

However, while a temporal aspect most likely plays a large role in the development from state-like to trait-like emotional exhaustion, there might be individuals that are more prone to develop or end up in a negative burnout spiral, supported by our results showing that females seemed to display a larger trait-like emotional exhaustion. Concurrently, females generally report higher levels of associated illbeing, including burnout and emotional exhaustion compared to men in the general population (Purvanova & Muros, 2010), and specifically in school principals (Dadaczynski & Paulus, 2015). Taken together this could be translated into a higher incidence rate of chronic burnout, or a stronger disposition for females to experience burnout. Assuming that job related demands of male and female principals should be similar (Dicke et al. 2018; Darmody and Smyth 2016), a possible explanation for the different experience of emotional exhaustion could be factors outside of work such as family related additional demands, less access to support, or less effective coping mechanisms (for an overview see Purvanova and Muros 2010). According to JD-R, all of these

disadvantages, that is, additional demands, for females would result in more opportunities for an imbalance of demands and resources. This would in turn lead to an additional depletion of resources which then accelerates the transition of experiencing state-like emotional exhaustion to experiencing enduring and trait-like exhaustion (Bakker and Demerouti 2014).

Likewise, for example, personality characteristics in teachers (Cano-García et al., 2005; Langelaan et al., 2006) and affect in teachers (Thoresen et al., 2003), and personality traits in general (Alarcon et al., 2009) have been repeatedly shown to be associated with emotional exhaustion. Such personal dispositions to developing burnout would be of particular importance for developing, preventing and treating emotional exhaustion, as will be discussed in the following section.

Practical Implications to Prevent and Deal with a Multi-Componential Emotional Exhaustion

Given the large and similar magnitude of variance components associated with the stable trait, enduring autoregressive trait, and occasion specific state component it is likely that interventions that target all three are necessary. This includes event and time critical resourcing to offset spikes in demands, as well as clinical interventions to improve coping styles and protective resources (Bakker & Demerouti, 2014; Hobfoll, 2001), both ideally targeted towards individual needs of educators (for an overview see Dicke, Elling, et al., 2015; Vercambre et al., 2009). For inexperienced principals, emotional exhaustion was mainly based on malleable components. This suggests the critical importance of early mentoring, training, and support in order to avoid acute burnout transitioning to becoming chronic (Dicke et al., 2014, 2016; Dicke, Elling, et al., 2015; Dicke, Parker, et al., 2015). This is because inexperienced principal burnout symptoms appear to be far from set and thus most amenable to change. While such early support will ideally function as a preventive measure to avoid developing a more chronic trait-like manifestation of experiencing emotional

exhaustion, as seen more in experienced principals, additional interventions will still be necessary for those with existing stable trait-like (and enduring autoregressive) emotional exhaustion. Similarly to the above, such late interventions should aim to break the negative burnout cycle by increasing the depleted resources and reducing the draining demands (Bakker & Costa, 2014; Bakker & Demerouti, 2014; Hobfoll, 2001) to resolve the burnout inducing situation. Thus, the onus of being mentally healthy should not be placed entirely on principals. It is key that systemic changes to lessen the burden and demands of principals are undertaken. Nevertheless, such rather slow-moving, politically-intertwined systemic changes need to be complemented by more immediate effects through interventions aimed at the resource and resilience building capacity of individuals, i.e. principals.

Among such measures to target ongoing, that is chronic, emotional exhaustion, teaching employees how to recover and detach from work has proven to be helpful (Bakker & Costa, 2014). Moreover, a recent meta-analysis of burnout interventions has shown that particularly for emotional exhaustion, interventions that focus on relaxation techniques, mindfulness, improving job related skills, and cognitive behavioral interventions (CBT) are effective (for teachers Iancu et al., 2017; in general Maricuțoiu et al., 2016). Assuming that there might be individuals that have a higher disposition to develop burnout would furthermore suggest researching the histories of people who choose to take up the role as there may be person-environment fit issues that only emerge over time (Burisch, 2002; Friedman, 2002).

In our results, the enduring autoregressive component of emotional exhaustion was of a similar size to the other components and statistically significant. From an implication perspective this means that policy makers and managers should provide support to principals, not only immediately following an event that may result in a spike in burnout, but also over a longer period given the possibility of lingering effects once the event has passed.

Strengths, Limitations, and Implications for Future Research

The present study was based on a large, representative, and longitudinal sample of Australian school principals. This is a strength for deriving conclusions for school principals, but also a limitation in the sense that our results cannot be easily generalized. That said, the school principals occupation is a very varied one (Dadaczynski & Paulus, 2015; Liebowitz & Porter, 2019), which includes many tasks of administrative, financial, managing, leadership-related, teaching-orientated nature. Thus, results found in this sample, might apply to many other occupations. While the specific emotional exhaustion items used in the present study themselves are worded “more generally”, the complete survey is framed to assess principal health and wellbeing in the workplace and includes a multitude of references to being work-related. Given this information, it is unlikely, but still possible that we assessed general emotional exhaustion and not specifically work-related emotional exhaustion. Further, we only focussed on one dimension of burnout, that is emotional exhaustion, which is a very common approach, particularly when working with teacher (related) occupations (Dicke, Stebner, et al., 2018; Iancu et al., 2017). Nevertheless, future research should compare the decomposition of emotional exhaustion and other burnout components over different occupations. An interesting focus in this regard would be to focus on the temporal sequence of the burnout dimensions, thereby investigating the relation of acute and chronic burnout with personal accomplishment and depersonalization, as research has suggested emotional exhaustion precedes the development of these latter dimensions. While our results found heterogeneity in the size of the variance components of emotional exhaustion to be linked to individual characteristics (gender and experience) and not the job/school characteristics (school sector or level), including other such variables relevant to JD-R might show a very different pattern and should be considered in future research. The inclusion of other important constructs as outcomes could also shed light on the validity of our assigned components,

research questions here could address if these outcomes are predicted differently by the different components (Merz and Roesch 2011). Moreover, qualitative research following up on the present study to understand the daily lived experience of principals would be important. This research would be able to identify the more personal and individual differences in the principal's development of emotional exhaustion. As in most burnout studies (Bakker & Costa, 2014), our study made use of a convenience sample, where the most affected (exhausted) principals most likely had dropped out. However additional analyses (see Supplemental Material) did not show any meaningful or systematic relations between non-response and levels of emotional exhaustion.

While the STARTS model has many strengths, such as the inclusion of three variance components, controlling for measurement error, and flexibility in its setup when using structural equation modelling, a limitation in its application is that it is quite complex and prone to fail convergence (Kenny & Zautra, 2001). While all of our models converged, we were not able to add even more complexity such as testing a model without any assumptions of stationarity (i.e., allowing the size of absolute variance in addition to the distribution of components to vary over time (Donnellan et al., 2012). With regard to the time intervals chosen to measure emotional exhaustion we used an annual measurement. This choice was foremost driven by theoretical (see Method section), but also practical considerations. School principals already experience high levels of demands at work and long work hours (Darmody & Smyth, 2016; Dicke et al., 2019; Dicke, Marsh, et al., 2018; Riley et al., 2019) It is, thus, very important to regularly survey their levels of occupational work. But this work is also quite difficult. Maintaining the high response levels, trust, and commitment of such samples is only possible due to continuous effort put into the relationship, ongoing communication with participants, and targeted marketing efforts. These measures are quite costly with regard to resources. Further, it is crucial not to provoke research and survey fatigue within these

samples.

The point of the model is not to capture the person's state every day of the year, but rather at the moment the survey is filled out with the assumption that principals will vary in what is affecting them now. Further, research may want to consider the influence of survey instructions related to time-frames (e.g., over the last week, today, right now, generally) on the proportion of variance associated with state, enduring autoregressive, and trait. Another interesting extension of the model could be to include other time-invariant and time-varying covariates to address research questions that target potential predictions of the trait component or state and autoregressive component respectively.

Our results have important implications for future research. The almost balanced distribution of all three components found in our study highlights the critical importance of distinguishing between- and within-person variance in burnout in applied research. While cross-lagged models have been popular in burnout research (Bakker & Demerouti, 2007), too few have taken advantage of recent developments in statistical analysis that aim to more clearly focus on modelling and predicting between *and* within person change (e.g., bivariate STARTS, Random Intercept-Cross Lag Panel Model; but see Aldrup et al., 2017; Bakker & Costa, 2014).

Conclusion

The present study provided important insights into a) the development of emotional exhaustion of a still understudied but high risk occupational group of school principals, b) the decomposition of emotional exhaustion into state, enduring autoregressive, and trait-like variance, and c) possible heterogeneity in these components. We found evidence for all three components, with differences attributable to individual characteristics (experience and gender) rather than school characteristics (school type and level). These results are important for furthering the theoretical definition of emotional exhaustion and thus, burnout, but more

importantly for practical applications including prevention and treatment of high levels of emotional exhaustion. Overall, we conclude that the responsibility for principals' wellbeing lies within the system and its policies as much as with the principals themselves. Moreover, it is of critical importance to nip the development of chronic emotional exhaustion in the bud by offering preventive measures to principals in burnout provoking situations. Thus, measures to tackle emotional exhaustion should ideally include elements that tap both the situational/contextual and individual factors that cause emotional exhaustion in school principals. Furthermore, measures need to be individually targeted, meaning more preventive for principals with more state-like emotional exhaustion, more interventive for principals with more trait-like emotional exhaustion.

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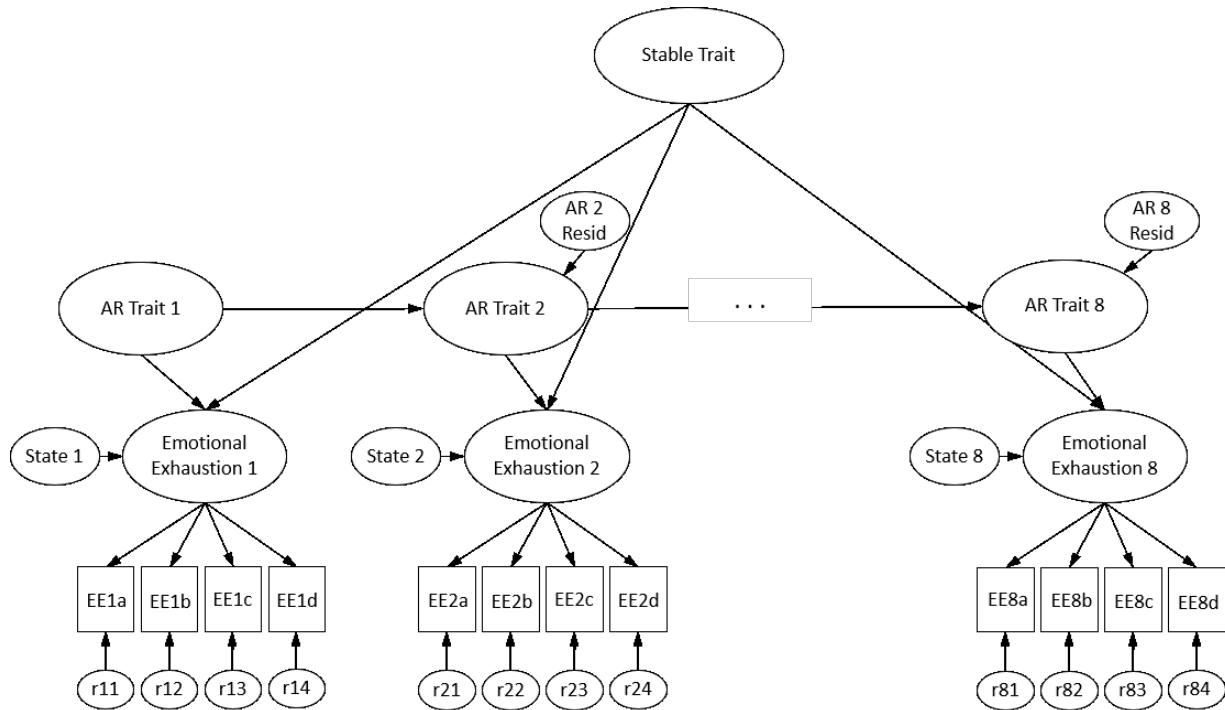
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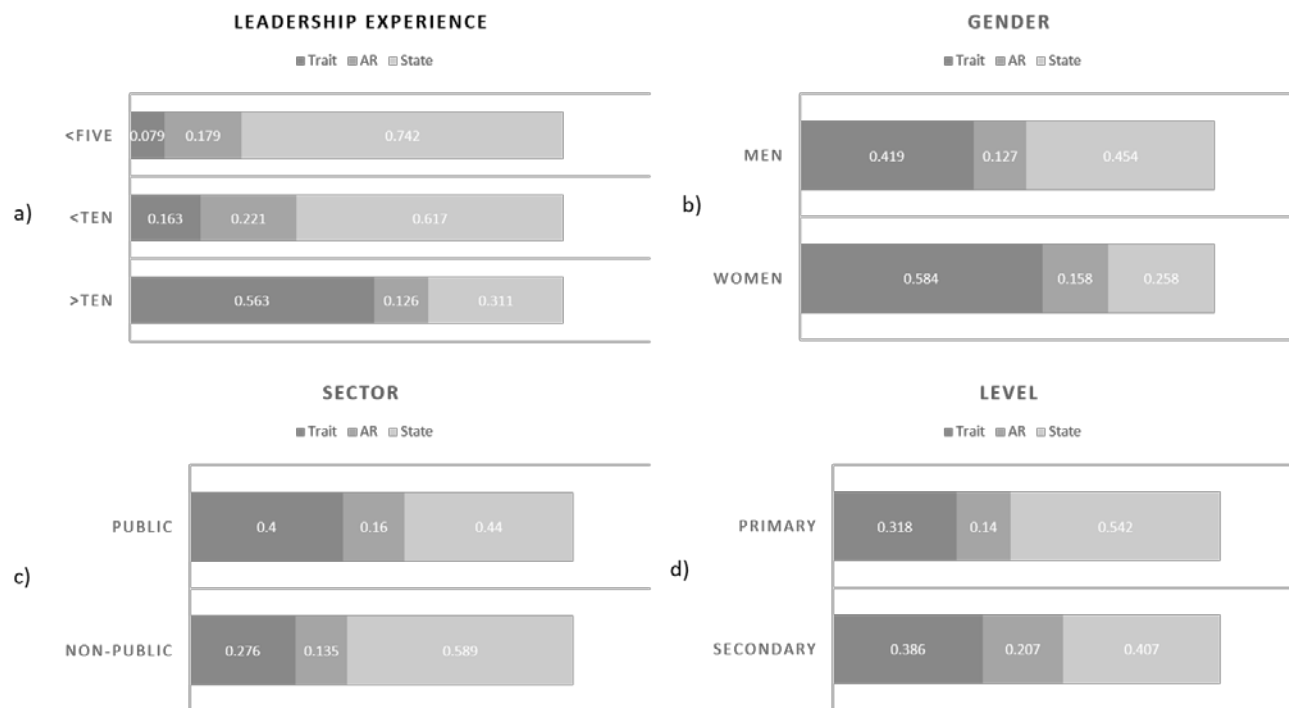
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Figure 1*Basic STARTS Model*

Note. STARTS (stable trait, autoregressive trait, and state) model based on multiple indicator factors decomposing emotional exhaustion into a stable trait, an enduring autoregressive component, an occasion specific state, and measurement error. AR = autoregressive trait. AR Resid. = autoregressive residual. Correlated uniquenesses were included in the analyses but are not displayed in this figure.

Figure 2*Variance Components by Group*

Note. Trait = stable trait. AR = enduring autoregressive component. State = occasion specific state.