Attracting, retaining and sustaining early childhood teachers: an ecological conceptualisation of workforce issues and future research directions

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Abstract

A well-qualified, well-paid, stable workforce with high psychological and emotional wellbeing is critical to the provision of quality early childhood education and care, yet workforce shortages and high turnover persist in Australia and internationally. This paper uses ecological theory to conceptualise and make sense of findings from research that has investigated the recruitment, retention and wellbeing of early childhood teachers in Australia. The theoretical framing of early childhood teacher workforce issues proffered in the paper highlights the utility of considering these issues from a holistic ecological perspective. Analysis of Australian early childhood workforce studies draws attention to the need for large-scale, longitudinal research that holistically investigates influences on the attracting, retaining and sustaining of early childhood teachers, and the impact of these influences on teacher quality.

Keywords Early childhood teachers · Recruitment · Retention · Wellbeing · Attrition · Workforce · Early childhood education

Introduction

Attracting, retaining and sustaining the early childhood education and care (ECEC[1]) workforce have long been issues of national and international significance (OECD 2006, 2019; Productivity Commission 2011; Whitebook et al. 2014; Totenhagen

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[1] While ECEC is internationally recognised as birth-eight years of age, in this paper our focus is on the early years, that is, birth-five years.

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et al. 2016; Pascoe & Brennan 2017; Jackson 2020;). While it is consistently rec-
ognised that a well-qualified, well-paid, stable workforce with high psychological
and emotional wellbeing is critical to the provision of quality ECEC (OECD 2006;
Whitebook et al. 2014; Cumming 2017; Thorpe et al. 2020), workforce shortages
and high turnover persist (OECD 2012). Of particular concern is the high turnover
and shortage of degree-qualified early childhood teachers (ECTs)[2], given the estab-
lished significant contribution they make to high-quality ECEC (Sylva et al. 2004;
Tayler 2016; Manning et al. 2019).

In Australia, the ECEC workforce is composed of a mix of degree-qualified
ECTs and diploma and certificate-trained educators, and there are workforce short-
ages across all three groups (Department of Education, Skills & Employment 2019).
Attracting early childhood preservice teachers and retaining them following gradu-
ation is of particular concern, with the supply of ECTs falling short of current and
projected need (PricewaterhouseCoopers 2014; Shah 2015; Future Tracks 2019).
Recent figures show that the completion rate for undergraduate initial teacher educa-
tion programs in Australia, including birth-eight and birth-12 years' early childhood
programs, is only 51% (Australian Institute for Teaching and School Leadership
[AITSL] 2019). Policy analysts have warned that this low completion rate, coupled
with government projections that by 2023 a further 29,000 ECTs will be needed to
meet regulatory requirements (Department of Employment, Skills, Small and Fam-
ily Business n.d.), will mean a sector shortfall of nearly 18,000 ECTs in 2023, leav-
ing at least one-third of preschools[3] without the ECTs they need (O'Connell 2019).
Moreover, the high staff turnover of ECTs and educators more broadly has been
deemed to range from 20 to 21% (Irvine et al. 2016; Jones et al. 2017) to 33–37%
(metropolitan and remote services, respectively) (Thorpe et al. 2020). A recent
ECEC workforce census noted that the average tenure for qualified educators[4] at
their current service was only 3.6 years (Social Research Centre 2017), while less
than a third of educators (27.8%) have 10 or more years' sector experience (Social
Research Centre 2014).

To address these supply and retention workforce issues in Australia, the Coun-
cil of Australian Governments (COAG) has endorsed national workforce strategies
(Standing Council on School Education and Early Childhood [SCSEEC] 2012;
Education Council 2019). Four state governments have also implemented ECEC

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[2] ECTs in this paper refer to graduate teachers with undergraduate or postgraduate degrees that qualify
them to work with children in the birth-five years age group. As will be explained later in the paper, early
childhood degrees in Australia can be birth-five, birth-eight, or birth-12 years focussed.

[3] In Australia ECTs are generally employed in preschools or long day care centres. Preschools cater for
children 3-5 years and typically operate 9am-3pm during school terms. In contrast, long day care ser-
vices operate for at least 48 weeks of the year, for a minimum 8 hours per day, thus catering for work-
ing families. Both services have an education focus, with ECTs required to implement an Early Years
Learning Framework (Department of Education Employment and Workplace Relations (DEEWR)
2009) and meet national quality standards (Australian Children's Education and Care Quality Authority
(ACECQA), 2020).

[4] The ECEC workforce censuses cited here (Social Research Centre 2014; 2017) report turnover data for
the ECEC collective workforce, and do not differentiate between degree-qualified ECTs and diploma or
certificate-trained educators.

workforce strategies that include initiatives such as campaigns to promote the value of ECEC and attract more students to ECT programs; scholarships for pre-service ECTs; scholarships and pathways to support educators' upskilling from a diploma to an ECT qualification; employment incentives for graduate ECTs; and opportunities for professional development (Early Childhood Australia [Tasmania] and the Tasmanian Department of Education 2017; NSW Department of Education 2018; Victorian Department of Education and Training 2019; Queensland Department of Education and Training 2020). Collectively, these strategies recognise that without improvements in the supply and retention of ECTs, policy initiatives (Council of Australian Governments [COAG] 2009) and regulatory reforms (Australian Children's Education and Care Quality Authority [ACECQA], n.d.; Commonwealth of Australia 2010) aimed at improving the quality of the ECEC sector through increased supply of ECTs, are at risk.

Given the significance and complexity of entrenched ECT workforce issues, policy analysts have cautioned that government responses must be coherent, substantive and evidence-based (Press et al. 2015; Pascoe and Brenman 2017; Jackson 2020). In the section that follows we draw on a holistic, ecological systems framework to conceptualise findings from Australian research that has investigated ECT workforce issues. We show that while extant research highlights barriers to attracting, retaining and sustaining ECTs in Australia, a comprehensive research base to inform government policy specific to ECTs is still lacking. Relative to the critical role teachers play in the provision of high-quality ECEC, limited research has focussed on ECT workforce issues. In particular, three shortcomings that we highlight in the present analysis are first, the lack of published studies that have longitudinally tracked the career trajectories of ECTs; second, the typically narrow rather than holistic lens through which recruitment, retention, and wellbeing issues have been investigated; and third, the small rather than large-scale scope of most extant ECEC workforce research.

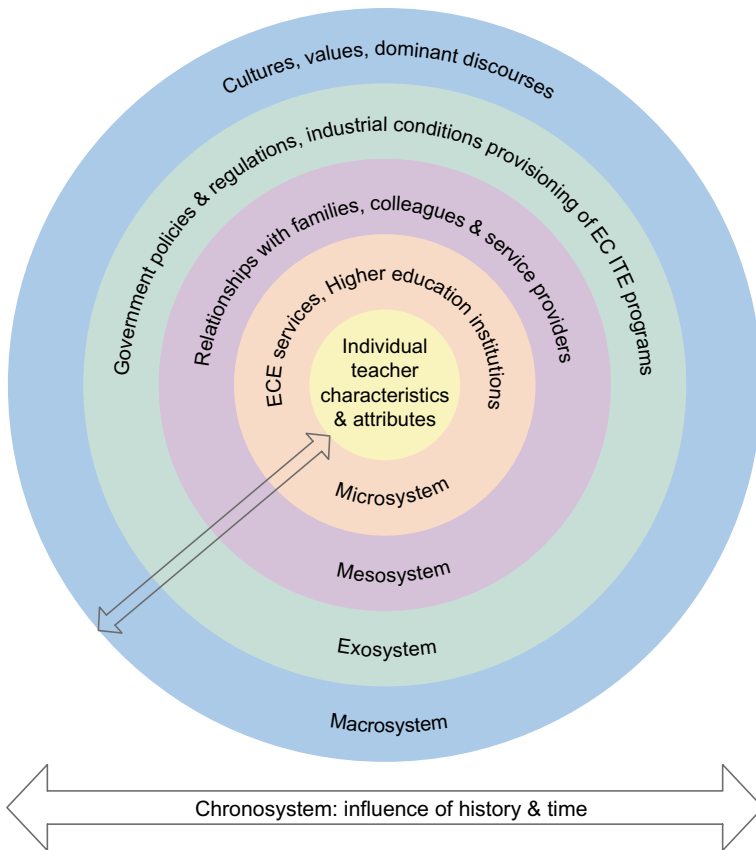## ECT workforce issues through an ecological lens

As we demonstrate below, research from the Australian context points to multiple factors that impact on the recruitment, retention and wellbeing of ECTs. Extending on studies that have utilised ecological theory to holistically conceptualise workforce issues in ECEC (McKinlay et al. 2018) and school contexts (Zavelevsky and Lishchinsky 2020), and the retention of undergraduate students more broadly (Loh et al. 2020), we draw on Bronfenbrenner's (1979; Bronfenbrenner and Morris 1998; Rosa and Tudge 2013) bioecological model to show that entrenched ECT workforce issues in Australia are attributable to interconnected and bi-directional systemic factors that are proximal and distal to ECTs. Such a systems approach is consistent with calls to examine workforce issues through a holistic frame that gives consideration to the interplay of individual, relational, organisational, sociocultural and political influences (Sumsion 2002; Cumming 2017; Cumming and Wong 2019; Jones et al. 2019).

Applying Bronfenbrenner's bioecological model to the ECT workforce ecosystem results in five interconnected subsystems, represented as nested spheres that impact on each other. Accordingly, each subsystem can individually but also collectively impact on the recruitment, retention and wellbeing of ECTs. At the centre of the ecosystem are the individual characteristics and attributes of ECT preservice and graduate teachers, such as age, gender, cultural background, experience in the ECEC context, and levels of job satisfaction, teaching self-efficacy and wellbeing. Impacting on ECTs are four extrinsic teaching contexts. First is the microsystem; comprising higher education institutions where preservice ECTs complete their teaching qualification, and ECEC services that employ ECTs. Second is the mesosystem; the interactions and degree of harmony or dissonance between components of the microsystem, such as relationships with colleagues, families and the service's governing body. Third is the exosystem; broader sector policies and structural conditions such as regulations, wages, and tertiary institutions' requirements and provisioning of early childhood initial teacher education programs. Fourth is the macrosystem; societal culture, values and dominant discourses pertaining to care, early learning and the value of ECEC. Operating across these four levels is the chronosystem, reflecting the influence of history and time, such as the development of the ECEC sector in Australia. Figure 1 illustrates this conceptualisation. Situating workforce issues within this ecological systems frame provides a holistic lens through which individual, workplace, relational, socio-political and discursive influences on ECT workforce issues can be coherently examined within and across the different levels.

Factors presented below that contribute to, or conversely, mitigate ECT workforce issues were drawn from empirical research, literature reviews, ECEC workforce censuses and government reports that have included or specifically focussed on ECTs in Australia. To extract peer-reviewed research for analysis, A+ Education, EbscoHost, Proquest Education and PsycInfo databases were utilised, with searches confined to peer-reviewed journal articles from 2000 onwards. The following search terms were used: "early childhood teach*" AND "Australia" AND "workforce"/"turnover"/"retention"/"job satisfaction"/"burnout"/ OR "wellbeing". Additional relevant research papers were located from the reference lists of the articles retrieved. Relevant workforce censuses and reports were also sourced from the authors' own professional libraries. In sum, 38 empirical peer-reviewed published studies were analysed (See Appendix 1 for a summary of the aims and methodologies of these papers), and 18 further papers (literature reviews and reports) reviewed.

Individual factors

A range of demographic and individual variables influence preservice and graduate ECT recruitment, retention and wellbeing. A large Australian study of beginning early childhood, primary and secondary preservice teachers showed that intrinsic motivations for becoming an ECT include a passion for teaching and working with young children (Richardson et al. 2011). In the ECEC context, however, these motivations in themselves do not ensure retention (Thorpe et al. 2020). Moral and

Cultures, values, dominant discourses

Government policies & regulations, industrial conditions provisioning of EC ITE programs

Relationships with families, colleagues & service providers

ECE services, Higher education institutions

Individual teacher characteristics & attributes

Microsystem

Mesosystem

Exosystem

Macrosystem

Chronosystem: influence of history & time

Fig. 1 An ecological framing of ECEC workforce issues

altruistic motivations—making a difference and supporting children's rights—draw students and teachers to ECEC (Sumsion 2004; Fenech et al. 2009; Richardson et al. 2011; Thorpe et al. 2011; Ciuciu and Robertson 2019). One study of preservice teacher enrolments in an EC initial teacher education program over a 14-year period showed that male students were significantly more likely than female students to withdraw prior to completion (65.6% vs 47.5% of respective total male and female enrolments) (Kirk 2020). In this study, the male cohort tended not to intrinsically view early childhood teaching as a career choice, and attitudinal barriers together with having few male peers contributed to their withdrawal from the program.

A small-scale qualitative study of seven thriving ECTs found other personal attributes that support ECT retention, namely self-reflexivity; a drive to overcome challenges; a preparedness to invest unpaid hours while maintaining work-life balance; determination and persistence; a commitment to ongoing professional development; and a capacity and willingness to formally or informally exercise leadership (Sumsion 2004). An exploration of professional identities associated with retention of 14 educators and four ECTs from two long day care services included a

longstanding desire to become an educator; having significant others who are teachers; deriving esteem and a positive self-image from working with children; and enacting the educator role from a sense of mastery (Cranitch 2017). For some preservice ECTs, a perception that this work will be compatible with family responsibilities provides a personal motivator to enrol in an early childhood ITE program (Richardson et al. 2011; Ciuciu and Robertson 2019).

The values, beliefs and aspirations of preservice teachers, in particular, the perception that working in an ECEC setting is not 'real teaching' and an associated aspiration to teach rather than seemingly only care for children, steer those enrolled in a dual (EC and primary) qualification to employment in the school rather than EC sector, to teach primary school-aged children (Liu and Boyd 2018). For those ECTs who do work in ECEC, younger and more qualified educators are more likely to leave their workplace and potentially also the sector if: they are studying to attain a higher ECEC or different qualification (Watson 2006; Irvine et al. 2016; Thorpe et al. 2020); their familial circumstances mean that they cannot afford to live on low wages (Irvine et al. 2016; McKinlay et al. 2018); they experience a disconnect between their motivation/love of children and the lived demands of the ECT role (Irvine et al. 2016); or they are women and leave due to pregnancy and/or to support the career trajectory of their spouse (Productivity Commission 2011; Thorpe et al. 2020). A tendency to put the needs of children, families and other educators before their own, and to underreport workplace issues and injuries, can mean that wellbeing issues in ECEC are not shared or addressed, and may become exacerbated over time (Logan et al. 2020). A diminishing passion for teaching, and the development of burnout, also contribute to ECTs' attrition (McKinlay et al. 2018), while progression from teaching into managerial roles can support retention (Thorpe et al. 2020).

Microsystem factors

ECTs have direct interaction with three microsystems at different points of their career. First are the early childhood teacher education contexts within which preservice ECTs complete their teaching qualification; second, the ECEC services in which preservice teachers complete professional experience; and third, the ECEC services where ECTs are employed.

Many early childhood teacher education program/programs in Australia are dual early childhood/primary qualifications that span birth-eight or birth-12 years, with variable ECEC-specific content and professional experience (Boyd et al. 2020). Many graduates of these programs choose or aspire to work with primary school-aged children in schools rather than with younger children in ECEC, and in preschools rather than long day care (Farrell et al. 2000; Sumsion 2002; Thorpe et al. 2011; Nolan and Rouse 2013; Harrison and Heinrich-Joerdens 2017; Liu and Boyd 2018; Boyd and Newman 2019; Gibson et al. 2019; Mahony et al. 2020). These consistent findings contrast attempts within early childhood teacher education programs to promote ECEC as early education and not just about care (Gibson et al. 2018). The breadth of these programs has generated concern about how well-prepared graduates are to teach in the early years sector (PricewaterhouseCoopers 2014;

Boyd and Newman 2019; Boyd et al. 2020). Similar concern has been raised about how well-prepared graduates of postgraduate EC teaching programs are to meet the demands of the job (Ciuciu and Robertson 2019). "Pedagogical challenges" have also been identified in the delivery of two-year master's early childhood teacher education programs whose cohorts include mature-age international students unfamiliar with the Australian ECEC context (Fenech et al. 2009, p. 208). Conversely, ECEC employers have expressed a preference for birth-five teacher graduates, who they consider best qualified to teach in the early years sector (Boyd et al. 2020).

The quality of education and care in services within which preservice ECTs undertake professional experience can influence their career choices (Thorpe et al. 2012; Nolan and Rouse 2013). Placement in low-quality services can deter preservice teachers from seeking a teaching position in the ECEC sector (Thorpe et al. 2011; Boyd and Newman 2019). Conversely, placements undertaken in settings characterised by strong leadership can steer students completing a dual early childhood/primary teacher education program to ECEC settings (Thorpe et al. 2012).

Following completion of an early childhood teacher education qualification, the ECEC service as a workplace represents a key systemic influence on workforce issues, through ECTs' levels of job satisfaction and associated turnover intent (Jones et al. 2017). On the one hand, ECEC services can be sites where ECTs experience high levels of stress and emotional exhaustion (Jovanovic 2013; Irvine et al. 2016), particularly in long day care (Social Research Centre 2014). Intense work environments where ECTs undertake multiple, complex and demanding tasks across the course of a day and at the same time (Harrison et al. 2019), where there is limited time to complete roles and responsibilities (Jovanovic 2013; Cumming 2017; McKinlay et al. 2018), no space for staff to experience physical and mental rest during their breaks (Logan et al. 2020), limited opportunity to work collegially (Sumsion 2002; Jovanovic 2013) or scope to exercise professional autonomy (Cumming 2015) can exacerbate stress and job frustration. In ECEC workplace environments, ECTs can also be regularly exposed to noise levels that exceed national occupational health and safety standards which can lead to psychological stress (Grebennikov and Wiggins 2006). ECTs' occupational health and safety can be further compromised by hazards in the workplace, the physical and emotional intensity involved in teaching young children, and children's challenging behaviours (Logan et al. 2020). These issues make ECEC settings one of the most hazardous workplaces in Australia, as reflected in the high number of workers' compensation claims made in 2016–2017, particularly for physical injuries (Cumming et al. 2020).

Employers who recognise and invest in ECTs "as professionals" (Sumsion 2004, p. 283) do much to support the recruitment, retention and wellbeing of ECTs. This recognition and investment in ECTs can be through the provisioning of material and non-material benefits and affordances. Above award pay and working conditions (e.g. paid study leave; programing time) are material benefits consistently cited in the early childhood workforce literature reviewed (Bretherton 2010a, b; McKinlay et al. 2018; PricewaterhouseCoopers 2014). Services that provide support and financial incentives for diploma-qualified educators to become ECT-qualified (e.g. paid study leave; guaranteed ECT position at course completion) enable educators wanting to upskill to do so (Future Tracks 2019; Boyd et al. 2020).

Non-material benefits or affordances in the ECEC workplace can enhance job satisfaction and in turn, support ECT retention and wellbeing. Such benefits identified in the literature include above minimum standard ratio and staff qualification requirements (Bretherton 2010b; Jones et al. 2017); effective service leadership and management (Jones et al. 2017; Thorpe et al. 2020); scope to exercise professional autonomy and judgement (Sumsion 2004; Cumming 2017; Jones et al. 2017; Jones et al. 2019; Thorpe et al. 2020); the provision of mentoring and professional development opportunities through within-service learning communities and access to conferences and professional courses (Sumsion 2004); flexible work arrangements (McKinlay et al. 2018); and a culture that is family-friendly (Bretherton 2010a; PricewaterhouseCoopers 2014; McKinlay et al. 2018; Jones et al. 2019). A workplace with strong morale, that enables ECTs to have a strong teacher identity, and where job satisfaction and other non-financial rewards are enjoyed (e.g. seeing children develop; opportunities for career progression, creativity, autonomy and leadership) fosters retention in the ECEC sector (Sumsion 2004; Thorpe et al. 2011; McKinlay et al. 2018).

Mesosystem factors

Synergies between microsystem components, most notably between ECTs and colleagues, the centre director, and families, can support workforce retention and wellbeing. The absence of other teachers in long day care settings (Thorpe et al. 2011; Ciuciu and Robertson 2019) and a lack of collegial relationships and teamwork can diminish a commitment to teaching and exacerbate stress, job dissatisfaction and attrition (Sumsion 2002; Cumming 2015; McKinlay et al. 2018). Moreover, working in teaching contexts that are not professionally stimulating (e.g. lacking a culture of critical reflection), where professional development is not valued, or where a shared philosophy among staff is lacking, can be demoralising and trigger attrition (Sumsion 2002; Bretherton 2010b).

Conversely, supportive, collegial relationships where ECTs are valued, mentored, committed to a shared philosophy, and feel a sense of belonging, enhance job commitment, the development of a strong professional identity, resilience to work stressors and wellbeing (Sumsion 2004; Cranitch 2017; Cumming 2017; Jones et al. 2017; Jones et al. 2019; Ciuciu and Robertson 2019). A supportive and competent centre director who identifies and addresses wellbeing issues can mitigate ECTs' occupational stress and injury (Logan et al. 2020). Employers' and families' recognition of ECTs' professional knowledge and skills also contributes to ECTs thriving in their work (Sumsion 2004). Employers and providers who engage in political advocacy to raise the profile and status of ECTs can affirm ECTs' own professional identity and inspire hope for improved wages and professional status across the sector (Sumsion 2004).

Exosystem factors

The broader systems' influences discussed in this section pertain to levers that support or constrain entry into and completion of early childhood teacher education

programs; the broader ECEC and education landscape in Australia; and relevant government policy that govern ECEC and the work ECTs do.

For diploma-qualified educators, complex university entry systems, perceived high university fees, inconsistent recognition of prior learning, and low ECT wages can prohibit enrolment in an ECT degree (Social Research Centre 2014; Future Tracks 2019). Moreover, upskilling to an ECT qualification can be difficult (Watson 2006) and does not always translate to an increased supply of ECTs, given that completing an ECT qualification also provides a pathway out of 'child care' to employment in the school sector (Nolan and Rouse 2013; Thorpe 2020; Watson 2006). For postgraduate preservice ECTs, a lack of government financial support can exacerbate financial pressures that threaten completion of early childhood teacher education programs (Fenech et al. 2009).

Low wages, low professional status, and lack of pay parity with teachers employed in schools are disincentives for preservice ECTs to work in ECEC, particularly long day care (Bretherton 2010a; Thorpe et al. 2011; Productivity Commission 2014; Irvine et al. 2016; Liu and Boyd 2018; Boyd and Newman 2019). Moreover, ECTs who do work in long day care but then leave, attribute their decision to these exosystem factors (Bretherton 2010a; PricewaterhouseCoopers 2014; Social Research Centre 2014; Irvine et al. 2016). These pay issues are exacerbated by variable industrial awards and enterprise agreements under which ECTs may be employed and which offer substantially different pay and working conditions, such as programing time and annual leave (Ciuciu and Robertson 2019). Rural and remote services experience even greater challenges attracting ECTs (PricewaterhouseCoopers 2014) and retaining educators (Thorpe et al. 2020).

Longstanding regulatory burden (and associated unpaid hours and constraints on professional autonomy) (Fenech et al. 2006; Fenech et al. 2007; Bretherton 2010b; Social Research Centre 2014; Grant et al. 2016; Irvine et al. 2016; Grant et al. 2018;), together with the experience of working long hours, are detrimental to work-life balance, job satisfaction and the retention and wellbeing of ECTs (Ciuciu and Robertson 2019). Conversely, Australia's Early Years Learning Framework (Department of Education Employment and Workplace Relations [DEEWR] 2009) does not prescribe curriculum; thus, its scope for teacher autonomy and professional judgement can enhance job satisfaction and retention (McKinlay et al. 2018).

The marketisation of ECEC in Australia, particularly of long day care, has emerged as an exosystem influence on ECT recruitment, retention and wellbeing in three ways. First, government funding and operation of schools compared to a heavily marketised long day care sector contributes to a perceived professional versus non-professional divide (Mahony et al. 2020) that can steer ECT graduates of birth-eight and birth-12 years' programs to a school teaching career. Second, ECTs employed in large private services or private long day care chains have higher levels of turnover intent than those employed in stand-alone or large not-for-profit services (Jones et al. 2017). Third, the commercial interests of the for-profit sector (Sumsion 2007) and the historical and continued trend of for-profit services generally not meeting quality standards and advocating against improved regulations (Fenech 2019) may mean that ECTs in these workplaces experience work dissatisfaction, stress and turnover.

Macrosystem factors

ECEC has long been positioned within care and maternalism discourses (Gibson 2013) whereby working with young children is regarded as women's work and attracts a predominantly female workforce, with low professional status and pay (Kirk 2020). The gender composition of the ECT workforce is compounded by gender stereotypes, a feminised preservice and workforce culture, and societal mistrust of men who want to work in ECEC (Sumsion 2000). It is unclear from the literature reviewed whether these discourses underpin career advisors' understandings of early childhood teaching, or whether counter discourses such as teaching as intellectual or political work (Sumsion 2003, 2004) are promoted by advisors and tertiary teacher educators.

The prevailing discourse that education begins with formal schooling (Nuttall 2018) can also influence the professional identities of preservice teachers such that they do not consider ECEC a viable option (Gibson 2013). Moreover, entrenched perceptions of long day care as 'care' and preschool as 'education' contribute to challenges attracting and retaining ECTs in long day care (Irvine et al. 2016). Moves to professionalise the EC workforce through regulatory reform can generate performative discourses of professionalism with associated expectations and practices that impede teacher-professionalism (Cumming 2015; Grant et al. 2016), for example, professional trust and autonomy being eroded by increased emphases to provide documentary evidence to 'prove' service quality.

Chronosystem factors

Findings from the literature reviewed paid limited attention to historical and temporal influences on ECT workforce issues. For example, no attention had been paid to the impact of opportunities for career progression, or whether ECTs who continue working in the sector tend to be employed in particular positions, services providing a high standard of quality ECEC, or provider types. What is known, and as noted earlier, is that while students' life histories mean that they enrol in an EC teacher education program with the intention to teach children, progression through a dual degree program can shift their aspirations from teaching in ECEC to teaching in a school (Farrell et al. 2000). Further, educators over time transition across the sector, from long day care to preschool, seeking better remuneration, status and work conditions (Irvine et al. 2016). This observed shift away from long day care to preschool is indicative of a historical and entrenched perceived differentiation in Australia of long day care being about care and supporting workforce participation, and preschool more about early education (Cheeseman and Torr 2009).

Limitations to current understandings about ECT workforce challenges

Despite a substantive body of research that has informed understandings about ECT workforce issues in Australia, policy analysts have asserted that Australia lacks the evidence base required to sufficiently inform strategic policy responses (Press et al. 2015). Accordingly, policy initiatives aimed at addressing workforce challenges may have limited impact (Cumming et al. 2015). We attribute this perceived limited evidence base to a lack of large-scale research that has systematically and longitudinally investigated how the collective individual, microsystem, mesosystem, exosystem, macrosystem and chronosystem factors play out in ECTs' career trajectories. To date, other than Sumsion's (2002) longitudinal phenomenological study of the "becoming, being and unbecoming" (p. 869) of one ECT, no published Australian ECEC workforce study has investigated the recruitment, retention and/or wellbeing of ECTs from preservice to mid-career and beyond. This is a noteworthy omission, given "the dynamism of relationships of people, places, materials and regulation *over time* [our emphasis], and the necessity of seeing efforts to support wellbeing [and thus workforce issues] *as ongoing rather than a one-off* [our emphasis]" (Cumming and Wong 2019, p. 276). From an ecological perspective, the lack of attention to the career trajectories of ECTs over time, and within their situated workplace contexts, negates the potential to identify chronosystem influences on ECTs' workforce challenges, and how other systems factors interact over time to influence the career decisions of preservice and graduate ECTs.

The ecological lens utilised in this paper highlights the utility of government and service ECEC workforce policies being developed from an understanding of what is occurring at the individual *and* contextual levels, at different points along an ECT's career pathway. Most studies to date, however, have focussed on specific influences *within* the individual, microsystem, mesosystem, exosystem or macrosystem of research participants. Collectively, extant research on Australian ECEC workforce issues falls short of a holistic consideration of how these interconnected systems collectively impact ECTs' career progression.

The sample size of the empirical studies cited in this paper is a further limitation of Australian research that has to date investigated workforce issues in ECEC. Most studies ($n = 14$) are small-scale qualitative investigations of the perspectives of ten or fewer ECTs (e.g. Cranitch 2017; Cumming 2015; Jones et al. 2019; Sumsion 2000, 2002, 2004). While quantitative studies reviewed for this paper had larger sample sizes, most focussed on preservice ECTs (e.g. Nolan and Rouse 2013; Harrison and Heinrich-Joerdens 2017; Boyd and Newman 2019). There is a need for both large-scale quantitative and small-scale qualitative studies to shed light on the complex nature of ECT's work (Press et al. 2015). The qualitative studies reported in this paper provide rich descriptions and nuanced understandings about the lived experience of being an ECT, and enable theory building. However, it is only through large-scale and longitudinal studies, such as the continuing 'FIT-Choice' (Factors Influencing Teaching Choice; www.fitchoice.org) project of Wattand Richardson which tracks the trajectories of 2007 future teachers from their entry to teacher

education until their mid-career teaching (see for retention rates, Lazarides et al. 2020), that we are able to discern how widespread these experiences are, and test the robustness of theories developed.

Notwithstanding the value of the four large-scale studies reviewed in this paper (Richardson and Watt 2006; Irvine et al. 2016; Jones et al. 2017; Thorpe et al. 2020), surprisingly little attention has been focussed on workforce issues *specific to ECTs*. Irvine et al. and Thorpe et al. in addition to eight smaller-scale studies (Grebennikopv and Wiggins 2006; Brethherton 2010a; Jovanovic, 2013; Cranitch 2017; Harrison et al. 2019; Jones et al. 2019; Cumming et al. 2020; Logan, Cumming and Wong 2020) and reports (e.g. Social Research Centre 2017) conflate findings from ECT and educator (certificate or diploma trained) participants, making it difficult to discern issues that may be specific to ECTs. Further, Richardson and Watt's (2006) investigation of preservice teachers' motivations for enrolling in a teacher education degree included early childhood as well as primary and secondary students, yet published findings do not provide disaggregated data for the early childhood cohort.

Exacerbating this silencing of ECTs' perspectives are issues pertaining to the collection of ECEC workforce data. First, data on workforce issues tend to be extracted from studies and reports that focus more on long day care than preschool, or include ECEC settings such as occasional care and family day care, where ECTs are generally not employed. Second, Australia's ECEC national workforce census no longer collects data from ECTs employed in preschools (Social Research Centre 2017). Third, the Australian Graduate Survey (now referred to as the Graduate Outcomes Survey) is distributed to graduates approximately four months after graduation, but ECEC teaching contexts are not included in the job categories listed, nor does the 'point in time' data capture ECTs' future career trajectories (Gibson et al. 2019). This collective downplaying and exclusion of ECTs has potential to render the ECT workforce an invisible cohort of teachers in the Australian education landscape, endangering efforts to effectively recruit, retain and sustain them in the ECEC sector.

Conclusion

Responding to the ongoing and intensifying scrutiny of teacher education in Australia and internationally, education policy scholars have maintained that a shift in research focus and methodology is needed to provide "the greatest power to respond" (Rowan et al. 2015, p. 275). With barriers to recruiting, retaining and sustaining ECTs persisting despite the two decades of research and published reports cited in this paper, this call is pertinent to the investigation of ECEC workforce issues in Australia.

While much valuable research has investigated ECEC workforce issues to date, the often small-scale, piecemeal and cross-sectional designs, conflation of ECT and other educator findings, and greater focus on long day care rather than preschool contexts, leaves much scope to extend understandings about the ECT workforce in Australia. Our ecological framing highlights the multiple and persistent barriers

evident *within* each level of the ECT workforce ecosystem, while also pointing to the complex and dynamic interplay *across* levels. Future large-scale research that adopts such a holistic approach to longitudinally investigate the situated career trajectories of preservice and graduate ECTs has much potential to progress nuanced understandings about these complexities and interrelationships.

Returning to the premise on which this paper began—that the attracting, retaining and wellbeing of high-calibre ECTs is critical to the provision of quality ECEC— each level of the workforce ecosystem, together with the synergy of influences within and across levels, can impact the effectiveness of ECTs, and thus the quality of ECEC they provide. Notably, while there is an established relationship between university-qualified teachers and high-quality ECEC, research has yet to explicitly investigate the influence of ecological systems factors pertaining to workforce issues on teacher quality. For example, how do the multiplicity of complex and dynamic factors that impact on ECT recruitment, retention and wellbeing impact the efficacy of ECTs who are working in the sector? Incorporating this focus into the line of enquiry we propose has scope to strengthen the evidence base to inform ECEC workforce policy in ways that would support regulatory approaches to quality and quality improvement.

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