Work environment predictors of beginning teacher burnout.

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Abstract

This study investigated elements of school environments that explain variance in burnout scores in a sample of university graduands two years after they commenced work as teachers. Using a longitudinal survey methodology, 79 beginning teachers completed the Maslach Burnout Inventory (MBI: Maslach, Jackson, & Leiter, 1996) on four occasions over a two year period, first six weeks after they commenced work as teachers and finally in the concluding term of their second year of teaching. Beginning teachers also completed the Work Environment Scale (WES: Moos, 1994) each time they were surveyed. The revised Eysenck Personality Questionnaire (EPQ-R/s: Eysenck & Eysenck, 1991) was administered when the graduands were first surveyed. In a series of hierarchical regression analyses, reports of how innovative the work environment was perceived to be added significantly to the explanation of variance in all three MBI subscales after first controlling for initial levels of burnout and the personality trait Neuroticism.

Work environment predictors of beginning teacher burnout.

It is now well accepted that the burnout phenomenon is a chronic state of physical, emotional and mental exhaustion that arises in personnel from the cumulative demands of their work. In relation to Hans Selye's (1967) three-stage general adaptation response to stressful events, the alarm, resistance, and exhaustion trilogy, burnout equates to the last phase of exhaustion, and the consequential depletion of physiological and psychological resources that occurs when an individual continually fails to adapt positively to chronic stress. Thus, the commonly held view is that burnout is a tragic end point in response to ongoing stressors, viz job stress, and the phenomenon is associated with significant adverse health implications for sufferers (Cordes & Dougherty, 1993; Lee & Ashforth, 1996; Maslach & Goldberg, 1998). Furthermore, according to research published over the last decade, personnel who have reached a state of burnout are likely to have developed some physiological responses to stressful events, such as elevated early morning cortisol levels, that differ from the responses observed in personnel who are experiencing stress but who are not burnt-out (De Vente, Olff, Van Amsterdam, Kamphuis, & Emmelkamp, 2003; Klein & Verbeke, 1999; Pruessner, Hellhammer, & Kirschbaum, 1999), and this “burnout” physiology is thought to be quite harmful to the long-term health and viability of the nervous system of afflicted personnel (O’Brien, 1997; Sapolsky, 1996).

While there are several definitions of burnout that have been presented in the extensive literature on this subject (Cherniss, 1980; Freudenberger, 1980), the most widely accepted definition of burnout stems from Maslach's assertion that burnout is “...a three dimensional syndrome of emotional exhaustion, depersonalisation, and reduced personal accomplishment that occurs among individuals who work with people in some helping capacity” (Maslach, 1982, p. 3). Or as Burke and Greenglass (1995) succinctly summarize the accepted wisdom “Psychological burnout is an umbrella term which includes three components that are conceptually distinct but empirically related (p.188).

While the initial years of a career are an important focus for burnout researchers, it is notable that past research into burnout has overly concentrated on populations of established workers and therefore, may have reached conclusions about burnout pertinent to populations of workers who may, as a group, be more resilient and/or more professionally acculturated than entry level populations at the time of their entry to a new profession. The teaching profession is no exception (Guglielmi & Tatrow, 1998). While there is an abundant literature that has focussed on the beginning teacher and trainee teacher experience, there is a dearth of studies investigating beginning teacher burnout. Perhaps this situation arises from the general perception that burnout takes considerable time to develop and therefore the accepted wisdom is that it is unlikely burnout will be observed at the commencement of a teaching career. Controversially, the results of one of the very few investigations of burnout undertaken with a focus on beginning teachers disputes this logic. Fimian and Blanton (1987) used a survey methodology to compare burnout in less experienced teachers and trainees with groups of more experienced teachers and found the burnout rates in less experienced and trainee groups to be almost identical to that reported by more experienced teachers. This raises two and perhaps three important questions for burnout researchers. Do a significant proportion of beginning teachers enter their

profession exhibiting symptoms of burnout that presumably may have arisen during their prior period of tertiary preparation, or alternatively, is the work environment and the demands that are placed on beginning teachers so aversive that burnout develops exceedingly rapidly in significant proportions of beginning teachers? If either of these propositions is correct, a subsequent question might be whether a "high-burnout" cohort of beginning teachers is overly represented in the significant early career turnover statistics observed in this profession? Attrition rates are estimated to be as high as 30% for beginning teachers within 3 years of commencing work (Gold, 1996; Gold, Roth, Wright, & Michael, 1991), and recently the Australian Federal Government recommended further research into the reasons driving high rates of beginning teacher attrition (Commonwealth Department of Education Science and Training, 2002).

Over and above clarifying the above questions about how quickly burnout develops in the teaching profession and investigating the possibility of links between burnout and early career attrition, the initial teaching years remain an important research focus for educational researchers. Previous work in the burnout field clearly identify several work climate factors, such as work pressure, role clarity and support, as influential in determining burnout case rates (Cordes & Dougherty, 1993; Iverson, Olekalns, & Erwin, 1998; Kahill, 1988; Maslach & Goldberg, 1998), however these variables have not been systematically investigated with beginning teachers where other factors, such as the perceived ability to exercise innovative teaching practices studied at university, may be more or less influential in determining whether burnout develops at the beginning of a career. Furthermore, while the literature describing the experiences of beginning teachers is replete with recurrent themes of initial overwhelm, reality shock, and the need for support, as well as accounts of survivor progression towards competence and proficiency as a teacher (Commonwealth Department of Education, Science and Training, 2002), there is a dearth of research concerned with burnout in this population. The possibility that there are other variables specifically associated with the commencement of a career that are of importance for both the understanding of and ultimately the prevention of early career burnout should not be ignored. Indeed it is entirely feasible that how the work environment is perceived by beginning teachers as they are acculturated into the unique high pressure work environments that are typically associated with a teaching career may be directly relevant to being able to understanding why burnout has an early career onset in some cases and not others. Clearly to address this question, one that arises from a notable gap in the research literature focusing on beginning teachers (Guglielmi & Tatrow, 1998), a systematic study of the work environment perceptions of beginning teachers needs to be undertaken within a research program that has a longitudinal and prospective focus. In summary then, each year that there is a new intake of beginning teachers into an education system there exists, prior to these new recruits completing a process of organisational and professional acculturation, a group of teachers who are perceiving and evaluating their work and school environment from fresh perspectives. For researchers these fresh perspectives constitute a highly valuable viewpoint, one that may be important for understanding and preventing early career burnout in the teaching profession.

The use of a longitudinal survey methodology to investigate both work environment perceptions and the incidence of burnout over the course of a career requires caution

and attention to at least two sources of confusion. First, as mentioned earlier, it cannot necessarily be assumed that burnout is not in evidence from the commencement of a career. In the case of pre-service teacher training, students today are often required to combine tertiary study with demanding work and family commitments. Consequently graduands could quite conceivably be exhibiting significant burnout symptoms at the commencement of their teaching career. Therefore to properly consider what aspects of the teaching environment contribute to burnout symptoms, initial burnout levels should be quarantined from subsequent observations of burnout.

Second, the serial use of a self-report survey methodology to determine changes in burnout within a sample over time introduces another potentially influential source of confounding variance. Warnings about the personality trait neuroticism being a potential source of bias in symptom reporting in self-report surveys of well-being have been made repeatedly (Brief, Burke, George, Robinson, & Webster, 1988; Costa & McCrae, 1987; McCrae, 1990). Watson and Clarke (1984) describe neuroticism "as the disposition to interpret events negatively" (p. 13), and like others have argued that individual differences in reporting symptoms of distress are an important source of variance that should be examined in studies seeking to explain subjective reports of stress from environmental or other variables. In emphasizing the potential importance that this variable is expected to have in job stress research with variables derived from surveys or self-reporting, some authors have advocated that neuroticism always be included within the research methodology (e.g., McCrae, 1990). While burnout researchers are noticeably less likely to include neuroticism in their investigations than researchers from the job stress area, there are several studies that demonstrate the importance of including neuroticism in burnout investigations (e.g., Goddard, Creed, & Patton, 2001; Iverson, Olekalns, & Erwin, 1998; Piedmont, 1993; Zellars Perrewe, & Hochwarter, 1999).

The present study

Employing a longitudinal design, the present study surveyed a sample of beginning teachers on four occasions, initially collecting self-report data on burnout, work climate and the personality trait neuroticism at T1, and then collecting self-report data on burnout and perceptions about the work environment on three subsequent occasions over a two-years period (T2-T4). In order to investigate what elements of the teaching environment, as perceived by beginning teachers themselves, may contribute to the development of burnout in the initial years of teaching, a series of hierarchical regression analyses was conducted to predict burnout levels reported at T4. To control for the effect of the personality trait neuroticism and for initial burnout levels that may have arisen prior to employment as a teacher, T1 scores for neuroticism and initial burnout were entered into the analysis before entering data describing teacher biographical details and how the beginning teacher respondents had perceived their work environments.

Method

Participants

Participants were teachers registered in the Australian state of Queensland and working full-time as teachers over the two years following their graduation from university. The sample was drawn from contact details held by the Queensland Board of Teacher Registration. Participants were surveyed on four occasions over a two-year period and a summary of participant perceptions of their work and well-being during the first year of the present study has been reported elsewhere (Goddard & O'Brien, 2003).

When first surveyed six weeks after commencing work as teachers (T1; March-April 2002), 142 teachers responded to the survey. The same teachers were again sent surveys approximately 6 months later (T2; September-October 2002), again after another 7 months had elapsed (T3; April-May 2003), and then finally after a further 6 months had elapsed (T4; October-November 2003). Respondents who completed the survey at T1 and who had either failed to return any of the subsequent surveys (n = 59) or who had indicated they were working on a part-time basis (n = 4) were discarded from the following analyses. A series of t-tests and chi-square analyses found that the 79 respondents who remained in the study did not differ from the fifty-nine respondents (41.5%) who had dropped out.

Instruments

Work Climate. Beginning teacher perceptions of work climate were investigated by administering the Work Environment Scale (WES; Moos, 1994) modified for teacher respondents according to Fisher and Fraser (1983, 1991). The modified WES was administered each time respondents were surveyed. The WES is a 90-item self-report questionnaire that asks respondents about their working environment using a true/false forced choice format (WES: sample item, "I feel under pressure at work"). The scale yields summary scores with respect to 10 subscales described by Moos (1994) as "distinct though somewhat related aspects of work environments" (p. 23). The technical manual reports alpha reliability coefficients for the 10 individual WES scales in a range between .60 and .84 for a sample of Australian teachers (p. 23). Over the course of the present study, corresponding Alpha coefficients for the 10 individual WES scales ranged from .39 to .84. Alpha coefficients for each WES subscale used in the following regression analyses are presented in Table 1.

Burnout. Burnout was measured by using the Educator Survey version of the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996). The MBI is a 22 item self-report instrument consisting of three subscales: Emotional Exhaustion (EE: sample item, "I feel emotionally drained from my work"), Depersonalization (DP: "I feel I treat some students as if they were impersonal objects"), and Personal Accomplishment (PA: "I feel I am positively influencing other people's lives through my work"). Participants respond on a seven-point frequency rating scale, ranging from "never" (0) to "every day" (6). High scores on the EE and DP subscales and low scores on the PA subscale are characteristic of burnout. Reliability coefficients for the Educator Survey version of the MBI have been reported by several researchers (Iwanicki & Schwab, 1981; Gold, 1984; Pierce & Molloy, 1990), and for a large sample of Australian teachers (N = 750) have been reported as .89 for EE, .71 for DP,

and .81 for PA (Pierce & Molloy, 1990). Over the course of the present study, Alpha coefficients for the three MBI sub-scales ranged from .89 to .91 for EE, from .73 to .81 for DP, and from .78 and .86 for PA.

Neuroticism. This personality dimension was measured by administering the 12-item short version of the neuroticism subscale of the revised Eysenck Personality Questionnaire (EPQ-R/s; Eysenck & Eysenck, 1991) at T1. The EPQ-R/s requires respondents to make yes/no decisions on items describing behaviours or responses typical of each dimension. A sample item from the neuroticism subscale is, "Are your feelings easily hurt?". The technical manual reports Alpha reliability coefficients for this subscale as .88 for males and .85 for females (Eysenck & Eysenck, 1991). The validity of this instrument is discussed in the manual (Eysenck & Eysenck) with reference to forty years of development and a large number of psychometric and experimental studies involving the Eysenck Personality Scales, and is considered satisfactory. In the present study, coefficient alpha for the Neuroticism scale was .72 for males and .77 for females.

Each time respondents were surveyed they were also asked to comment on their experiences as beginning teachers. Respondents were also asked to provide advice to future beginning teachers and to make suggestions to employers and universities as to how the beginning teacher experience for future graduates could be improved. The text units resulting from these tasks were analysed using QSR NUD*IST (Richards & Richards, 1994).

Procedure

Initially a sample of more than 600 Queensland teacher graduates was invited to participate in a longitudinal study into beginning teacher well-being to be conducted over the following two years of professional employment. Written invitations to participate in the present study were sent by mail during the last week of January 2002, just prior to the commencement of classes for the Australian 2002 academic year. Invitations indicated that the invitation to participate in the present study should only be accepted if the teacher had already secured ongoing employment as a teacher. As a result of this recruitment exercise, survey booklets containing the MBI, the WES, the short version of the EPQ/R and a questionnaire asking respondents for demographic information and personal details to facilitate ongoing contact were then forwarded directly to the 180 individuals who indicated that they had (i) secured on-going employment as teachers, and (ii) that they were prepared to participate in the present study over the following two years. Reply paid envelopes were included with the survey so that completed forms could be returned directly to the researchers. Six months later, 13 months later and again 19 months later all 142 teachers who responded to the initial survey at T1 were forwarded survey booklets containing the MBI, the WES and a brief questionnaire asking for details and perceptions about the current teaching situation and working conditions. Reply paid envelopes were included with each survey.

Results

Summary Data

At T1, the average age of the full-time beginning teacher cohort (n =79) was 26 years (SD = 7.46). Sixty-six (84%) respondents were female, a higher proportion than recent Australian national and Queensland estimates of overall female teacher frequencies of 65% and 59% respectively (Dempster, Sim, Beere, & Logan, 2000). Twenty-six respondents (33%) were married and all respondents reported having graduated from one of three Queensland universities in 2001. Thirty-five respondents (44%) were primary school teachers, thirty-five (44%) secondary teachers and nine (11%) early childhood teachers. Sixty-three respondents (80%) were employed within the Queensland state government education system while the remaining 16 teachers were employed at private schools. Twenty respondents (25%) indicated that they were working at a rural location when they commenced work as a teacher in February of 2001.

Over the two-year course of the present study, 59 respondents (75%) remained working at the school they had commenced at, while 20 beginning teachers (25%) changed schools on at least one occasion.

Work Climate

Work environment summary scores for each of the ten WES subscales reported on by beginning teachers over the two-year course of the present study are presented in Table 1. Relative to a normative population comprised of 8,146 workers from various occupational categories, participants of the present study consistently indicated perceptions of significantly higher work pressures, $t(78) = 3.71$, $p < .001$ at T1, $t(78) = 3.29$, $p < .01$ at T2, $t(78) = 4.31$, $p < .001$ at T3, $t(78) = 4.79$, $p < .001$ at T4.

Qualitative data collected throughout the course of the present study consistently described the unremitting nature of the work pressures experienced by beginning teacher respondents. The following comments provided by three respondents at T4 typify respondent advice about work pressure to future beginning teachers.

> Be prepared for working week end and nights for each term (holidays is the only time there is nothing to do).

And

> Be prepared to have very little personal time.

And

> Just get through the first year- the second year then begins to make sense.

In comparison to how the normative population described their work environments, beginning teachers consistently reported that they were more involved and committed to their jobs and that they experienced greater co-worker support and greater autonomy in their jobs, but they also reported experiencing less clarity about daily routines, rules and policies and perceived their school environments to be less able to accommodate innovative work practices.

Respondents did not elaborate on the psychometric data indicating high levels of commitment and autonomy in the qualitative data but did comment on their experiences of support received from other teachers. The comments of three respondents follow.

> I had a mentor last year and it was great to have someone more experienced offering advice.

And

> Extremely helpful, great to have someone to go to/get advice from. I have someone whose opinion I trust and whom I believe knows a lot of useful information. She is very helpful, but may not know she is my mentor.

And

> Excellent to debrief with another teacher and share ideas with. My mentor is my prac teacher from fourth year. She is great and is now one of my best friends.

It was through text that gave advice to future beginning teachers that the qualitative data reinforced the finding that there was a lack of encouragement for innovative work practice. For example:

> Learn how to be submissive and diplomatic quick.

And

> You should try your best to conform.

And

> It is far too easy to feel weighted down by old, cynical teachers who have been at he same school for 25 years.

Of serious note were the significant changes in how the work environment was perceived by beginning teachers over the two-year course of the present study. Significant declines in the perception of job commitment, job autonomy, role clarity, co-worker cohesion and supervisor support were evident between T1 to T4. These declines run counter to the logical expectation that after 21 months in a new job graduate teachers might be expected to report increased clarity about their roles, and to have formed better relationships with co-workers and supervisors, and to be more involved in, committed to and autonomous in their teaching work than when first commencing. Furthermore, with the exception of the perception of very high work pressures that remained constant throughout the course of the present study, the overall declining view of these key aspects of a beginning teachers' work environment appeared to decline uniformly over the two years and therefore could not be explained by a short "induction dip" or a temporary anomaly in the data.

Summarising the evidence provided by the WES, subscale scores indicated that beginning teachers reported experiencing significantly high work pressures and limited potential for innovation over the course of the present study, phenomena often associated with high burnout levels (Cordes, Dougherty, & Blum, 1997; Kahill, 1988). Furthermore respondents were also reporting perceptions consistent with a

steadily declining view of several key aspects of their work environments. Respondent comments about their work environment and their advice to future beginning teachers were consistent with these findings.

Insert Table 1 about here

The view that the work environment of a beginning teacher is very demanding was further reinforced by responses to a question that asked respondents to rate their work input with respect to the level of satisfaction gained from being a teacher. The proportion of teachers who indicated that they were experiencing an imbalance between the effort they were putting into their work as teachers and the rewards they received from undertaking this work was high. At T1, that is six weeks after first commencing a teaching career, 35% of respondents indicated that the effort they were putting into their job was greater than the rewards they believed they were getting back. During the course of the present study this percentage steadily *increased* so that by T4 the proportion of beginning teachers reporting an unfavourable effort-reward imbalance had increased significantly to 49%. A post-hoc comparison of WES means between the cohort of respondents reporting an unfavourable effort to reward transaction at T4 (i.e. 49% of respondents) with the cohort of respondents who reported that effort expended was approximately equal to the rewards returned (43% of respondents) found that those teachers who did perceive equity in the effort-reward transaction reported significantly higher involvement in their work, $t(71) = 3.43$, $p < .001$, perceived significantly greater opportunity to exercise innovation, $t(71) = 3.41$, $p < .001$, and reported significantly greater supervisor support, $t(71) = 2.42$, $p < .05$. This equity cohort also consistently reported lower work pressures, $t(71) = 2.27$, $p < .05$.

Beginning teacher burnout

MBI subscale summary scores describing beginning teacher burnout reported by the 79 full-time teachers over their first two years teaching are presented in Table 2. On all three MBI subscales mean beginning teacher burnout increased between T1 and T4. A series of repeated measures analyses of variance indicated that significant changes occurred between T1 and T4 across all three MBI subscale scores, $F(3,76) = 3.83$, $p < .05$ for the observed increases in Emotional Exhaustion, $F(3,76) = 2.96$, $p < .05$ for the observed increases in Depersonalization and $F(3,76) = 36.13$, $p < .001$ for the observed decreases in Personal Accomplishment. To determine if the levels of burnout reported by beginning teacher respondents sampled by the present study were high relative to levels reported by other teacher cohorts, one-sample *t*-tests were conducted comparing mean beginning teacher MBI subscale scores with normative data reported by Maslach et al. (1996) developed from a large sample ($n = 4{,}163$) of American teachers. Mean beginning teacher emotional exhaustion scores at T2, T3 and T4 were all significantly higher than the Maslach et al. norm, $t(78) = 2.88$, $p < .01$, $t(78) = 3.39$, $p < .01$ and $t(78) = 2.49$, $p < .05$ respectively, indicating high mean burnout levels were being reported on the emotional exhaustion subscale by the sample of beginning teachers. Also indicative of high levels of burnout, the mean beginning teacher personal accomplishment score at T4 was significantly lower than the norm for this subscale, $t(78) = 3.32$, $p < .01$. No significant difference from the

Maslach et al. norm was observed for the depersonalisation subscale at any time. In summary, the average burnout levels reported in the present study indicated that significant increases in burnout were being reported by the beginning teachers involved in the present study and that these increases were resulting in significant levels of burnout in comparison to normative data on two of the three MBI subscales.

Insert Table 2 about here

Post-hoc comparison of MBI means reported at T4 between the cohort of respondents reporting an unfavourable effort to reward transaction at T4 (i.e. 49% of respondents) with the cohort of respondents who reported that effort expended was approximately equal to the rewards returned (43% of respondents) found that those teachers who perceived equity in the effort-reward transaction also reported significantly lower mean burnout scores on all three MBI subscales, $t(71) = 4.90$, $p < .001$ for the Emotional Exhaustion subscale, $t(71) = 2.79$, $p < .01$ for the Depersonalization subscale, and $t(71) = 5.01$, $p < .001$ for the Personal Accomplishment subscale. Similar post-hoc comparisons of MBI means reported at T1, T2 and T3 demonstrated the same pattern of results, that is teachers reporting that the effort they were putting into their job was approximately equal to the rewards they were receiving from their job consistently reported significantly lower burnout scores for all MBI subscales.

Work Environment Predictors of Beginning Teacher Burnout

In keeping with the aim of the present study to investigate the work environment predictors of beginning teacher burnout, three separate hierarchical regression analyses using stepwise analyses at each level were undertaken to explain the variance in the three MBI subscales measured at T4. To account for the effect of burnout that may have arisen prior to entering a teaching environment, the corresponding MBI subscale score measured at T1 was entered at the first step in each of the three regression analyses. Following the advice of McCrae (1990) to always account for the influence of the personality trait neuroticism in investigations of well-being, particularly investigations relying on self-report data, Neuroticism measured by the Eysenck Personality Questionnaire at T1 was entered at the second step in each of the three regression analyses. In the third step, respondent age and a series of three dummy variables were entered to investigate the broad classifications of schools and teachers operating within the state of Queensland. These dummy variables described whether the respondent had commenced work at a school in a rural or in an urban locale, whether they were working in a public or private school, and whether they were working as an early childhood, primary or secondary school teacher. Finally, in the fourth step of each of the three hierarchical regression analyses the 10 work climate summary scores measured at T4 were entered.

After controlling for MBI scores reported at T1, the personality trait neuroticism was found to make significant contributions to the further explanation of variance in two of the three MBI subscale scores measured at T4. Neuroticism, measured at T1,

accounted for 9% of the variance in Emotional Exhaustion scores measured at T4 and 4% of the variance in Personal Accomplishment scores.

At the third step of the regression analyses, whether a teacher commenced work at a school located in a rural or urban locale accounted for 4% of variance of the respondents' Emotional Exhaustion scores at T4. Beginning teachers commencing at rural schools reported experiencing significantly greater Emotional Exhaustion than teacher graduates who commenced at urban schools. A series of post-hoc *t*-tests compared rural and urban teachers' perceptions of their work environments at T4. Teachers who commenced work in a rural location reported significantly less involvement in their work and significantly less clarity about their role(s) as a teacher, $t(77) = 2.39$, $p < .05$ and $t(77) = 2.93$, $p < .01$ respectively. Whether a graduate commenced in a government or non-government school or whether they were working at the primary, secondary or early childhood level did not explain additional variance in any of the three MBI subscale scores.

In the final step of each regression analysis, all 10 WES summary scores describing the work environment for each respondent at T4 were entered simultaneously. Notably, the work climate summary score describing how innovative the school environment was perceived to be consistently explained significant amounts of variance in burnout in all three analyses. The three separate analyses are summarised in Table 3. Inspection of Table 3 shows that the Innovation subscale of the WES accounted for 10% of additional variance in Emotional Exhaustion scores measured at T4 after which Work Pressure then accounted for another 7% of variance in Emotional Exhaustion. Although the WES measures ten distinct aspects of the work environment, only the subscale describing innovation accounted for significant amounts of unique variance in each of the three MBI subscales, and on each occasion Innovation was a more potent explanatory variable of burnout than the personality trait Neuroticism.

Insert Table 3 about here

Discussion

While caution must be exercised before the results of the present study can be generalised to other groups of beginning teachers, the results of the present study appear to give support to the proposition that how innovative a teaching environment is perceived to be by beginning teachers is significantly related to the level of burnout that is reported to develop by these teachers during the second year of their teaching career. Work environments that were rated low on their ability to support innovative teaching were consistently associated with significant increases in burnout levels, even after controlling for the personality trait neuroticism. These results are consistent with teacher burnout research that has been undertaken and reported elsewhere. For example, in a longitudinal investigation of the antecedents of teacher burnout, Burke and Greenglass (1995) have reported that a lack of stimulation and narrow client contacts, that is a work environment with a low potential to exercise innovative work practices, significantly predicted burnout a year later in a large sample of Canadian teachers. Along the same lines Friedman (2000) has postulated that beginning teacher burnout reflects the "shattered dreams" of beginning teachers who have been unable

to exercise their initiatives and talents, and recently Ben-Ari, Krole, and Har-Even (2003) have reported that the more a teacher employed complex instruction strategies, that are also presumably more challenging and more innovative, the less burnout they would report. The results of the present study therefore appear to support the more general proposition that how innovative a school work environment is perceived to be has importance in predicting the extent that burnout symptoms will be experienced. Given that the analysis undertaken in the present study has, prior to focussing on the work environment, accounted for the effect of both initial burnout and the personality trait neuroticism, it is notable that Innovation accounted for significant amounts of unique variance in each of the three separate analyses conducted. Particularly in respect of the Emotional Exhaustion scores, a core dimension of burnout, how innovative the work environment was perceived to be explained more unique variance than was accounted for by scores for Work Pressure a WES subscale that had been entered simultaneously with Innovation. Work pressure has consistently been found to be a reliable predictor of Emotional Exhaustion in other studies into the antecedents of burnout in teachers (Maslach et al., 1996). Such a finding suggests that by the second year of their careers teachers may place a greater importance on their ability to exercise innovative work practices than they place on meeting excessive work pressures and achieving acceptable clarity about their roles, key work environment predictors of burnout in more experienced workers. While this suggestion may inform future investigations, within the bounds of the present study the suggestion must be considered to be speculative as it is based on analyses suited to predicting burnout rather than confirming the relative contributions specific predictor variables make to explain total variance in burnout scores.

The results of the present study are noteworthy because they are based on a longitudinal methodology. Longitudinal methodologies have not been commonly reported in burnout research generally, and rarely from the commencement of a professional career. The present study has started to address this apparent deficiency within the literature by following the development of burnout over the first two years of professional service with the consequence that several of the results reported here were unexpected. In particular the mean levels of burnout that were reported after only six weeks employment were much higher than expected. This finding could have several explanations. For example, initial high burnout scores could simply suggest that under work conditions that feature excessive initial work demands the syndrome can develop more rapidly than commonly thought. Alternatively, it is possible that teacher burnout may actually commence developing during the rigorous and competitive pre-service university training period that precedes professional employment as a teacher. These questions will need to be settled by future investigations that commence during the period of pre-service teacher training. Either way the present study is not the first to report high burnout levels in beginning teachers (Fimian & Blanton, 1987; Gold et al., 1991) and therefore the finding of high initial burnout scores should not be dismissed lightly without the advantage of contradictory evidence. Perhaps importantly, all respondents participating in the present study undertook their pre-service university training in the years immediately preceding this study, that is the study did not include any graduate teacher who took more than a two month break between completing their entry level training at university and commencing employment. Given the demands associated with undertaking tertiary training in this area today, coupled with work and family

demands that are typically associated with university life in the 21st century, the results of the present study may be suggesting that the concept of "early career" should encompass some period of undergraduate training.

The declining view of several key features of the work environment, features such as job commitment, involvement, role clarity, and supervisor and co-worker support, was also an unexpected and surprising finding. Notably the summary scores describing these key work environment features declined significantly over the course of the present study when logic would suggest that after settling into a new teaching career and school over a 21 month period, roles would become clearer, co-workers and supervisors would be perceived as more supportive, and respondents would report becoming more involved in their school and more committed to the work that they had chosen. This was not the case and the mostly favourable perceptions of the work environment declined throughout the course of the present study. Although consistent with the findings of other researchers (for example Friedman, 2000 and Leiter, 1991), this finding appears all the more remarkable when one considers that each respondent demonstrated high levels of motivation to become teachers by successfully undertaking lengthy and expensive university training just to be eligible for employment as a teacher, and had gone to the trouble of securing employment that commenced immediately after the conclusion of their qualifying studies. Such logic was not supported by the results of the present study and in a worrisome pattern for both the administrators of education in Queensland and for Queensland teacher unions, beginning teacher respondents in the present study were clearly and consistently reporting a declining view of their working environments. Furthermore, associated with the declining perceptions of the work environment, there was an increasing proportion of respondents reporting that the effort they were putting into their teaching work was greater than the rewards they believed they were getting back from being a teacher. Seigrist (1996) has clearly demonstrated an association between such high-effort / low reward conditions and adverse health effects.

The results of the present study also add weight to the argument that burnout researchers would be well advised to include a measure of Neuroticism in survey research seeking understand this phenomenon. In summary, Neuroticism was entered at the second step in each of the hierarchal regression analyses described above in order to control for, or partial out, any contribution that this personality trait might have made to explaining the increases in burnout scores observed between T1 and T4. Not to include Neuroticism at this step could mean that the subsequent steps in the analyses could identify erroneous environmental explanations for burnout, which perhaps should correctly be attributed to this personality trait. Close inspection of Table 3 demonstrates that Neuroticism did make a significant contribution to the explanation of unique variance in the Emotional Exhaustion and Personal Accomplishment scores provided by respondents at T4. Not to have accounted for the influence of Neuroticism in this way may therefore have compromised the later steps in these analyses that sought to identify the extent that work environment could explain the increases in burnout. Looking specifically at the results for Emotional Exhaustion, Table 3 shows that the contribution of the stable personality trait neuroticism to the explanation of the increase of self-reported Emotional Exhaustion between T1 and T4 (i.e., 9% of the variance) is of the same order of magnitude that Innovation (10% of unique variance) and Work Pressure (7%) add to the explanation

of this increase. This finding is consistent with the findings reported in other burnout investigations that have controlled for the effect of Neuroticism, such as investigations into the antecedents of burnout in Australian employment service personnel (Goddard, Patton, & Creed, 2004) and burnout in American teachers and health care professionals (Piedmont, 1993). Given McCrae's (1990) warnings that neuroticism is likely to contribute to a response bias in survey responses and considering neuroticism has been well accepted as a stable and enduring personality trait, positioning neuroticism in regression analyses wishing to explain variance in MBI scores is arguably important for analyses seeking to accurately estimate the relative contributions of disposition and environmental factors. The potentially powerful influence that neuroticism may have on both survey response behaviour (Brief et al., 1988; McCrae, 1990) and on the constructs being measured (Peidmont, 1993; Watson & Clarke, 1984, Zellars et al., 1999) is certainly a cogent argument for always measuring neuroticism in research seeking to predict or explain burnout through the use of a survey methodologies.

Several limitations to the present study should be noted. The first caution concerns the "generalisability" of the present study's sample of beginning teachers. The concern here is that the pool of teachers that were initially invited to participate in this research project may not have been representative of all university graduates in Queensland. Recruitment for the present study was based upon publicly available graduation lists, newspaper result lists and then a laborious manual interrogation of the Queensland teacher registration database. Therefore the possibility of a sampling bias cannot be discounted. Furthermore, one cannot discount the possibility that those teachers who agreed to participate may have systematically differed from those that either declined to be involved in this two-year study or who had not found employment by the time the invitation to participate was circulated (participation bias). Therefore the results reported here might be limited to this population.

Second the relatively small sample size may also be considered a limitation to the present study, particularly in respect of the regression analyses where the overall variability or stability of work environment scores may have been influential in the pattern of results obtained. However the statistical significance of the results in such a small sample of beginning teachers working in schools throughout Australia also argues for the strength of some of the findings. Given the dearth of reports available that detail studies into beginning teacher burnout both here in Australia and overseas, the present investigation would have been strengthened considerably if it had simultaneously surveyed a large sample of experienced teachers. Such a refinement would ideally have made comparisons between beginning teachers and their more experienced colleagues, and depending on the sophistication of the design as permitted by budgetary and other constraints, the design might have been further strengthened if controls were matched to the beginning teachers' gender and school. These refinements did not form part of the present study.

In conclusion, the present study adds to the body of knowledge about teacher burnout and directly addresses the dearth of empirical studies investigating beginning teacher burnout from the commencement of a teaching career. The results of the present study, although based on a relatively small sample of commencing teachers, clearly identifies the perception of workplace innovation as a potentially important variable

for the understanding and management of early career burnout in the teaching profession. Additionally the present study raises a number of serious concerns for the profession, chief of which are the consistent perceptions of high and inequitable workloads that are prescribed for beginning teachers during their induction into their chosen profession and the declining view that commencing teachers progressively develop about key elements of their work environments.

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Table 1

Work Environment Scale (WES) summary scores for beginning teachers surveyed four times over their first two years of teaching.

	Beginning Teachers surveyed after first commencing work as a teacher								
	At 6 weeks (T1) (n = 79)		At 8 months (T2) (n = 79)		At 15 months (T3) (n = 79)		At 21 months (T4) (n = 79)		
WES Subscale	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*r*
Involvement	7.25	2.03	6.86	2.07	6.63	2.42	6.20	2.57	.81
Co-worker Cohesion	7.19	1.89	6.52	2.29	6.54	2.49	6.13	2.78	.84
Supervisor Support	5.94	1.92	5.56	2.32	5.49	2.29	5.41	2.04	.73
Autonomy	6.87	1.63	6.25	1.72	6.48	1.74	6.35	1.70	.45
Task Orientation	6.95	1.62	6.49	1.82	6.61	1.88	6.63	1.82	.64
Work Pressure	6.23	2.20	6.16	2.31	6.37	2.18	6.51	2.22	.79
Clarity	5.29	2.30	4.75	2.63	4.91	2.56	4.58	2.46	.76
Managerial Control	5.73	1.87	5.01	2.33	5.06	2.31	4.89	2.11	.39
Innovation	5.29	2.67	5.24	2.77	5.32	2.79	4.91	2.65	.82
Physical Comfort	4.43	2.36	4.19	2.59	4.18	2.52	3.77	2.51	.79

Table 2

Maslach Burnout Inventory (MBI) summary scores for beginning teachers surveyed four times over their first two years of teaching.

	Beginning Teachers surveyed after first commencing work as a teacher							
	At 6 weeks (T1) (n = 79)		At 8 months (T2) (n = 79)		At 15 months (T3) (n = 79)		At 21 months (T4) (n = 79)	
MBI Subscale	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Emotional Exhaustion	21.84	11.49	24.95	11.43	25.23	10.43	24.19	10.52
Depersonalization	6.72	6.30	8.01	6.94	8.23	6.24	8.24	5.82
Personal Accomplishment	37.35	7.10	36.15	7.17	37.49	6.28	32.65	5.18

Table 3

Summary data for three Hierarchical Multiple Regression Analyses Predicting Maslach Burnout Inventory (MBI) subscale scores at T4, Step-wise method (n = 79)

Significant Predictor Variables	*R*	*β*	ΔR^2	*F Change*	Significance *F Change*
Predicting EE_4					
Step 1 – EE measured at T1	.48	.31	.23	22.60	.000
Step 2 – Neuroticism	.56	.19	.09	9.86	.002
Step 3 – Rural/Urban School	.60	-.17	.04	4.82	.031
Step 4 – Innovation	.68	-.30	.10	14.24	.000
Step 5 – Work Pressure	.73	.29	.07	10.89	.001
Predicting DP_4					
Step 1 – DP measured at T1	.68	.64	.47	67.50	.000
Step 2 – Innovation	.72	-.22	.05	6.93	.010
Predicting PA_4					
Step 1 – PA measured at T1	.60	.54	.35	42.19	.000
Step 2 – Neuroticism	.63	-.17	.04	4.57	.036
Step 3 – Innovation	.67	.24	.06	7.71	.007

Note. In each analysis, all 10 WES subscales were entered simultaneously in the final level of the hierarchical analysis.