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Research paper

## The impact of practicum job demands and resources on pre-service teachers' occupational commitment and job intent

Jeremy Pan<sup>a,\*</sup>, Tony Loughland<sup>a</sup>, Rebecca J. Collie<sup>a</sup>, Andrew A. Kingsford-Smith<sup>a</sup>,  
Mary Ryan<sup>b</sup>, Caroline Mansfield<sup>c</sup>, Rachele Davey<sup>d</sup>, Chrissy Monteleone<sup>b</sup>, Miriam Tanti<sup>e</sup><sup>a</sup> School of Education, University of New South Wales, Australia<sup>b</sup> Faculty of Education and Arts, Australian Catholic University, Australia<sup>c</sup> School of Education, Edith Cowan University, Australia<sup>d</sup> Faculty of Education, Philosophy and Theology, University of Notre Dame Australia, Australia<sup>e</sup> School of Education, La Trobe University, Australia

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## ABSTRACT

Around the world, there is a need to understand how to support pre-service teachers through their initial teacher education (ITE). The current study applied the Job Demands-Resources Theory to examine the associations among Australian pre-service teachers' job demands and resources. The structural equation modelling found that perceived autonomy support, and relatedness with colleagues and students, were positively related to work outcomes of occupational commitment and job intent. Conversely, factors like disruptive student behaviour and time pressure were negatively associated with these outcomes. These findings suggest the relevance of providing support mechanisms for pre-service teachers to enhance their important ITE phase.

## 1. Introduction

Around the world, schools are reporting growing concerns regarding teacher shortages (García & Weiss, 2019; Productivity Commission, 2022). The problem may be further exaggerated as some countries struggle to entice younger people to take on an educator role when these prospective educators might seek more distinguished careers (Guo & Hau, 2024). This concern has led to a high demand for graduate teachers, many of whom receive employment offers even before completing their initial teacher education (ITE) programs (Morrison et al., 2022). In this context, there is a need to explore how to effectively support pre-service teachers during their Initial Teacher Education practicum placements, which are crucial for their professional growth and development, and successful transition into employment (Grudnoff, 2011; Nawab, 2024). Support mechanisms not only enhance pre-service teachers' preparedness for the classroom, but also help early career teachers to become classroom-ready through improving their teaching self-efficacy, while also helping schools become graduate-ready institutions that support occupational commitment and intent to work in schools.

Job demands-resources theory (JDRT; Bakker & Demerouti, 2017) is

a useful framework through which to examine the work conditions in schools that predict positive outcomes for pre-service teachers. The JDRT literature on teachers (Granziera et al., 2021) demonstrates that qualified teachers' experiences of job demands and resources are broadly predictive of their self-efficacy (Skaalvik & Skaalvik, 2016), occupational commitment (Collie, 2021a), and job satisfaction (Skaalvik & Skaalvik, 2011). However, scant research has used this framework to examine these associations within samples of pre-service teachers during their teaching practicum placements. Most research on pre-service teachers' practicum placements has used small samples and qualitative research designs that make it difficult to generalise the findings (Lawson et al., 2015). These gaps in the literature are significant because pre-service teachers' experiences vary from in-service teachers because of their transitioning professional identities from "student" to "teacher" (Joseph, 2019). There is also a lack of research that has used JDRT to explore pre-service teachers' job intent – a crucial factor considering it reflects their desire to work at their practicum school. This outcome may be important for schools and systems to ensure that pre-service teachers have smooth transitions from ITE to employment. Exploration of these gaps is critical for schools to understand how pre-service teachers can be better supported and recruited during their ITE practicum placements.

\* Corresponding author. University of New South Wales (UNSW), School of Education, Morven Brown Building, SYDNEY, NSW, 2052, Australia.  
E-mail address: [jeremy.pan1@unsw.edu.au](mailto:jeremy.pan1@unsw.edu.au) (J. Pan).

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This study uses JDRT principles to examine the associations among pre-service teachers' job demands/resources, self-efficacy, occupational commitment, and job intent with a focus on specific job demands and resources relevant to this group. Three job demands (disruptive student behaviour, time pressure, role ambiguity) and three job resources (perceived autonomy support, relatedness with colleagues, and relatedness with students) were examined because of their salience for pre-service teachers (Collie, 2023; Grudnoff, 2011; Klassen & Chiu, 2011; Mutlu, 2015). Through this approach, this study aimed to illuminate how pre-service teachers could be better supported to thrive during their practicum placements and to start successful careers in teaching.

### 1.1. Conceptual framework

JDRT posits that work conditions, which may be psychological, physical, social, or organisational in nature, can be broadly categorised into *job demands* (hindering factors) or *job resources* (supportive factors). Job demands are more strongly predictive of maladaptive functioning and negative work outcomes, such as burnout and strain, while job resources are more strongly predictive of adaptive functioning and positive work outcomes, such as engagement, occupational commitment, and job satisfaction (Bakker & Demerouti, 2017). *Personal resources* also play an important part in influencing individuals' functioning, with elements such as self-efficacy representing individuals' perceived control over their work environment (Bakker & Demerouti, 2017). Personal resources are associated with positive work outcomes (Bakker & Demerouti, 2017), and are predicted by job demands/resources (Aldridge & Fraser, 2016; Skaalvik & Skaalvik, 2010, 2016). The JDRT also set out interaction processes, one of which is the boosting process, where job demands enhance the positive effect of job resources on positive work outcomes (Bakker & Demerouti, 2017). Thus, JDRT provides a framework to examine the processes through which job demands/resources are predictive of work experiences, including personal resources and work outcomes. Next, we introduce the job demands/resources that are salient for pre-service teachers.

### 1.2. Salient job demands/resources for pre-service teachers

Pre-service teachers, while navigating their professional experience, have various job demands and resources (Grudnoff, 2011; Li et al., 2022; Sariçoban, 2010). The current study examined job demands and resources that are linked to the basic psychological needs described in self-determination theory, which are important for optimal human functioning (Ryan & Deci, 2017). The three job demands (disruptive student behaviour, time pressure, role ambiguity) may act as burdens on pre-service teachers' feeling of competence and autonomy, and may be detrimental to their professional commitment, especially if they do not have the proficiency or resources to manage these demands. On the other hand, the three job resources (perceived autonomy support, relatedness with colleagues, relatedness with students) may support pre-service teachers' basic psychological needs within a social context for optimal wellbeing and functioning, and may help create effective learning and working experiences. Table 1 below summarises the demands that present unique challenges for pre-service teachers due to their developing proficiency and the complex nature of their roles, and the resources that are present in the practicum setting.

While past JDRT studies tend to focus on in-service teachers, pre-service teachers may also experience these demands and resources while undergoing training. These pre-service teachers, under the mentorship of supervising teachers in the practicum school, gradually take on similar responsibilities akin to those of fully qualified teachers, including lesson planning, classroom management, and providing student feedback (Hall et al., 2018). Because of their growing load, pre-service teachers experience similar job demands/resources as fully qualified teachers, yet their experiences of these demands/resources may differ due to their inexperience (Klassen & Chiu, 2011).

**Table 1**

Pre-service teachers' relevant job demands and resources.

	Description
<b>Job demands</b>	
Disruptive student behaviour	Student behaviours that disrupt effective learning and engagement (Collie, 2022)
Time pressure	When teachers feel they have insufficient time to manage their workload (Collie, 2022)
Role ambiguity	When teachers face unclear situations at work (Bowling et al., 2017)
<b>Job resources</b>	
Perceived autonomy support	Teachers' perceptions of supportive practices that encourage autonomy (Collie, 2021b)
Relatedness with colleagues	Feeling connected with other teaching staff (Ryan & Deci, 2017)
Relatedness with students	Feeling connected with students (Ryan & Deci, 2017)

Furthermore, we focused on the pre-service teachers' appraisals to assess these demands and resources. This circumvents issues associated with objective measures of the respective demand or resource (e.g., time pressure), which may or may not be perceived as a demand by different individuals (Collie and Mansfield, 2022).

*Disruptive student behaviour* such as off-task behaviour and calling out may be particularly concerning for pre-service teachers as managing these behaviours during training may result in a loss of opportunities to build their proficiency in teaching (Rozimela, 2016; Valencia et al., 2009). *Time pressure* can make teachers feel less successful or unable to effectively complete their responsibilities (Collie, 2022; Ryan et al., 2022). As pre-service teachers are not proficient in their teaching duties and must manage practicum placement work alongside their studies, increased time pressures may hinder pre-service teachers (Mairitsch et al., 2021; Mtika, 2011). *Role ambiguity* occurs when teachers face additional burdens when they are uncertain of the right course of action (Bowling et al., 2017). Specifically, pre-service teachers on practicum placements may face role ambiguity as they are inexperienced and unfamiliar with their schools, and the timing and duration of their practicum placement (Bloomfield, 2010; Davies & Heyward, 2019; Mtika, 2011).

Three job resources identified in the literature were examined in this study: perceived autonomy support, relatedness with colleagues, and relatedness with students. *Perceived autonomy* support refers to pre-service teachers' perceptions that their supervising teacher uses supportive practices, such as listening to their perspectives and providing choice (Collie, 2021b). This job resource may be particularly prominent for pre-service teachers because practicum placements are learning opportunities where pre-service teachers work closely with a supervising teacher (Sheridan & Young, 2017). Supervision that supports autonomy, instead of being controlling, may help pre-service teachers and early career teachers adjust to, and enjoy, the teaching profession (Grudnoff, 2011; Kaplan, 2022).

Two forms of relatedness were also included as job resources in this study: relatedness with colleagues and relatedness with students. These forms of relatedness may be particularly notable for pre-service teachers because early career teachers have reported feeling isolated from the practicum school's staff community (Johnston, 2016; Teng, 2017), or that they felt less connected to other staff members and students while on practicum placements, but felt more connected to the school and teaching cohort when they began teaching (Grudnoff, 2011). Therefore, building these connections/relationships during the practicum placement may be an important resource to support pre-service teachers' professional growth and commitment.

Taken together, the six job demands/resources in this study appear to be significant for pre-service teachers. Most research on these job demands/resources have focused on samples of qualified teachers, and thus little is known about the associations for pre-service teachers

between these job demands/resources, self-efficacy, occupational commitment, and job intent. Understanding this is essential for guiding efforts to attract and retain new teachers in the profession. Self-efficacy as a personal resource is introduced next.

1.3. Self-efficacy and the predictive role of job demands and resources

Self-efficacy, a critical personal resource for teachers (Granziera et al., 2021), pertains to teachers' belief in their perceived ability to execute their roles successfully (Bandura, 1997, 2006). Teaching self-efficacy is widely considered to be composed of three interrelated dimensions (Tschannen-Moran & Hoy, 2001; Zee & Koomen, 2016). Table 2 below describes these three dimensions. Self-efficacy is considered to be particularly malleable for early career teachers, but then becomes more stable throughout a teacher's career (George et al., 2018; Hoy & Spero, 2005; Klassen & Chiu, 2011). Thus, it is important to identify factors that can support self-efficacy during pre-service teachers' practicum placements.

Self-efficacy is negatively predicted by teachers' job demands (Skaalvik & Skaalvik, 2016). Studies have shown that disruptive student behaviour is associated with lower self-efficacy among in-service teachers (Kingsford-Smith et al., 2023; Skaalvik & Skaalvik, 2019), likely because such student behaviours can make it difficult for the teacher to effectively teach, or manage the classroom effectively (Klassen & Chiu, 2011). Time pressure is also negatively associated with self-efficacy among pre-service teachers (van Rooij et al., 2019), likely because these pressures can make it challenging for teachers to successfully fulfil their roles. Experiencing higher levels of time pressure during a practicum placement may make the teaching profession seem more stressful to pre-service teachers, and such stress is predictive of lower self-efficacy for student engagement (Klassen & Chiu, 2011; Skaalvik & Skaalvik, 2017).

Turning to role ambiguity, studies on samples of education staff (i.e., school teachers, university teachers, and school leaders) have identified significant negative correlations between role ambiguity and self-efficacy (Lindberg et al., 2013; Macovei et al., 2023) and significant positive correlations between role clarity (which represents the opposite of role ambiguity) and self-efficacy (Brandmo et al., 2021; Marciionetti & Castelli, 2022). These studies show that it is possible that when pre-service teachers face ambiguous situations during their practicum training, they may not be adequately prepared to address them and execute their teacher role effectively.

Self-efficacy is positively predicted by job resources (Skaalvik & Skaalvik, 2014). Perceived autonomy support is associated with teachers' basic psychological need for competence (Collie et al., 2015), which is linked to self-efficacy (Ryan & Deci, 2017). Autonomy support is thought to nurture a person's basic psychological needs and help them feel more capable (Ryan & Deci, 2017). Studies have demonstrated that perceived autonomy support from university teachers in ITE courses is positively predictive of pre-service teachers' self-efficacy (Chan et al., 2021; González et al., 2018). It is likely that perceived autonomy support from supervising teachers within practicum placements is also linked with self-efficacy because it may help pre-service teachers feel supported yet able to create their own teaching identity (Sheridan & Young, 2017). Pre-service teachers' relationships at work may also be

**Table 2**  
Dimensions of self-efficacy (Tschannen-Moran & Hoy, 2001; Zee & Koomen, 2016).

Dimensions	Description
Classroom management	Perceived proficiency in managing student behaviour
Student engagement	Perceived proficiency in supporting student involvement and motivation
Instructional strategies	Perceived proficiency in using pedagogical approaches that support learning

associated with their self-efficacy. Relatedness with colleagues likely predicts self-efficacy because collaborating with colleagues has been shown to support self-efficacy (Collie et al., 2012; Liu et al., 2021). On the other hand, relatedness with students likely supports self-efficacy because teaching self-efficacy is mostly focused on teachers' ability to successfully work with students (Chang et al., 2022; Tschannen-Moran & Hoy, 2001). As novice teachers, it is likely that pre-service teachers evaluate their own efficacy based on those they interact with at school, including teachers and students.

From the literature reviewed here, it was hypothesised that the three job demands would negatively relate with self-efficacy, whereas the three job resources would positively relate with self-efficacy.

1.4. Work outcomes and the predictive role of job demands/resources and self-efficacy

This study examined two work outcomes for pre-service teachers: occupational commitment and job intent. Table 3 below describes the two job outcomes in the study. For teachers, job demands generally negatively predict positive work outcomes (Haerens et al., 2022; Han et al., 2020; Klassen, 2010). Research has shown that disruptive student behaviour can be a key source of stress for teachers and is associated with lower occupational commitment (Collie, 2021a) and higher turnover intentions (Collie, 2022). For pre-service teachers, such stresses may negatively impact their commitment to the teaching profession (Klassen & Chiu, 2011; Klassen et al., 2013), as well as to their intent to work at a particular school. Similarly, time pressure has been shown to positively predict teachers' turnover intentions (Collie, 2022). Factors associated with time pressure, such as teaching stress and stress from student teaching assignments, were also negatively associated with pre-service teachers (Klassen & Chiu, 2011; Klassen et al., 2013). Role ambiguity is negatively associated with teachers' professional satisfaction and commitment (Conley & You, 2009; Homayed et al., 2024), likely because teachers can feel uncertain of what results or duties are expected of them. Given that past research focuses on qualified teachers, the current research intends to examine these associations among pre-service teachers.

In contrast to the negative role of job demands, positive work outcomes are positively predicted by job resources (Liu et al., 2021). Research has shown that perceived autonomy support is positively associated with job satisfaction (Collie et al., 2015) and commitment (Collie, Bostwick, & Martin, 2020; Collie & Martin, 2017) among teachers. Further, both forms of relatedness are positively associated with teachers' positive functioning at school, job satisfaction, and occupational commitment (Collie et al., 2015; Klassen et al., 2012), likely because satisfaction of basic psychological needs is linked to optimal wellbeing and motivation (Ryan & Deci, 2017).

JDRT also describes how personal resources are linked with job outcomes. A number of studies have shown that teaching self-efficacy is associated with greater occupational commitment (Klassen & Chiu, 2011) and practicum satisfaction (García-Lázaro et al., 2022) for

**Table 3**  
Work outcomes relevant to pre-service teachers.

Work outcomes	Description
Occupational commitment	Affective commitment to the teaching profession (Klassen & Chiu, 2011)
Job intent <sup>a</sup>	Intention to work at the school where pre-service teachers are currently practicing, or where they most recently completed a practicum

<sup>a</sup> Although job intent is a new concept introduced in this study, the construct is largely similar to job satisfaction, which encompasses teachers' positive affect towards their current role (Skaalvik and Skaalvik, 2015). The main difference between these two constructs is that pre-service teachers do not have an ongoing job at their practicum school, and thus their affective responses towards their practicum school are measured as job intent rather than satisfaction.

pre-service teachers. Yet, other studies report no associations between self-efficacy and work outcomes for in-service teachers (Granziera et al., 2022; Kingsford-Smith et al., 2023). Since the link between self-efficacy and work outcomes is not fully understood, this study presents an opportunity to investigate these associations in pre-service teachers.

In summary, we hypothesised that the three job demands would negatively associate with self-efficacy, occupational commitment and job intent, and the three job resources would positively associate with self-efficacy, occupational commitment and job intent. Self-efficacy would also relate with occupational commitment and job intent. Furthermore, as described in the JDRT, interaction processes between demands and resources have been shown in teachers (Dicke et al., 2018; Granziera et al., 2022). In the current study, it is possible that the job demands experienced by pre-service teachers would boost the associations between job resources and work outcomes.

1.5. Pre-service teachers' background characteristics

Past research has suggested that some teacher background characteristics may be associated with pre-service teachers' experience. The following characteristics were added as controls to explain the unique variance of the substantive factors: age, gender, current placement, and degree type. Research has shown that age was related to practicum satisfaction (Troesch et al., 2023), female teachers reported higher time pressure (Collie, Guay, et al., 2020), and teaching experience was significantly associated with disruptive student behaviour (Collie, 2022). While these studies mainly focused on in-service teachers, it was possible that these characteristics may be important for pre-service teachers as well.

1.6. Study Overview

This study aims to examine how job demands (disruptive student behaviour, time pressure, and role ambiguity) and job resources (perceived autonomy support, relatedness with colleagues, and relatedness with students) are associated with pre-service teachers' self-efficacy, occupational commitment, and job intent. Additionally, the research investigates the links between self-efficacy and occupational commitment and job intent. Indirect associations from the job demands/

resources to occupational commitment and job intent via self-efficacy, and the boosting effects of job resources on job outcomes were also examined (Bakker & Demerouti, 2017). Several covariates were included in modelling: age, gender, current enrolled degree, and practicum placement (see Method for more detail). The hypothesised model can be seen in Fig. 1 below.

2. Methods

The current study was reviewed and approved by the University of New South Wales Human Research Ethics Committee (UNSW HREA Panel B: Arts, Architecture, Design and Law; HC210998).

2.1. Sample

Between March 2022 and December 2022, participants for this study were recruited via two channels. First, each author representing four different ITE schools across Australia sent recruitment materials to teacher-education students who had just finished a practicum placement. Second, social media was used to distribute the recruitment materials to potential participants at other universities and institutions across the country. The sample consisted of 221 pre-service teachers enrolled in an ITE program in Australia, with a majority from the state of New South Wales (NSW), each of whom had completed at least one mandatory school practicum placement. The practicum placements have varying requirements based on the State/Territory and education level, but these placements generally take place over a minimum of 20 days (House of Representatives Standing Committee on Educational and Vocational Training, 2007). The requirements may also vary depending on the number of previously completed practicum experiences. For example, pre-service teachers may attend observational sessions in the first practicum and gradually take on teaching periods as they complete more practicums. More details on the practicum placement may be viewed in the supplementary materials.

The participants identified as female (70.1%), male (27.6%), or used alternative terms to describe their gender (2.3%; this percentage includes those who preferred not to answer). The average age of the teachers was 28.12 years, with a standard deviation of 9.58. Additional demographic data were collected, including current degree, recently

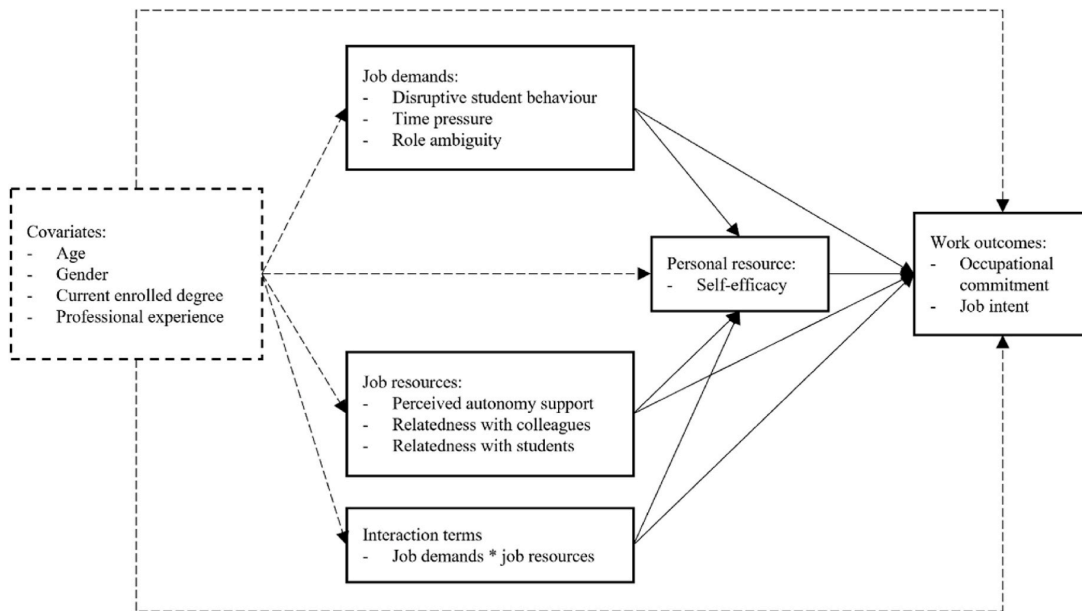


Fig. 1. Hypothesised model.

completed practicum placement, practicum completion status, school location, state, school size, and conditional accreditation to teach status. Conditional accreditation gives the pre-service teacher the opportunity to be paid for their last practicum placement and has been adopted by schools and systems in NSW as a recruitment method in a time of severe staff shortages. These data are presented in Table 4 below.

2.2. Measures

In this study, substantive factors were measured using 7-point Likert-like scales (ranging from “1 - strongly disagree” to “7 - strongly agree”) and were modelled as latent factors. When reporting on their experiences, the participants were asked to recall their most recent professional experience. The following stem was added to the questionnaire: “The following questions will ask you about your most recent professional experience”. Below, the measures used are detailed.

2.3. Job demands

Disruptive student behaviour was measured using Collie’s (2022) four-item scale. The items focus on the extent to which pre-service teachers experienced disruptive behaviour from students in the classroom (example item: “When I’m teaching, there is a lot of noise and disorder among my students”). Time pressure was measured using Collie’s (2022) four-item scale. The items focus on the extent to which pre-service teachers felt pressed for time to complete their work on their practicum placement (example item: “I rarely have enough time to get everything done in my work”). Role ambiguity was measured using three

items from Bowling et al.’s (2017) role ambiguity scale. The items focus on the extent to which pre-service teachers felt unsure about what was expected of them in their roles during their practicum placement. These items were: “I was not sure what was expected of me at work”, “The requirements of my job weren’t always clear”, and “I often did not know what was expected of me at work”. Reliability was adequate ( $\omega \geq .70$ ) for the three factors: disruptive student behaviour ( $\omega = .86$ ); time pressure ( $\omega = .93$ ), and role ambiguity ( $\omega = .89$ ).

2.4. Job resources

Perceived autonomy support was measured using Collie’s (2021b) five-item scale. The items focus on the extent to which pre-service teachers perceived their practicum placement supervisor supported their autonomy and agency (example item: “My supervisor provided me with choice for how I go about my work”). Relatedness with colleagues was measured using items adapted from the Basic Psychological Need Satisfaction and Frustration Scale (four items; Chen et al., 2015). Adaptations involved adding “in my job” to wording and changing “people” to “colleagues” (example item: “I felt that the colleagues I care about in my job also care about me”). Relatedness with students was measured using Klassen et al.’s (2012) four-item scale. The items focus on the extent to which pre-service teachers felt connected with students at their practicum school (example item: “I felt connected to my students”). Reliability was adequate ( $\omega \geq .70$ ) for the three factors: perceived autonomy support ( $\omega = .94$ ); relatedness with colleagues ( $\omega = .96$ ), and relatedness with students ( $\omega = .88$ ).

2.5. Self-efficacy

Three forms of self-efficacy were measured using Tschannen-Moran and Hoy’s (2001) three teaching self-efficacy scales, each consisting of four items: Self-efficacy for classroom management (example item: “How much can you do to control disruptive behaviour in the classroom?”); self-efficacy for student engagement (example item: “How much can you do to motivate students who show low interest in school work?”); and self-efficacy for instructional strategies (example item: “To what extent could you craft good questions for your students?”). Reliability was adequate ( $\omega \geq .70$ ) for the three factors: self-efficacy for classroom management ( $\omega = .87$ ); self-efficacy for student engagement ( $\omega = .80$ ), and self-efficacy for instructional strategies ( $\omega = .76$ ). The three factors had high intercorrelations ( $r = .76 - .90$ ) and were therefore modelled as a higher order self-efficacy factor ( $\omega = .93$ ).

2.6. Work outcomes

Occupational commitment was measured using four items from the Organisation for Economic Co-operation and Development’s (OECD, 2019) job satisfaction with profession scale. The items focus on the extent to which pre-service teachers felt committed to the teaching profession (example item: “If I could decide again, I would still choose to work as a teacher”). Job intent was measured using three items developed for this study that focus on the extent to which pre-service teachers would like to work at their practicum school: “If this school offered me a contract next year, I would seriously consider taking it,” “I think this school would be a great place to work,” and “I could see myself working at this school in the future”. Reliability was adequate ( $\omega \geq .70$ ) for the two factors: occupational commitment ( $\omega = .85$ ), and job intent ( $\omega = .96$ ).

2.7. Covariates

Age, gender, current enrolled degree, and the number and the most recent placement placements were accounted for as covariates in the modelling as they were found to have an association with the variables of interest. Age was a continuous variable in number of years. Gender

Table 4  
Descriptives of demographic data.

	n	%
<b>Current degree</b>		
Undergraduate	138	62.4
Postgraduate	83	37.6
<b>Recently completed practicum placement</b>		
First	49	22.2
Second	75	33.9
Third	65	29.4
Fourth	32	14.5
<b>Practicum status</b>		
Completed practicum	153	69.2
Still on current practicum	68	30.8
<b>Practicum school level</b>		
Primary school	107	48.4
High school	97	43.9
Central school (K-12)	15	6.8
Other	2	.9
<b>School location</b>		
Major cities	178	80.5
Inner regional Australia	18	8.1
Outer regional Australia	17	7.7
Remote Australia	7	3.2
<b>States</b>		
NSW	135	61.1
WA	31	14
QLD	21	9.5
VIC	16	7.2
SA	5	2.3
TAS	5	2.3
ACT	4	1.8
NT	4	1.8
<b>School size</b>		
>1000 students	43	19.5
501-1000 students	82	37.1
101-500 students	83	37.6
51-100 students	10	4.5
0-50 students	3	1.4
<b>Conditional accreditation</b>		
Not Granted	136	61.5
Granted	85	38.5

was coded as 0 for males and 1 for females. Practicum placements were coded based on their most recent completed placement experience (1 for first, 2 for second, 3 for third, and 4 for fourth). Pre-service teachers in Australia need to complete 80 days of practicum for undergraduate degrees and 60 days for postgraduate degrees in teacher education. These days are distributed in different ways across providers into two, three, or four practicum placements. Current enrolled education degree was coded 1 for undergraduate and 2 for postgraduate.

### 3. Results

The overall measurement model demonstrated an adequate fit for pre-service teachers:  $\chi^2(955) = 1421.50, p < .001, RMSEA = .05, CFI = .93, TLI = .93$ . This model included four residuals which were correlated. Additional details about the individual CFA fit indices and the evaluation of the measurement models using dynamic fit index cut-offs (McNeish & Wolf, 2023) are in the supplementary materials provided.

Table 5 shows the descriptive statistics of the substantive variables in the study with the range of standardized factor loadings, and Table 6 shows the correlations between the latent variables. The following summarises the correlations among substantive factors. Self-efficacy (which is the higher-order factor of the three types of teacher efficacy) was significantly negatively correlated with job demands (disruptive student behaviour,  $r = -.59, p < .001$ ; time pressure,  $r = -.41, p < .001$ ; role ambiguity,  $r = -.43, p < .001$ ) and significantly positively correlated with job resources (perceived autonomy support,  $r = .47, p < .001$ ; relatedness with colleagues,  $r = .46, p < .001$ ; relatedness with students,  $r = .57, p < .001$ ).

Job intent was significantly negatively correlated with job demands (disruptive student behaviour,  $r = -.48, p < .001$ ; time pressure,  $r = -.36, p < .001$ ; role ambiguity,  $r = -.46, p < .001$ ) and significantly positively correlated with job resources (perceived autonomy support,  $r = .67, p < .001$ ; relatedness with colleagues,  $r = .70, p < .001$ ; relatedness with students,  $r = .28, p < .001$ ). Job intent was also correlated with teacher self-efficacy ( $r = .48, p < .001$ ).

Occupational commitment was significantly negatively correlated with job demands (disruptive student behaviour,  $r = -.26, p < .01$ ; time pressure,  $r = -.39, p < .001$ ; role ambiguity,  $r = -.31, p < .001$ ) and significantly positively correlated with job resources (perceived autonomy support,  $r = .18, p < .05$ ; relatedness with colleagues,  $r = .24, p < .01$ ; relatedness with students,  $r = .40, p < .001$ ). Occupational

commitment was also correlated with self-efficacy ( $r = .34, p < .001$ ).

#### 3.1. Data analysis

All analyses in this study were conducted using Mplus version 8 (Muthén & Muthén, 2017). Multivariate non-normality was handled using the robust maximum likelihood estimator. Missing data was handled using the full information maximum likelihood estimator (missing data = 4%). First, preliminary analysis was conducted, which included inspecting the means, standard deviations, and reliability (omega values). Next, confirmatory factor analysis (CFA) was conducted on the substantive factors to assess model fit. All substantive factors were estimated as latent factors from their respective items: job demands (disruptive student behaviour, time pressure, role ambiguity) and resources (perceived autonomy support, relatedness with colleagues, relatedness with students), self-efficacy, and work outcomes (occupational commitment, job intent). Single-item (covariates) measures were estimated as observed variables with the loading set to 1 and the residual set to 0. Model fit for this CFA was assessed using Keith's (2015) recommendations for good model fit: root mean-square error of approximation (RMSEA) values  $\leq .05$  ( $\leq .08$  for adequate fit); comparative fit index (CFI) values  $\geq .95$  ( $\geq .90$  for adequate fit); and Tucker–Lewis index (TLI) values  $\geq .95$  ( $\geq .90$  for adequate fit).

Next, an initial structural equation modelling (SEM) was conducted to ascertain how the factors were associated with one another while controlling for covariates. The measurement model specifications were retained from the CFA: Self-efficacy, occupational commitment, and job intent were regressed on the job demands/resources; and occupational commitment and job intent were regressed on self-efficacy.

The outcome variables were also regressed on latent interactions between the job resources and demands. As the modelling was complex, the interactions were tested in batches. Each batch contains one job demand (e.g., time pressure) and the interactions with the three job resources interactions (perceived autonomy support, relatedness with colleagues, and relatedness with students) using the 'XWITH' Mplus command in one model. This was repeated until all job demand and resource interactions were examined. The significant interactions were retained and tested in the final model. Following Maslowsky et al. (2015), two conditions should be fulfilled to make interpreting the interaction effect more robust: a loglikelihood ratio test comparing the model with no interactions and the model with the significant latent interaction, and the change in  $R^2$  to determine the variance explained by adding the interaction effect.

Any indirect associations between job demands and resources, and job outcomes, via self-efficacy were also tested. These indirect associations were tested in the SEM without the interaction effects using a non-parametric bootstrapping approach with 1000 draws (Shrout & Bolger, 2002).

#### 3.2. Pre-service teachers job demands and resources model

Overall, the SEM without interaction effects yielded adequate fit:  $\chi^2(955) = 1439.55, p < .001, RMSEA = .05, CFI = .93, TLI = .93$ . The following summarises the significant paths of interest. Disruptive student behaviour ( $\beta = -.39, p < .001$ ), perceived autonomy support ( $\beta = .19, p < .05$ ), and relatedness with students ( $\beta = .36, p < .001$ ) uniquely associated with self-efficacy. Disruptive student behaviour ( $\beta = -.27, p < .001$ ), perceived autonomy support ( $\beta = .37, p < .001$ ), and relatedness with colleagues ( $\beta = .39, p < .001$ ) uniquely associated with job intent. Time pressure ( $\beta = -.28, p < .001$ ) and relatedness with students ( $\beta = .29, p < .01$ ) uniquely associated with occupational commitment. After controlling for the shared variance, self-efficacy did not relate with job intent ( $\beta = .02, p = .827$ ) and occupational commitment ( $\beta = .03, p = .803$ ). Table 7 shows the results from the structural modelling and the model is also displayed in Fig. 2. For completeness, the unstandardised estimates, collinearity diagnostics, and incremental change in variance

**Table 5**  
Descriptive statistics and factor loadings.

	Mean	SD	Standardised factor loadings <i>M</i> (range)
<b>Job Demands</b>			
Disruptive student behaviour	3.91	1.63	.85 (.78–.90)
Role ambiguity <sup>a, b</sup>	3.48	1.75	.86 (.81–.96)
Time pressure	4.70	1.78	.88 (.79–.96)
<b>Job Resources</b>			
Perceived autonomy support	5.31	1.60	.86 (.85–.88)
Relatedness with colleagues	5.05	1.68	.93 (.91–.96)
Relatedness with students	6.45	.73	.80 (.60–.91)
<b>Personal Resources</b>			
Self-efficacy	5.13	.93	.72 (.53–.83)
<b>Work Outcomes</b>			
Occupational commitment	5.10	1.48	.83 (.71–.95)
Job intent	4.75	2.09	.95 (.94–.95)

<sup>a</sup> An initial analysis of the role ambiguity items found that the reverse-worded items demonstrated higher residual covariances due to method effects; thus, only positively worded items were retained for subsequent analyses.

<sup>b</sup> Although there is some evidence of a non-linear association between ambiguity and self-efficacy (Wang & Hsu, 2014), preliminary tests showed that this association was linear and thus we proceeded with linear modelling.

**Table 6**  
Correlations of latent factors.

	1	2	3	4	5	6	7	8	9	10	11	12
<b>Covariates</b>												
1. Age												
2. Gender	-.14											
3. Current degree	.47 <sup>c</sup>	-.17 <sup>a</sup>										
4. Practicum placement	-.02	.17 <sup>a</sup>	-.20 <sup>b</sup>									
<b>Job Demands</b>												
5. Disruptive student behaviour	.10	-.12	.10	.00								
6. Role ambiguity	.05	-.03	.01	-.12	.40 <sup>c</sup>							
7. Time pressure	.11	.06	.08	.09	.31 <sup>c</sup>	.42 <sup>c</sup>						
<b>Job Resources</b>												
8. Perceived autonomy support	-.15 <sup>a</sup>	.08	-.07	.03	-.29 <sup>c</sup>	-.57 <sup>c</sup>	-.41 <sup>c</sup>					
9. Relatedness with colleagues	-.22 <sup>b</sup>	-.02	-.06	.02	-.34 <sup>c</sup>	-.57 <sup>c</sup>	-.39 <sup>c</sup>	.70 <sup>c</sup>				
10. Relatedness with students	-.09	.17 <sup>a</sup>	.07	-.07	-.31 <sup>c</sup>	-.28 <sup>c</sup>	-.23 <sup>c</sup>	.28 <sup>c</sup>	.30 <sup>b</sup>			
<b>Personal Resources</b>												
11. Self-efficacy	-.31 <sup>c</sup>	.07	-.20 <sup>b</sup>	.07	-.59 <sup>c</sup>	-.43 <sup>c</sup>	-.41 <sup>c</sup>	.47 <sup>c</sup>	.46 <sup>c</sup>	.57 <sup>c</sup>		
<b>Work Outcomes</b>												
12. Occupational commitment	-.09	.09	.03	-.16 <sup>a</sup>	-.26 <sup>b</sup>	-.31 <sup>c</sup>	-.39 <sup>c</sup>	.18 <sup>a</sup>	.24 <sup>b</sup>	.40 <sup>c</sup>	.34 <sup>c</sup>	
13. Job intent	-.15 <sup>a</sup>	-.02	-.08	.00	-.48 <sup>c</sup>	-.46 <sup>c</sup>	-.36 <sup>c</sup>	.67 <sup>c</sup>	.70 <sup>c</sup>	.28 <sup>c</sup>	.48 <sup>c</sup>	.25 <sup>c</sup>

Note. Gender (0 = male, 1 = female). Current degree (1 = undergraduate, 2 = postgraduate). Practicum placement (1 = first, 2 = second, 3 = third, 4 = forth).

<sup>a</sup>  $p < .05$ .  
<sup>b</sup>  $p < .01$ .  
<sup>c</sup>  $p < .001$ .

**Table 7**  
Standardised results for the structural equation model.

	Personal Resources		Work Outcomes			
	Self-efficacy		Occupational commitment		Job intent	
	$\beta$	SE	B	SE	$\beta$	SE
<b>Covariates</b>						
Age	-.17 <sup>b</sup>	.06	-.04	.08	.02	.05
Gender	-.10	.05	.06	.07	-.08	.05
Current Degree	-.07	.06	.03	.08	-.03	.05
Practicum placement	.09	.05	-.13 <sup>a</sup>	.06	-.01	.05
<b>Job Demands</b>						
Disruptive student behaviour	-.39 <sup>c</sup>	.07	-.02	.09	-.27 <sup>c</sup>	.07
Time pressure	-.10	.07	-.28 <sup>c</sup>	.07	-.00	.06
Role ambiguity	-.04	.08	-.16	.09	.10	.07
<b>Job Resources</b>						
Perceived autonomy support	.19 <sup>a</sup>	.08	-.17	.10	.37 <sup>c</sup>	.09
Relatedness with colleagues	-.01	.10	.05	.11	.39 <sup>c</sup>	.09
Relatedness with students	.36 <sup>c</sup>	.07	.29 <sup>b</sup>	.10	.01	.06
<b>Personal Resources</b>						
Self-efficacy			.03	.13	.02	.09
R-squared (%)	64		29		63	

Note. Gender (0 = male, 1 = female). Current degree (1 = undergraduate, 2 = postgraduate). Practicum placement (1 = first, 2 = second, 3 = third, 4 = forth). SE = standard error.

<sup>a</sup>  $p < .05$ .  
<sup>b</sup>  $p < .01$ .  
<sup>c</sup>  $p < .001$ .

analysis were added to the supplementary materials.

Indirect associations were also tested, where self-efficacy was the mediator between demands and resources, and outcomes (e.g., perceived autonomy support → self-efficacy → job intent), but there were no significant effects. When examining the boosting effects (i.e., interaction effects), the analysis showed that the interaction between disruptive student behaviour and perceived autonomy support was significantly associated with occupational commitment ( $\beta = -.14, p = .026, \Delta R$ -squared = .04). However, the log-likelihood ratio test did not indicate a significant improvement compared to the model without the interaction term,  $\chi^2(1) = 2.48, p = .115$ . Based on the guidelines by Maslowsky et al. (2015), the small change in variance explained and a non-significant log-likelihood ratio test suggests no evidence of a

meaningful boosting effect of disruptive student behaviour on the association between perceived autonomy support and occupational commitment

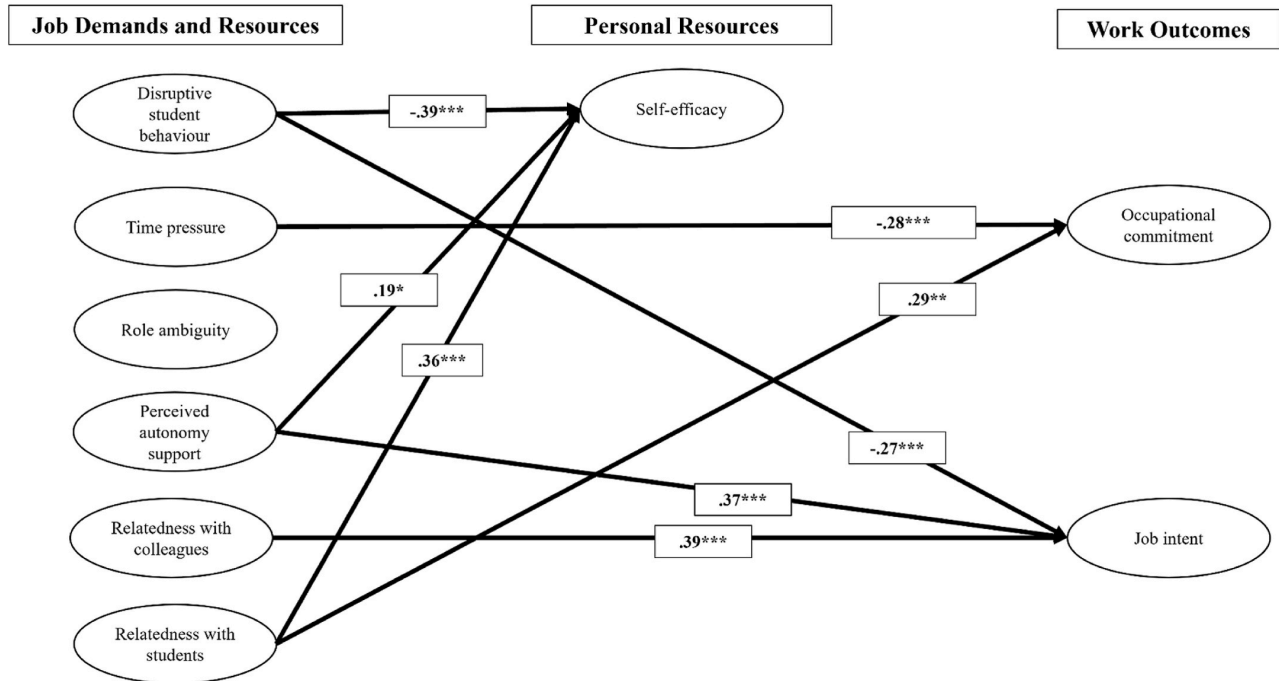
#### 4. Discussion

The study examined the associations between pre-service teachers' job demands, job resources, self-efficacy as a personal resource, and work outcomes, drawing upon experiences from their practicum schools. Although the bivariate correlations between the factors aligned with the hypotheses and expectations based on the JDRT (Bakker & Demerouti, 2017), further scrutiny using SEM revealed that once controls for shared variance and covariates were in place, there were a handful of factors that had unique association with the personal resource and outcomes.

##### 4.1. Job resources, personal resources, and work outcomes

In the JDRT framework, job resources are adaptive conditions associated with the job, while personal resources are linked to teachers' personal attributes (Bakker & Demerouti, 2017). These resources play a part in pre-service teachers' functioning and are associated with their commitment to their role and the intent to work with the practicum school. Overall, the results indicate that the job resources of interest to pre-service teachers were positively associated with their self-efficacy, and the work outcomes of job intent and occupational commitment. However, pre-service teachers' personal resource of self-efficacy was not associated with either work outcome after controlling for the influence of related variables. The findings will be discussed in turn.

Job resources in the form of perceived autonomy support and relatedness with colleagues positively associated with job intent. The positive association between perceived autonomy support and job intent meant that pre-service teachers who received autonomy from their supervisors were more likely to indicate that they would work at the practicum school. This result was expected, as perceived autonomy support fulfils teachers' need for autonomy (Ryan & Deci, 2017), and as such, pre-service teachers are more likely to work in a school that could continue to support their need for autonomy. The results also demonstrate that relatedness with colleagues was associated with a higher intent among pre-service teachers to work at the same school. Interestingly, past work suggests that there is limited interaction time between pre-service teachers and staff due to a restricted pre-service teacher



**Fig. 2.** SEM of JDR and Work Outcomes  
 Note. Only significant paths are shown; \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Observed indicators are not displayed. The model controls for covariates (not included in the model).

practicum (Grudnoff, 2011), which may exacerbate feelings of isolation from the school staff community (Johnston, 2016; Teng, 2017). The current finding could indicate a shift in practicum curriculum over the past decade, allowing more integration between pre-service teachers and school staff. Alternatively, given the study’s proximity to the lifting of COVID-19 lockdown procedures in Australia, the practicum period captured in the study represented a time when pre-service teachers could have in-person practicum interactions. This modality shift may have prompted pre-service teachers to seek more social connections at their practicum school, and explain why pre-service teachers were able to tap into this job resource and contribute to their intent to work at their practicum school. Considering this, when pre-service teachers interact with school staff and build relationships, pre-service teachers are more likely to feel more connected with the school and may intend to work at the same school. In light of the demand for pre-service teachers, the interactions that pre-service teachers have between supervisors and other staff appear essential in establishing pre-service teachers’ intent to continue working at the school after the practicum.

Relatedness with students, as a job resource, was shown to be positively associated with occupational commitment. Teachers who spend time with their students have their need for relatedness fulfilled, which promotes commitment to their work (Ryan & Deci, 2017). Previous findings highlighted that pre-service teachers reported feeling less connected to their students while on practicum placements (Grudnoff, 2011), yet the current findings point to how building on pre-service teacher-student relationships may act as an important resource to better support pre-service teachers’ affective commitment to the teaching profession. As mentioned above, a shift in practicum modality (i.e., in-person practicums) because of COVID-19 may have further prompted a change in this association. Furthermore, other work has examined the associations between the teachers’ social-emotional competencies and their teacher-student relationships (Zhang et al., 2023), which suggest that pre-service teachers who have high social-emotional competencies could benefit from their relatedness with students. Future studies could

explore how pre-service teachers’ social-emotional competencies are associated with practicum outcomes.

A novel finding of the study was that self-efficacy did not associate with the two work outcomes after accounting for all the factors. In pre-service teachers, self-efficacy has long been regarded as an important personal resource that predicts job commitment and satisfaction (García-Lázaro et al., 2022; Klassen & Chiu, 2011), with the latter related to job intent. In line with JDRT, the paths show how disruptive student behaviour, perceived autonomy support, and relatedness with students were related to self-efficacy in the expected direction. These factors show how supervision and student interactions can play a role in building pre-service teachers’ perceptions of their teaching ability. However, the results from the current study indicate that pre-service teachers’ belief in their effectiveness in teaching was not associated with their affective commitment to their occupation, or to their connections with the school in which the practicum took place. This finding echoes (Granziera et al., 2022), who showed that teachers’ self-efficacy was not associated with retention-related outcomes (i.e. occupational commitment). In the current study, it is possible that the pre-service teachers view the practicum school only as a temporary position, solely focused on developing their teaching skills and teacher identity (Joseph, 2019), which may explain why pre-service teachers might not accept a job at the school or develop any attachment with the teaching profession. Future work should examine similar samples to determine if pre-service teachers’ self-efficacy, or other pertinent personal resources, are associated with related work outcomes.

In summary, the results underscore how the relationships with students, school staff, and the supervisor as job resources are important to pre-service teachers’ commitment to the profession and their intent to stay in their practicum school. However, the missing links between self-efficacy and pre-service teachers’ work outcomes are unexpected; though, it is necessary to remember that self-efficacy is an important outcome of the practicum experience itself. Future studies could investigate the role of these associations in other samples.



#### 4.2. Pre-service job demands and work outcomes

JDRT theory positions job demands as conditions at work that predict maladaptive functioning and poor work outcomes (Bakker & Demerouti, 2017). This study sought to understand how disruptive student behaviour, time pressures, and role ambiguity as job demands were salient to pre-service teachers. However, only disruptive student behaviour and time pressure were associated with work outcomes.

The results of this study illustrate that disruptive student behaviour is negatively related to job intent. Disruptive student behaviours disrupt effective learning and engagement (Collie, 2022), which may make it difficult for pre-service teachers to deliver effective instruction (Scarparolo & Subban, 2021). As such, the negative relationship between disruptive student behaviour and job intent was expected. Pre-service teachers managing classes for the first time during their practicum placement may have faced disruptive student behaviour and felt unsupported in handling it, which could contribute to their concerns about future work at the school. As an initial training step, assigning pre-service teachers classes with a lower record of student disruptions may be beneficial until they are given sufficient training to handle more disruptive classes.

Time pressure negatively associated with occupational commitment. According to past research, time pressure faced during pre-service training acts as a burden (Collie, 2022), especially when pre-service teachers must manage their workload and studies (Mairitsch et al., 2021; Mtika, 2011). The association may indicate how pre-service teachers faced insufficient time to complete both training and studies and as such, question their choice in the profession. Practicum placement supervisors could alleviate the time pressure teachers face during training and include training sessions to manage responsibilities effectively. In addition, the blurring of pre-service and in-service teaching with the rise of conditionally accredited teachers who have yet to complete their degrees (Morrison et al., 2022), means that new models of ITE need to account for these additional time pressures.

Role ambiguity is the extent to which pre-service teachers face situations with an unclear expected course of action (Bowling et al., 2017). While past work indicated that pre-service teachers might face such ambiguous work situations (Bloomfield, 2010; Davies & Heyward, 2019; Mtika, 2011), the results show that role ambiguity was not significantly associated with both work outcomes after controlling for the factors of interest. It was also noteworthy that pre-service teachers reported role ambiguity as the lowest job demand, which could mean that the teachers in this sample did not face many ambiguous situations. A possible explanation for this might be that the current practicum placements were highly structured, and pre-service teachers did not attend to other roles (e.g., administration) during their practicum training. Therefore, practicum placements should continue to structure the practicum to allow pre-service teachers to focus on training and, if taking on other roles, to provide clear guidance and structure to take on these responsibilities.

The analyses did not reveal any significant indirect associations or meaningful interaction effects. Given that past studies with in-service teachers show evidence of interactions between job demands and resources (e.g. Granziera et al., 2022), future studies may consider examining other interactions between job demands and resources for pre-service teachers.

#### 4.3. Covariates and work outcomes

As this study represents an early step in examining the factors related to teacher retention, it is beneficial to assess the association of background factors with pre-service teacher work outcomes. After controlling for background characteristics, only practicum experience (i.e., number of practicums) was associated with occupational commitment. In other words, as pre-service teachers complete more practicums, they feel less about committing to the teaching profession. It is unclear why

this association occurred, as practicum experience was unrelated to job demand. It is possible that pre-service teachers' perception of teaching roles may change as a function of the number of completed practicum.

Moreover, as mentioned earlier, the current study focused on background characteristics highlighted in the literature that are mainly relevant to in-service teachers. However, other background characteristics, such as geographical preferences, may play a role in work outcomes. For example, pre-service teachers may consider the distance they need to travel when considering a teaching role at the school. As this paper represents early research in addressing teacher retention by bringing together and examining several variables from in-service teacher research, future research could explore other background factors pertinent to pre-service teachers to provide a more robust analysis.

#### 4.4. Implications for practice

The results from the study present unique associations between job demands and resources, and work outcomes that support retention and pre-service teachers' choice of employer after graduation. While the findings are correlational in nature, the results suggest several approaches practicum schools can review for retaining pre-service teachers and getting teachers "classroom-ready".

As interactions with students in the classroom were shown to be related to pre-service teachers' self-efficacy, occupational commitment, and intent to work at the school, practicum schools could consider ways of helping pre-service teachers reduce disruptive behaviours in the classroom and build positive relationships with students. In turn, pre-service teachers can focus on building their teaching competencies in the classroom (Klassen & Chiu, 2011). The findings also suggest that practicum schools can go beyond just improving pre-service teachers' perceived ability to teach (i.e. self-efficacy). Pre-service teachers may not find it important that the skills they develop during their training inform their intent to remain at the school or their commitment to their profession. Other outcomes such as well-being (Collie, 2023), or behavioural engagement during the practicum (Granziera et al., 2022), may also be important for shaping pre-service teachers' intention to work at the school. Practicum schools could explore providing a more holistic approach beyond focusing on teaching ability (e.g., student engagement) when training pre-service teachers.

Supporting relationships between pre-service teachers and school staff were shown to be important in promoting pre-service teacher retention. As such, promoting interactions with school staff could support a higher positive affect towards the school (Collie et al., 2015; Klassen et al., 2012). In practice, this may be achieved by fostering staff engagement, such as having occasional sharing sessions between pre-service teachers and school staff (e.g., paraprofessionals, learning support, teacher aide) in schools throughout their degrees. Establishing these relationships with school staff has the potential to go a long way in supporting pre-service teachers through their ITE school placements, helping pre-service teachers feel connected with their practicum school, and subsequently, supporting their choice of school employment.

The results from the study also underscore the importance of the supervisor's role in pre-service teachers' intention to work at the school. Specifically, supervisors in practicum schools are in positions to support the pre-service teachers by way of autonomy support and help with managing their workload during pre-service training. In practicum schools, supervisors can support pre-service teachers' need for autonomy by valuing their input during training or providing a meaningful rationale for assigned tasks. Furthermore, supervisors may manage the workload given to pre-service teachers so that teachers can focus more on their practicum training. Supervisors that adopt more of these practices could help pre-service teachers continue employment with the practicum school after graduation.

#### 4.5. Limitations

There are some limitations of the current study. First, the measures completed in the study rely exclusively on self-reported questionnaires completed by pre-service teachers in mainly NSW, Australia. This meant that the results were largely reliant on the subjective experience of pre-service teachers in one country. Future research could complement these findings by including external sources, such as supervisor reports and evaluations, and replicating this study in other countries with different ITE systems. Second, the current study is cross-sectional in design, which aimed to get responses from pre-service teachers who have recently completed their practicum. As such, the data collected pertains to a specific, singular point in time, constraining our ability to infer causal relationships between the constructs under examination. However, it is important to acknowledge that the direction of relationships between factors are consistent with JDRT. Future work could incorporate longitudinal designs that consider the start and end of pre-service practicums, leading to a better understanding of how job demands and resources influence work outcomes by the end of pre-service teachers' practicum. Third, given its quantitative nature, the study may not adequately capture the depth and nuance of pre-service teachers' experiences during their practicum placement, nor how these experiences correlate with their work outcomes. Adopting a mixed-methods approach in future studies could provide a richer more comprehensive understanding of the factors influencing retention outcomes among pre-service teachers. Through the integration of quantitative and qualitative data, researchers may uncover more detailed insights into the complex interplay of experiences and perceptions that inform pre-service teachers' career decisions and commitments. Similarly, the current study adopted appraisal-based measures of demands and resources; however, in future research, it would be valuable to examine time pressure at different points in the degree to understand what experiences may be implicated in different levels of this variable.

#### 5. Conclusion

The study aimed to understand the job demands and resources that were pertinent to pre-service teachers undergoing practicum training. The results suggested that disruptive student behaviour, time pressure, perceived autonomy support, relatedness with colleagues and students had unique associations with teacher self-efficacy, occupational commitment, and job intent. Of note, it was found that teacher self-efficacy as a personal resource did not associate with work outcomes for pre-service teachers. Together, the results suggest how building on relationships and enhanced supervision can better support pre-service teachers' commitment to teaching and improve retention in practicum schools.

#### CRedit authorship contribution statement

**Jeremy Pan:** Writing – review & editing, Writing – original draft, Formal analysis. **Tony Loughland:** Writing – review & editing, Conceptualization. **Rebecca J. Collie:** Writing – review & editing, Methodology, Formal analysis, Conceptualization. **Andrew A. King-Smith:** Writing – original draft, Methodology. **Mary Ryan:** Writing – review & editing, Conceptualization. **Caroline Mansfield:** Writing – review & editing, Conceptualization. **Rachelle Davey:** Writing – review & editing, Conceptualization. **Chrissy Monteleone:** Writing – review & editing, Conceptualization. **Miriam Tanti:** Writing – review & editing, Project administration, Conceptualization.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.tate.2024.104841>.

#### Data availability

The authors do not have permission to share data.

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