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ARTICLE

Teacher well-being and turnover intentions: Investigating the roles of job resources and job demands

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Abstract

Background: Identifying factors implicated in teachers' well-being and turnover intentions is important for driving research, policy, and practice to better support teachers in their work.

Aims: This study examined the role of three job resources (autonomy-supportive leadership, relatedness with colleagues and students) and three job demands (autonomy-thwarting leadership, time pressure, disruptive student behaviour) in relation to teacher well-being (subjective vitality, behavioural engagement, professional growth) and turnover intentions.

Sample: Participants were 426 Australian school teachers.

Methods: Structural equation modelling was used to examine main associations and interactions among factors. Teachers' characteristics (gender, teaching experience and educational qualification) and personality factors served as controls in all analyses.

Results: The job resources were generally positively associated with the well-being factors, whereas time pressure was negatively associated with vitality, but positively associated with behavioural engagement. In addition, relatedness with colleagues and subjective vitality were negatively associated with turnover intentions, whereas the reverse was true for autonomy-thwarting leadership and time pressure. There were no interaction terms retained in the final model.

Conclusion: Taken together, findings yield understanding about the salient resources and demands in relation to teachers' well-being and turnover intentions (beyond the role of background characteristics and personality factors).

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KEYWORDS
behavioural engagement, job demands, job resources, personality, professional growth, subjective vitality, teacher well-being

INTRODUCTION

Prior research has highlighted that different aspects of teachers' work—that is, job resources and demands—can help or hinder teachers' psychological functioning at work, including their well-being and turnover intentions (Bakker & Demerouti, 2017). Although prior work has highlighted several resources and demands that are salient for teachers, research that considers these factors simultaneously is now needed. Researchers have identified social support from school leaders, colleagues, and students as important job resources, along with pressure from school leadership, workload, and student behaviour as common job demands (Collie, 2022a). However, these factors have been identified in separate studies. Thus, the extent to which these factors remain salient when examined together is unknown. Considering these resources and demands concurrently is important for isolating which factors remain significant beyond the role of other factors (Hakanen et al., 2022). The most prominent factors can then form a focus in research, policy, and practice aimed at improving teachers' experiences at work and reducing attrition.

The present study, therefore, examined three job resources (autonomy-supportive leadership, relatedness with colleagues, relatedness with students) and three job demands (autonomy-thwarting leadership, time pressure, disruptive student behaviour) simultaneously in relation to teacher well-being (subjective vitality, behavioural engagement, professional growth) and, in turn, teachers' turnover intentions—all while controlling for teacher characteristics and personality. Figure 1 displays the hypothesized model. Interactions between the resources and demands were also examined, as were indirect associations.

Conceptual framework: job demands-resources theory

Job demands-resources (JD-R) theory (Bakker et al., 2023; Bakker & Demerouti, 2017) emphasizes that job resources and demands influence functioning among employees. Job resources and demands can take many different forms including physical, social, psychological or organizational factors at work (Hakanen et al., 2022; Lesener et al., 2019). Within JD-R theory, two central processes are posited. In the first of these processes, *the motivational process*, job resources (e.g., collegial support) promote positive employee outcomes (e.g., motivation). In the second process, *the health impairment process*, job demands (e.g., high workload) lead to negative employee outcomes (e.g., turnover intentions; Bakker & Demerouti, 2017). The two main processes of JD-R theory align with a dual process hypothesis, such that within-process

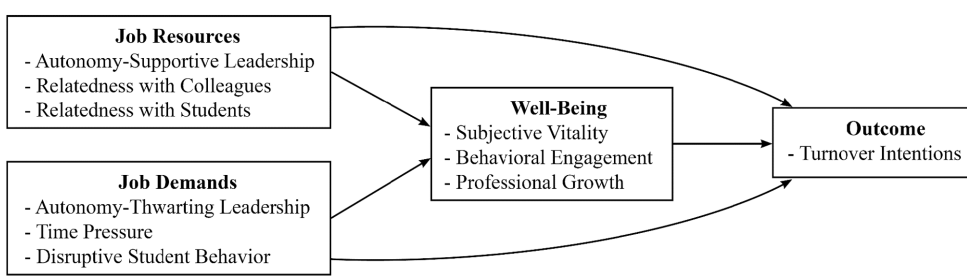

FIGURE 1 Hypothesized model

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associations are strong and positive in nature (i.e., between resources and positive outcomes, or between demands and negative outcomes), whereas between-process associations are weaker and negative (or even non-significant) in nature (i.e., between job resources and negative outcomes and vice versa; Collie et al., 2020). JD-R theory also stipulates two interaction processes. In the *boosting process*, job demands enhance the positive effect of job resources on employee's positive outcomes, whereas job resources reduce the detrimental effect of job demands on negative outcomes in the *buffering process*.

Job resources and demands salient in teaching work

Job resources and demands are known to be associated with teachers' well-being and retention-related outcomes (Dicke et al., 2018; Prieto et al., 2008; Skaalvik & Skaalvik, 2018). In the present study, six resources and demands were examined that have been shown to be important for teachers (Dicke et al., 2018; Klassen et al., 2012; Prieto et al., 2008), but have yet to be investigated simultaneously. Examining the factors together is important for determining what factors play a unique role in relation to the outcomes (given controls for shared variance are incorporated). Such knowledge is important for guiding understanding about the factors on which intervention should best focus (Hakanen et al., 2022). Moreover, this knowledge will extend prior research examining higher-order factors of job demands and job resources among general employees (Hakanen et al., 2022; Lesener et al., 2019) to pinpoint specific factors relevant to teachers.

The three job resources traverse different types of social support at work. *Autonomy-supportive leadership* refers to teachers' sense that their school principal supports their sense of agency and self-initiative at work (Ford et al., 2019; Ryan & Deci, 2017). *Relatedness with colleagues* refers to teachers' sense that they are connected to, they care for and they are cared for by their colleagues (Ryan & Deci, 2017). *Relatedness with students* refers to teachers' sense of connection and caring with their students (Ryan & Deci, 2017).

The three job demands capture common challenges for teachers (Dicke et al., 2018; Stang-Rabrig et al., 2022). *Autonomy-thwarting leadership* reflects teachers' sense that their school principal controls or pressures them to think, act, and feel in particular ways (Ryan & Deci, 2017). *Time pressure* involves the sense of having insufficient time to complete work tasks (Prieto et al., 2008). *Disruptive student behaviour* involves perceptions that students engage in behaviours such as being noisy, disturbing other students and being distracted, that make it challenging for effective learning to occur.

Together, the resources and demands tap into the basic psychological needs (autonomy, competence and relatedness) that are considered essential for optimal human functioning (Ryan & Deci, 2017). Autonomy-supportive leadership helps teachers feel autonomous in their work, which lays a foundation for positive psychological functioning at and commitment to one's work (Ford et al., 2019). Relatedness (with students and colleagues) boosts energy and investment in work (Jansen in de Wal et al., 2018; Ryan & Deci, 2008) and, in turn, leads to deeper attachments to work (Jo, 2014). In contrast, autonomy-thwarting leadership, time pressure and disruptive student behaviour can make teachers feel less competent (because they are unable to meet their learning and teaching goals) and less autonomous at work (because there are undue pressures). In turn, these factors result in lower well-being (Ryan & Deci, 2008) and weaker attachments to work (Skaalvik & Skaalvik, 2018).

Teacher well-being

In the present study, well-being is defined as "a combination of feeling good and functioning effectively" (Huppert & So, 2013, p. 838). Three well-being factors were examined that feature in theorizing on employee well-being (Bakker & Demerouti, 2017; Ryan & Frederick, 1997; Spreitzer et al., 2005). *Subjective vitality* involves feeling excited and energetic about one's job (Ryan & Frederick, 1997). *Behavioural engagement* refers to individuals' efforts to be well-prepared, productive and effective at work (Fredricks et al., 2004). *Professional growth* involves investment in one's professional growth through reflection and

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planning for development of professional skills and knowledge (Spreitzer et al., 2005). Together, the three factors of well-being traverse "feeling good" at work (i.e., subjective vitality), as well as "functioning effectively" in relation to one's job (i.e., behavioural engagement) and the profession (i.e., professional growth). These factors were selected above other well-being constructs (e.g., positive affect, job satisfaction) because the aim was to capture active and invested evaluations of well-being, rather than general contentment at work.

As per the motivational process in JD-R theory (Bakker & Demerouti, 2017), the job resources were expected to be strongly and positively associated with the well-being factors. In line with the dual process hypothesis (e.g., Collie et al., 2020), job demands were expected to be weakly and negatively associated with well-being. Prior research provides preliminary support for these hypotheses. For example, autonomy-supportive leadership is associated with greater job satisfaction (Nie et al., 2015). Relatedness with colleagues is linked with greater subjective vitality (Collie, 2022a) and job satisfaction (Stang-Rabrig et al., 2022). Relatedness with students is associated with greater work enjoyment and a broader work engagement construct (Klassen et al., 2012). Turning to the job demands, autonomy-thwarting leadership is associated with impaired well-being (greater emotional exhaustion; Collie, 2021); however, no research has apparently examined the link with adaptive well-being factors. Such examinations are important given growing concerns about declines in teacher well-being (Australian Government, 2022) and the need to identify factors implicated in this that can then be targeted in practice. Time pressure is linked with greater emotional exhaustion (Fernet et al., 2016), lower subjective vitality (Collie, 2022a) and lower work engagement (Mérida-López & Extremera, 2020). Disruptive student behaviour is also linked with lower job satisfaction (Klassen, 2010) and greater emotional exhaustion (Baeriswyl et al., 2021; Dicke et al., 2018).

Despite this growing body of work, researchers have yet to examine all six resources and demands simultaneously, which is important for determining the unique role played by each factor (Hakanen et al., 2022). Perhaps some factors are no longer relevant when examined simultaneously with the other factors (i.e., with controls for shared variance). Alternatively, it may be that particular resources are salient for subjective vitality, whereas other resources are relevant to behavioural engagement and professional growth. Such knowledge is needed for guiding the development of interventions to support teachers' psychological functioning. The present study involved examining whether the resources and demands are uniquely associated with each well-being factor.

Turnover intentions as a retention-related outcome

Turnover intentions refer to teachers' plans to search for another job and leave their current employment (Michaels & Spector, 1982). In the present study, the resources, demands and well-being factors were all examined as predictors of turnover intentions. Prior research provides some preliminary evidence for these predictors in relation to organizational commitment (another retention-related outcome; Fernet et al., 2016); however, only limited research has considered turnover intentions. For example, relatedness with students, subjective vitality and work engagement are associated with lower turnover intentions (Grant et al., 2019; Skaalvik & Skaalvik, 2018). Conversely, time pressure and disruptive student behaviour are associated with higher turnover intentions (Räsänen et al., 2020). The extent to which autonomy-supportive and -thwarting leadership, behavioural engagement and professional growth are associated with turnover intentions remains unexamined. Moreover, the extent to which the previously examined predictors remain significant when examined concurrently is important for pinpointing the most salient job resources and demands for turnover intentions.

In line with the health impairment process in JD-R theory (Bakker & Demerouti, 2017), job demands were expected to be strongly and positively associated with the outcome. Based on the dual process theory (Collie et al., 2020), job resources were expected to be weakly and negatively associated with turnover intentions. Moreover, it was hypothesized that subjective vitality and behavioural engagement would be associated with lower turnover intentions because teachers who feel energized by and engaged in their

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current job are less likely to want to quit that job (Schaufeli & Taris, 2014). In contrast, a non-significant association between professional growth and turnover intentions was expected because teachers who are developing their professional skills may be doing so with their present job or another job in mind. Alongside the main associations, interaction effects were also examined. For the interactions, it was hypothesized that the job demands would boost the strength of the association between the job resources and the well-being factors (boosting process), whereas the job resources would buffer the association between the job demands and turnover intentions (buffering process; Bakker & Demerouti, 2017). The extent to which the resources/demands are indirectly associated with the outcome via well-being was also tested.

Teacher characteristics and personality factors

Three teacher characteristics (gender, teaching experience and educational qualification) and five personality factors (openness, agreeableness, conscientiousness, extraversion and emotional instability; Norman, 1963) were examined in the present study as covariate controls given these factors have been associated with the substantive variables. For example, female and more experienced teachers have been shown to report lower well-being (Baeriswyl et al., 2021). Further, personality is implicated in JD-R theory processes (Bakker et al., 2023). For example, emotional instability is known to be relevant for well-being (Perera et al., 2018), and thus, it is important to control for personality to identify unique associations among substantive factors.

STUDY OVERVIEW

The aim of the present study is to investigate the unique role of job resources and demands in predicting teacher well-being and turnover intentions. Figure 1 displays the hypothesized model. Alongside the main associations, interaction effects between the resources and demands were tested in relation to the well-being factors and turnover intentions. In subsidiary analyses, indirect associations from the resources/demands to turnover intentions via the well-being factors were also examined.

METHODS

Sample and procedure

The sample comprised 426 teachers from across Australia who were working at primary (52%), secondary (40%) or both levels (7%). The majority of the sample identified as female (82%), and the remainder identified as male (18%). This gender breakdown generally aligns with the population of teachers in Australia, which is 82% female in primary schools and 60% in secondary schools (ABS, 2020). Teachers in the study were on average 36 (SD = 10) years of age and had 11 (SD = 9) years of teaching experience. Most of the sample spoke only English at home (92%). Participants held a bachelor's degree (62%) or a postgraduate degree (34%; the remainder held a certificate or diploma; 4%). Participants worked in government (68%), Catholic (16%), or independent schools (16%), and reported their school's socio-economic status as low (19%), below average (18%), average (39%), above average (18%) or high (5%). Participants worked in inner city (10%), suburban (71%), rural (17%), or remote areas (1%).

Data were collected in May, 2021, using an online questionnaire. This period of time was during the COVID-19 pandemic; however, there were very few cases of COVID-19 in Australia and schools were open as usual. Participant recruitment occurred through Qualtrics and their market research partners, who have contact details for a large sample of the Australian population. The study invitation was relayed via email or app notification to adults who had registered their interest in participating in studies for those working in education. Respondents opened the questionnaire website, provided consent and

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responded to screening questions about whether they were working in an Australian primary or secondary school. Individuals not working in schools were withdrawn from the survey. Respondents who were working in schools, but completed the questionnaire in <1/3 of the median time for completion (n = 5) or who responded the same across >80% of the questionnaire (n = 9), were excluded from the study (Dewitt et al., 2019). The response rate was 81%. The study received Institutional Review Board ethics approval.

Measures

Unless otherwise stated, all scales were scored from 1 (Disagree strongly) to 7 (Agree strongly). Scale scores for instruments have demonstrated evidence of validity in prior research (measurement invariance, expected correlations; Collie, 2021, 2022b; Klassen et al., 2012; Michaels & Spector, 1982) and/or in the present study.

Job resources

Autonomy-supportive leadership practices were assessed with the Leadership Approach to Autonomy Scale (LAAS; five items; e.g., "My principal listens to my perspective;" Collie, 2021). *Relatedness with teachers* was assessed using items adapted from the Basic Psychological Need Satisfaction and Frustration Scale (four items; Chen et al., 2015). Adaptations involved adding the words "in my job" to items and changing "people" to "colleagues" (e.g., "I feel that the colleagues I care about in my job also care about me"). *Relatedness with students* was assessed with four items (e.g., "I feel connected to my students"; Klassen et al., 2012). In the present study, reliability, calculated using McDonald's omega, was adequate for autonomy-supportive leadership practices (ω = .89), relatedness with teachers (ω = .92), and relatedness with students (ω = .83).

Job demands

Autonomy-thwarting leadership practices were assessed using the LAAS (five items; e.g., "My principal expresses disappointment if I don't do things their way;" Collie, 2021). *Time pressure* was measured with the Time Pressure Scale (four items; e.g., "I feel pressed for time in my job"; Collie, 2022a). *Disruptive student behaviour* was assessed with the Disruptive Behaviour Scale (four items; e.g., "It is difficult to ensure my students concentrate on their schoolwork;" Collie, 2022a). Reliability was adequate for autonomy-thwarting leadership practices (ω = .89), time pressure (ω = .90) and disruptive student behaviour (ω = .85).

Well-being

Well-being was measured with Collie's (2022b) items. Four items assessed *subjective vitality* (e.g., "I feel excited to start work each day"). Four items assessed *behavioural engagement* (e.g., "I complete my work tasks to a high standard"). Four items assessed *professional growth* (e.g., "In my job, I regularly reflect on how I can grow my professional skills"). Reliability was adequate for the three factors: ω = .90 for subjective vitality, ω = .83 for behavioural engagement, and ω = .85 for professional growth.

Outcome

Michaels and Spector's (1982) three items were used to assess *turnover intentions*: "I often seriously consider leaving my current job," "I intend to quit my current job" and "I have started to look for other jobs." Coefficient omega was .88 in the current study.

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Background factors

Gender was scored 0 (male) or 1 (female). Teaching experience was measured in years. Qualification was scored 0 (bachelor's degree or less) or 1 (post-graduate degree). For personality, Donnellan et al.'s (2006) 20-item Mini-IPIP (International Personality Item Pool) scale on the Big Five personality dimensions was used to measure openness (e.g., "I have a vivid imagination"), agreeableness ("I sympathize with others' feelings"), conscientiousness (e.g., "I get chores done right away"), extraversion (e.g., "I talk to a lot of different people at parties") and neuroticism (e.g., "I get upset easily"). Prior studies have yielded evidence of the validity of scores from this scale, including anticipated associations with other measures of personality (Donnellan et al., 2006; Perera et al., 2018).

Data analysis

Analyses were conducted using M*plus* 8.7 (Muthén & Muthén, 2021) using robust maximum likelihood (MLR). In confirmatory factor analysis (CFA) and structural equation modelling (SEM), the root-mean-square error of approximation (RMSEA) and comparative fit index (CFI) were used to assess model fit. RMSEA values of ≤.08 and CFI values of ≥.90 indicate adequate fit (Hu & Bentler, 1999). Missing data (<1%) were handled using full information maximum likelihood (Enders, 2022).

Preliminary analyses involved calculating means and standard deviations. Multigroup CFA was used to test measurement invariance of all substantive factors in the model (see Supplementary Materials for details). A CFA was then run involving all factors. The substantive factors (job resources and demands, well-being factors, turnover intentions) were entered as latent factors. This CFA also included the teacher characteristics (gender, teaching experience and qualification) and personality factors. Teacher characteristics were estimated with loading set to 1 and residual set to 0. Personality factors were entered as error-adjusted mean scores to reduce the number of parameters relative to sample size.[1] For the error-adjusted mean scores, loading was set to 1 and the residual was set using the following equation: $\sigma^2 * (1 - \omega)$, where σ^2 is the estimated variance of a personality factor and ω is the reliability of the same factor (Brown, 2006). Reliability and variance were calculated for each personality factor from a preliminary CFA involving only the personality items.

Next, SEM was run to ascertain hypothesized associations from the resources and demands to the well-being factors, along with latent interactions involving the resources and demands. The SEM involved the same specification as the CFA and included directional paths from the predictors to the well-being factors. Controls for shared variance were included by intercorrelating the demands and resources, and intercorrelating the well-being factors. In addition, the covariates served as controls for all factors (and were also intercorrelated). The latent interactions between the resources and demands were run using the "XWITH" option in M*plus* (Muthén & Muthén, 2021) and in three groups to ensure convergence. First, the interactions between autonomy-supportive leadership and each demand were run together. Then, interactions between relatedness with colleagues and each demand were tested in a second model, and finally the same again for relatedness with students in a third model. Significant interactions were then examined in a combined model. A log-likelihood ratio test provided evidence of whether adding the interactions improved model fit. Change in R^2 for the outcomes was also consulted to ascertain whether additional variance in the outcomes was explained by the interaction terms (Maslowsky et al., 2015). Indirect associations were also tested (see Supplementary Materials for details).

RESULTS

Table 1 displays the reliability estimate, mean, standard deviation, and factor loading mean and range for each substantive variable. Multigroup CFAs supported the complete invariance of the substan-

[1]For completeness, the main SEM described below was rerun with latent personality factors and the results showed a similar pattern to that described. Thus, error-adjusted mean scores were retained to reduce number of parameters relative to sample size.

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TABLE 1 Reliability estimates (omega), descriptive statistics and standardized factor loadings

	Omega (ω)	*M*	*SD*	Standardized factor loadings *M* (range)
Job resources and demands				
Autonomy-supportive leadership	.89	4.54	1.32	.79 (.69–.88)
Relatedness with teachers	.92	5.63	1.13	.87 (.82–.90)
Relatedness with students	.83	6.35	.70	.73 (.62–.81)
Autonomy-thwarting leadership	.89	3.38	1.39	.79 (.71–.84)
Time pressure	.90	5.65	1.28	.82 (.67–.93)
Disruptive student behaviour	.85	3.96	1.42	.76 (.65–.85)
Well-being factors				
Subjective vitality	.90	4.45	1.29	.83 (.80–.85)
Behavioural engagement	.83	5.89	.81	.74 (.65–.81)
Professional growth	.85	5.28	.99	.77 (.71–.82)
Outcome				
Turnover intentions	.88	3.06	1.74	.85 (.81–.89)

tive factors (see Supplementary Materials). As expected from prior research (Laverdière et al., 2013; Perera et al., 2018), modification indices in the preliminary personality CFA suggested six correlated residuals. These were incorporated into the model, which had adequate fit: χ^2 (154) = 354.75, p = .001, RMSEA = .055, CFI = .90. Measurement invariance for the personality factors could not be tested because the multigroup CFA did not attain adequate fit (see Limitations).

The CFA involving all covariates and substantive factors yielded adequate fit: χ^2 (982) = 1373.00, p = .001, RMSEA = .031, CFI = .96. Correlations are shown in Table 2 (for a description of results involving covariates, see Supplementary Materials). The job resources were positively intercorrelated, as were the job demands. The resources and demands were generally negatively correlated with two exceptions: relatedness with colleagues was unassociated with time pressure, and relatedness with students was positively associated with time pressure. The well-being factors were positively interrelated, and positively associated with the resources. The well-being factors were also generally negatively associated with the job demands with two exceptions: time pressure was positively associated with behavioural engagement, and unassociated with professional growth. Finally, the job resources and well-being factors were negatively associated with turnover intentions, whereas the reverse was true for the job demands.

The SEM without interactions showed adequate fit: χ^2 (982) = 1373.00, p = .001, RMSEA = .031, CFI = .96. When interactions were added to the SEM, these investigations revealed four significant paths. Despite demonstrating a significant improvement in fit over the model with no interaction terms (χ^2 [4] = 47.44, $p < .001$), the interactions explained very little additional variance in the outcomes (ΔR^2 = 1.40%–2.60%). This modest change in *R*-squared raises some questions about the utility of including the interactions. Importantly, no significant paths from the original SEM were rendered non-significant in the model with the four significant interaction effects included. Thus, for reasons of parsimony and because the pattern of main associations was the same, results from the SEM without interactions are reported here. Simple slope analyses involving the four interactions are shown in Supplementary Materials.

Figure 2 and Table 3 show the results from the final SEM, which included controls for shared variance and covariates. Autonomy-supportive leadership and relatedness with students were associated with greater subjective vitality, and time pressure was associated with lower vitality. Autonomy-supportive leadership and relatedness with students were positively associated with behavioural engagement; however, time pressure was also positively associated with engagement. All three job resources were associated with greater professional growth—none of the job demands were significantly associated with professional growth. Turning to the outcome, relatedness with colleagues was associated with lower turnover intentions, whereas autonomy-thwarting leadership and time pressure were associated with greater turnover

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TABLE 2 Latent correlations among covariates, predictors, well-being factors and strain correlates

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
Covariates																	
1. Gender																	
2. Teaching exp.	−.06																
3. Qualification	−.07	.08															
4. Openness	−.16	−.03	.07														
5. Extraversion	−.02	−.16	.03	.31													
6. Agreeableness	.16	.03	.15	.29	.29												
7. Conscientiousness	.06	.13	−.04	.03	.02	.17											
8. Emotional instability	.25	−.27	−.02	−.13	−.04	.10	−.32										
Job resources																	
9. Autonomy-supportive lead.	−.07	−.04	−.04	.06	.14	.10	.10	−.18									
10. Rel. with colleagues	.07	−.04	.03	.14	.33	.39	.17	−.10	.35								
11. Rel. with students	.29	.03	−.02	.12	.09	.49	.28	−.05	.15	.35							
Job demands																	
12. Autonomy-thwarting lead.	−.03	−.09	−.02	−.03	−.04	−.04	−.18	.33	−.64	−.19	−.13						
13. Time pressure	.21	−.05	.08	−.09	−.12	.09	−.12	.34	−.28	−.02	.16	.35					
14. Disruptive behaviour	.01	−.16	.01	−.08	−.15	−.07	−.29	.37	−.20	−.19	−.31	.35	.15				
Well-being																	
15. Subjective vitality	−.05	−.01	−.09	.09	.17	.13	.17	−.38	.53	.33	.28	−.39	−.40	−.24			
16. Behavioural engagement	.26	.17	.02	.12	.06	.44	.43	−.14	.25	.36	.62	−.19	.13	−.30	.33		
17. Prof. growth	.15	−.04	.03	.18	.16	.31	.11	−.04	.42	.38	.39	−.21	−.02	−.14	.46	.54	
Outcome																	
18. Turnover intentions	−.10	−.04	.01	−.05	−.10	−.10	−.18	.36	−.42	−.37	−.28	.51	.37	.26	−.67	−.29	−.36

Note. Gender was scored 0 (male) or 1 (female). Qualification was scored 0 (bachelor's degree or less) or 1 (post-graduate degree). $|r| \leq .12$ is non-significant and $|r| > .12$ is significant at $p < .05$.
Abbreviations: Exp. = experience; Lead. = leadership; Rel. = relatedness.

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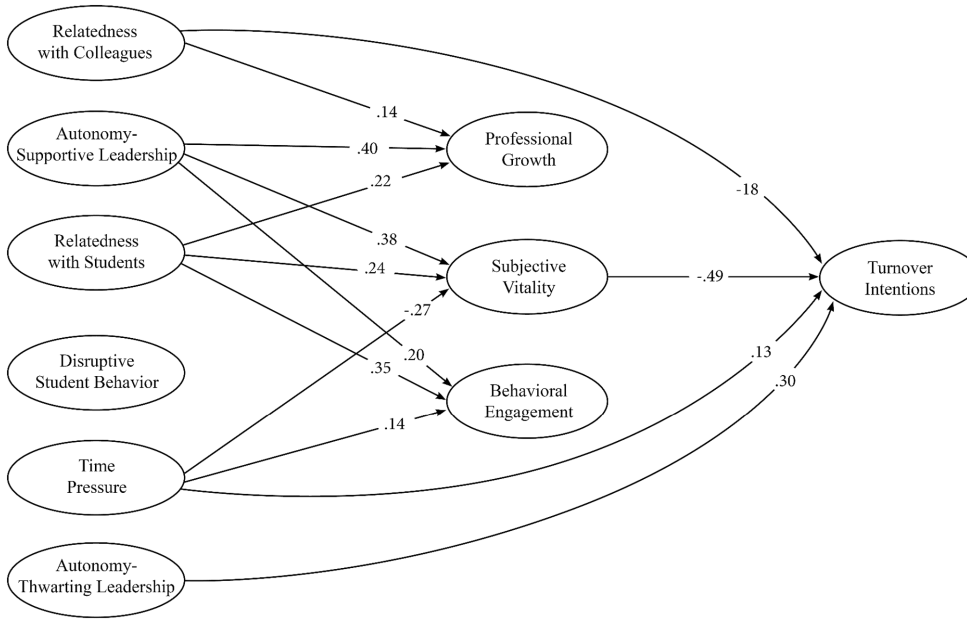

FIGURE 2 Results from structural equation modelling

intentions. Of the well-being factors, subjective vitality was associated with lower turnover intentions. For results involving covariates from the final model, see Supplementary Materials. For completeness, a model excluding all covariates is also reported in Supplementary Materials.

DISCUSSION

Autonomy-supportive leadership and relatedness with students were associated with all well-being factors, aligning with prior research about the important role of job resources for positive employee outcomes (Lesener et al., 2019). Notably, these associations occurred beyond controls for shared variance and covariates, suggesting these two factors may be salient for practice (discussed below). Principals who promote teachers' self-initiative and self-empowerment help teachers to feel supported, trusted, and agentic at work (Slemp et al., 2018), which are important for well-being. When teachers feel close and connected to their students, they are likely to feel more energized at work (vitality), invested in their teaching (engagement), and committed to further improving their skills (professional growth; Klassen et al., 2012; Vermote et al., 2022).

Relatedness with colleagues was associated with greater professional growth: feeling connected with colleagues fosters positive connections with the profession and, thus, teachers' investment in developing their skills (Jansen in de Wal et al., 2018). Relatedness with colleagues was unassociated with the other well-being factors. This differs somewhat from prior research (Collie, 2022a; Stang-Rabrig et al., 2022). For example, Collie's (2022a) study showed a link between relatedness with colleagues and subjective vitality; however, it did not examine professional growth alongside vitality, did not control for personality, and was conducted during the first wave of COVID-19 (when many teachers were working remotely). More research is needed among other samples to see if these associations replicate.

Time pressure predicted lower subjective vitality, and the association was stronger than anticipated—adding weight to the notion that time pressure is a salient job demand (Prieto et al., 2008) and should be a focus in practice (see below). Because time pressure impacts all aspects of teachers' work (Skaalvik & Skaalvik, 2018) and requires substantial effort to ensure all tasks are completed (Baeriswyl et al., 2021),

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TABLE 3 Standardized beta estimates from the structural equation modelling

	Job resources and demands						Well-being factors			Outcome
	Aut.-support	Rel. with colleagues	Rel. with students	Aut.-thwarting	Time pressure	Disrupt. behaviour	Subj. vitality	Beh. Engage.	Prof. growth	Turnover intentions
Covariates										
Gender	−.05	.04	.24***	−.10	.13*	−.06	.01	.13**	.12*	−.12**
Teaching exp.	−.09	−.06	−.02	.01	.02	−.09	−.06	.12**	−.01	.01
Qualification	−.06	−.02	−.06	−.01	.08	.02	−.05	.01	.04	−.05
Openness	−.04	−.04	.03	.02	−.03	.01	−.04	.05	.12*	.01
Extraversion	.09	.23***	−.05	−.01	−.12	−.15*	.03	−.05	−.01	.05
Agreeableness	.11	.33***	.45***	−.05	.07	−.02	.02	.14*	.06	.07
Conscientiousness	.03	.07	.15**	−.06	−.05	−.18*	−.05	.24***	−.01	.02
Emotional instability	−.19**	−.13*	−.11	.34***	.28***	.30***	−.27***	−.06	−.01	.08
Job resources										
Aut.-supportive lead.							.38***	.20*	.40***	.15
Rel. with colleagues							.10	.08	.14*	−.18**
Rel. with students							.24***	.35***	.22*	−.08
Job demands										
Aut.-thwarting lead.							.06	.06	.11	.30***
Time pressure							−.27***	.14*	.01	.13**
Disruptive behaviour							.03	−.07	.01	−.02
Well-being										
Subjective vitality										−.49***
Behavioural engagement										.01
Professional growth										−.05
R^2 (%)	6.7	22.7	33.5	12.7	15.6	19.7	48.0	55.6	34.2	58.8

Note: Gender was scored 0 (male) or 1 (female). Qualification was scored 0 (bachelor's degree or less) or 1 (post-graduate degree).

Abbreviations: Aut. = autonomy; Beh. engage. = behavioural engagement; Exp. = experience; Lead. = leadership; Prof. growth. = professional growth; Rel. = relatedness; Subj. = subjective.

*$p < .05$, **$p < .01$, ***$p < .001$.

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its link with reduced vitality is understandable. Contradicting expectations, time pressure was associated with greater behavioural engagement. Although unexpected, this finding aligns with some prior research (Prieto et al., 2008; Skaalvik & Skaalvik, 2018) and possibly occurred because time pressure can be motivating when work is viewed as important (Schmitt et al., 2015). However, there is likely a point at which time pressure stops being motivating and instead is detrimental for engagement. This finding highlights the need to ensure teachers are well-supported so that behavioural engagement can be sustained. For a discussion of results involving interactions, see Supplementary Materials.

Relatedness with colleagues negatively predicted lower turnover intentions. This was the only job resource directly associated with the outcome, and likely occurred because connectedness with colleagues builds stronger attachments to work (Fernet et al., 2016). Autonomy-thwarting leadership and time pressure were associated with greater turnover intentions. Both of these job demands involve feeling pressured, which is not conducive to building a strong attachment to one's work (Jo, 2014; Räsänen et al., 2020). Together, the findings extend prior research by pinpointing the most salient factors for turnover intentions—and highlight these factors may warrant a focus in efforts to retain teachers (discussed below). Disruptive behaviour was unassociated with turnover intentions. It may be that when examined alongside the other resources/demands (and controlling for variance attributable to the personality factors), disruptive behaviour is no longer prominent for turnover intentions (Dicke et al., 2018).

In line with other research (Grant et al., 2019), subjective vitality was associated with lower turnover intentions. This finding underscores the importance of promoting vitality among teachers—and the indirect associations reported in Supplementary Materials further support this. It was surprising that behavioural engagement was unassociated with turnover intentions. This may be because the present study controlled for personality factors (for a discussion of these, see Supplementary Materials). Conscientiousness was significantly associated with behavioural engagement—thus, teachers high in conscientiousness are more likely to be behaviorally engaged at work. After controlling for conscientiousness, however, perhaps teachers are engaged for other reasons: because they feel pressured to do so or because they have fun at work. These different reasons likely have different implications for behavioural engagement and so might explain its inconsistent association with turnover intentions in the present study.

Implications for practice

Autonomy-supportive leadership and relatedness with students were the most consistent predictors among the job resources. As such, schools may want to focus on promoting these two factors. For autonomy-support, school leaders can provide choice and control over how teachers conduct their work, invite teachers' input in decisions and school policies, and provide rationales for work tasks (Ware & Kitsantas, 2011). To build positive relationships between teachers and students, school leaders may want to provide teachers with ongoing relational support, offer teachers feedback about how they might develop more positive interactions with students, and design goals for improving their interactions with students (Pianta et al., 2012). For relationships among teachers, providing common planning time, establishing professional learning communities, developing a shared mission and cultivating a supportive staffroom are relevant strategies (Carroll et al., 2021; Ford & Youngs, 2018). Efforts to reduce time pressure also appear crucial, such as reducing the red tape burden in teachers' work (Australian Government, 2022), and the workload associated with reforms (Putwain & von der Embse, 2019). To reduce autonomy-thwarting practices, school leaders can avoid domineering behaviours, such as using guilt to ensure compliance, and demanding behaviours, such as being inflexible and dictating how things need to be done (Aelterman et al., 2019).

Limitations and future directions

Several limitations should be taken into consideration when interpreting findings. First, all data in the present study are self-reported. Given the aim was to examine teachers' intrapsychic perceptions, this is

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an appropriate approach. Nonetheless, it will be important to examine the links between the well-being factors and other outcomes, such as number of days absent from work. Moreover, because our leadership variables were focused on teachers' individual perceptions, they may be impacted by common-method bias. Multilevel research that captures agreement across the collective is important for ascertaining whether school-average perceptions of leadership are relevant for school-average well-being. Second, data were collected at one time point. Future research that collects data over time is needed to reduce concerns about single-source bias. Although the hypothesized model was derived from theory, longitudinal research is needed to ascertain the extent to which there are reciprocal associations among the variables (e.g., see Lesener et al., 2019). Third, it was not possible to provide evidence of measurement invariance for the personality factors. Despite this, the factors were retained because they were not substantive factors (but rather covariates), and other research has shown evidence of measurement invariance for the scale scores among Australian teachers (Perera et al., 2018). Fourth, participants' school of employment was not identified due to the recruitment method, which means it was not possible to account for hierarchical clustering of participants within schools. Given the participants were spread across the country, this is unlikely to be an issue. Nonetheless, future research that considers clustering is important.

CONCLUSION

Findings pinpoint the unique role of specific job resources and demands (beyond the variance explained by other factors, teacher characteristics and personality factors). In particular, social support (via autonomy-supportive leadership, relatedness with colleagues and students) appears centrally linked with teacher well-being, whereas time pressure and autonomy-thwarting leadership are associated with greater turnover intentions.

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CONFLICT OF INTEREST

All authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The Institutional Research Board ethics approval received for these data does not allow for data sharing.

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