Australian Journal of Teacher Education

Volume 43 | Issue 6 Article 5

2018

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Recommended Citation

Carson, K., & Bayetto, A. (2018). Teachers' Phonological Awareness Assessment Practices, Self-Reported Knowledge and Actual Knowledge: The Challenge of Assessing What You May Know Less About. *Australian Journal of Teacher Education, 43*(6).
http://dx.doi.org/10.14221/ajte.2018v43n6.5

Teachers' Phonological Awareness Assessment Practices, Self-Reported Knowledge and Actual

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Abstract: This study investigates the relationship between early childhood (EC) and early years' primary school (EYPS) teachers' phonological awareness (PA) assessment practices, self-reported PA knowledge and actual PA knowledge. Method: A survey design was employed whereby 102 registered Australian EC and EYPS teachers responded to questions regarding PA assessment practices, self-reported PA knowledge and actual PA knowledge. Results: The results showed: a) more than 80% of teachers use PA assessments, with EYPS teachers conducting frequent assessments and EC teachers conducting rare-to-occasional assessments; b) over-estimation of self-reported PA knowledge; c) low levels of actual PA knowledge; and d) high usage of observations and professional judgement as assessment methods despite limited own PA knowledge. Implications: Increasing EC and EYPS teachers' knowledge of PA and improving their self-appraisal skills is critical for high-quality teacher PA assessment practices, and it illustrates the need for robust pre- and in-service teacher training.

Introduction

Assessment of how well children acquire the foundational skills that will support skilful reading development is critical if all children are to prosper in early reading acquisition (Ehri et al., 2001; International Reading Association, 2013). Assessment, an integral component of the teaching and learning process, informs feedback, planning and monitoring of the acquisition of new knowledge and skills. Research shows that children who struggle to read are at greater risk of inequalities in educational attainment, vocational opportunities, socio-economic prospects, and health and wellbeing (Cree, Kay, & Steward, 2012). In Australia, up to 24% of 10-year-old children cannot read above a 'low' international reading benchmark (Mullis, Martin, Foy, & Drucker, 2012). This has reinforced federal and state government initiatives aimed at improving reading outcomes for young Australian learners (Australian Government, 2016), for example, the proposed introduction of a 'light touch' phonics test for all six year olds (Ireland, 2017). The early identification of risk for reading difficulties, or giftedness with reading, is important to ensure that all children can be supported in attaining reading and academic success. Several skills play an important role in learning to read; one powerful predictor of early reading success, and therefore a valuable variable to measure, is phonological awareness (PA)—a conscious ability to manipulate the sound structure of spoken words (Gillon, 2004). In the preschool (i.e., children aged 4–5 years in the year preceding school entry) and early schooling years, teachers must have a strong understanding of the skills that underpin early reading success. This includes a robust ability to self-reflect on one's own knowledge and accurately apply this knowledge to assessment,

teaching and learning.

Several studies have profiled early childhood (EC) teachers', early years' primary school (EYPS) teachers' and related professionals' (e.g., speech-language pathologists) levels of PA knowledge or the relationship between this knowledge and instructional practice and pedagogical beliefs (e.g., Alghazo & Al-Hilawani, 2010; Cheesman, McGuire, Shankweiler, & Coyne, 2009; Fisher, Bruce, & Greive, 2007; Hammond, 2015). Few, if any, have investigated teachers' PA assessment practices—in particular, the relationships between: a) teachers' own PA knowledge; b) self-reported PA knowledge; and c) PA assessment practices, and the implications this may have for the early identification of children at-risk for reading difficulties. The current study addresses this gap and discusses how improved teacher PA assessment practices, self-appraisal and actual knowledge can better support young children, including those at-risk, those with typical development, and those who are higher functioning, with learning to read in Australia.

Phonological Awareness and Early Reading Development

Many studies, research reviews and meta-analysis have evaluated what contributes to early reading success and identified several key skills that underpin positive reading outcomes, namely, proficiency in spoken language, PA, letter-sound knowledge, vocabulary, reading fluency and comprehension (e.g., Ehri et al., 2001). In the preschool and early schooling years, PA provides a bridge between spoken (i.e., sounds) and written (i.e., letters) language by supporting children to decipher the alphabetic code, and is defined as a conscious ability to notice and manipulate the sound structure of spoken words, including syllables (i.e., syllable awareness), onset-rimes (i.e., rime awareness) and individual phonemes (i.e., phoneme awareness) (Neaum, 2017). PA, particularly at the phoneme level, is considered a powerful predictor of early reading achievement, ahead of variables such as socio-economic status, mother's education level, vocabulary knowledge and listening comprehension (Carson, Gillon, & Boustead, 2013; Catts, Nielsen, Bridges, Liu, & Bontempo, 2015; De Groot, Van den Bos, Van der Meulen, & Minnaert, 2017; Gellert & Elbro, 2015; Hogan, Catts, & Little, 2005; Kaminski & Powell-Smith, 2017; Rvachew, 2006).

PA begins to develop as early as three years of age and becomes more stabilised by four years of age (Gillon, 2004). Generally, awareness of larger sound units such as syllables and onset-rime develop first, with the development of early phoneme-level knowledge emerging, and therefore measurable, between four and five years of age. More complex phoneme-level knowledge tends to develop in the early schooling years, between five and seven years of age (Paulson, 2004). While not all children with limited PA knowledge experience difficulties learning to read, researchers note that most children with poor PA will struggle to decode an alphabetic script (Schuele & Boudreau, 2008); therefore, teacher proficiency in PA assessment is an important protective factor for ensuring that children at-risk are promptly identified and supported.

Assessment of Phonological Awareness Aptitude

Teachers' successful assessment of early reading development relies in part on their own in-depth knowledge of PA, accurate self-appraisal of their own PA knowledge and the accurate application of this knowledge to assessment practices that inform teaching and learning (International Reading Association, 2013). Skilful assessment requires teachers to know, understand and be able to apply appropriate diagnostic and technically adequate

assessment processes, including the accurate selection of assessment tools. Landrigan and Mulligan (2013, p. 20) referred to this as 'assessment literacy' and maintained that '…assessment literacy helps us understand which tools will give us the type of information we need, and what we know about literacy helps us understand which area of reading to assess' (p. 49). Research suggests that a high number of EC and EYPS teachers have limited knowledge of PA and its relationship to literacy (Carroll, Gillon, & McNeill, 2012; Fisher et al., 2007; Hammond, 2015). These limitations are likely to influence how well the predictive power of early PA can be capitalised on through competent teacher assessment practices. Given this inextricable link between knowing literacy and knowing assessment, it is critical to uncover what research has already identified regarding EC and EYPS teachers' PA assessment practices, self-reported knowledge and actual knowledge.

Teachers' Phonological Awareness Assessment Practices

In the available literature, few studies have profiled teachers' PA assessment practices in the preschool and early schooling years; consequently, little is known about variables such as frequency of PA assessment (i.e., once a year, termly, upon entry to school), types of PA assessments employed (i.e., standardised assessments, observations, checklists) and reasons for assessing (i.e., to inform teaching, to support transitions). Understanding how teachers engage with PA assessment can provide useful information regarding whether it is used effectively to support the early identification of risk for reading difficulties, or giftedness with reading, in everyday teaching environments.

In a United States study by Spear-Swerling and Zibulsky (2014), 102 kindergarten to grade 5 teachers were asked to indicate how they would choose to allocate time to various literacy tasks across a two-hour language and arts period. The participants were also asked to complete a teacher knowledge survey regarding reading assessment and instruction. The results showed that many teachers did no or little planning for assessment, including for phonemic awareness. Teachers' knowledge of PA and phonics did predict the amount of time teachers would allocate to assessment and instruction of these skills. EYPS teachers demonstrated stronger PA knowledge than did teachers in the upper primary levels; however, the authors cautioned that this was no guarantee that the teachers had a deep knowledge of its components, and that '…in these studies the performance even of experienced teachers was generally low' (p. 1357).

In another study based in the United States, Gischlar and Vesay (2014) surveyed the literacy instruction and assessment practices of 215 EC teachers. The results showed that many EC teachers constructed their own literacy assessments, raising concerns regarding the robustness of the collected data, particularly given that teacher-made assessments are less likely to be technically sound. Approximately 40% of respondents indicated that they were self-taught in the administration of the assessments they used. Interestingly, with such importance placed on teacher quality and their use of assessment practices, there is not a large body of research indicating what is happening in today's Australian classrooms regarding the assessment of key skills known to influence early reading success, including PA.

Teachers' Self-Reported Phonological Awareness Knowledge

Research suggests that teachers' self-reported PA knowledge is often misaligned with their actual PA knowledge (Cunningham, Zibulsky, & Gallahan, 2009). Louden et al. (2005) found that 80% of new graduate teachers in Australia felt confident in their knowledge of

literacy practices in the classroom. However, their confidence level was disproportionate to the perspectives of senior managers (i.e., 25%). Similarly, in an evaluation of the PA and phonics knowledge of 140 Australian pre-service teachers, Fisher et al. (2007) identified that the majority of pre-service teachers were quietly assured in their understanding of the sound structure of spoken language and how it translates to print. However, they overestimated their knowledge, as they were not aware of what they knew and did not know. Fielding-Barnsley and Purdie (2005) found that Australian pre-service and in-service teachers had positive attitudes towards code-focused instruction, such as PA and phonics; however, when tested, they demonstrated limited knowledge in these foundational areas. In another Australian-based study, Hammond (2015) identified that EC teachers agreed that they must understand literacy development and its instruction, but they largely overrated their own metalinguistic ability. They lacked a deep understanding of PA, which may lead them to feel more confident about their classroom practice than they perhaps should.

Although research shows a misalignment between teachers' self-reported PA knowledge and their actual knowledge, this misalignment may be more significant for teachers with less knowledge than for those with more knowledge in this skill area. Cunningham et al. (2009) identified that teachers with more secure knowledge of language structures are more modest in their self-appraisal, whereas teachers with less secure knowledge tend to overestimate what they know. This phenomenon is often referred to as the 'Dunning–Kruger effect', whereby individuals with lower ability in a certain area inaccurately self-assess their ability as being greater than it is, and individuals with higher ability often underestimate their actual competency (Kruger & Dunning, 1999). The disparity between self-reported and actual knowledge of PA may result in less-informed teachers believing they do not need to learn anything more; thus, they may be less likely to engage with professional learning opportunities.

Teachers' Actual Phonological Awareness Knowledge

A large body of research evaluating teachers' PA and language knowledge has highlighted notable knowledge gaps (Fielding-Barnsley & Purdie, 2005; Mahar & Richdale, 2008; Moats, 2014). This undoubtedly has implications for both literacy assessment and instructional practices, as teachers cannot assess or teach something they do not know themselves. This phenomenon is referred to as the Peter Principle (Moats, 2014). Exemplifying this phenomenon, Spear-Swerling and Zibulsky (2014) identified that a high numbers of teachers did not understand the difference between PA and letter-sound knowledge, and they experienced difficulties when counting the number of phonemes in words, recognising irregular words and understanding the logical progression for teaching phoneme awareness. Cheesman et al. (2009) found that many in-service teachers, when discussing their entry into pre-service education, indicated that they did not have a secure understanding of the written structure of the English language and that their teacher education programmes placed little importance on needing to know such skills. The authors suggested that the teachers' low entry skills would likely have affected their ability to benefit from what instruction might have been given. This was supported by Fielding-Barnsley (2010), who found that undergraduates had low personal literacy skills and queried whether this came about because they had been through schooling when whole language approaches were popular.

In a comprehensive study evaluating the knowledge of 699 teachers and paraprofessionals, Carroll et al. (2012) identified that junior primary teachers, EC teachers and teacher aides achieved 74%, 54% and 63% competency levels on measures of PA

respectively; none of the teacher-trained cohorts achieved near ceiling levels. As posited by Moats (2014, p. 87), teachers' limited knowledge of code-based skills is a disservice to both students and teachers, as '…we continually underestimate the elusiveness of the foundational content… Teachers often know little more than their students'. It is the remit of educational systems, school leadership and teachers to ensure that teachers have the necessary professional skills to assess and prioritise the learning needs of all students at any stage of their literacy development. It is worth noting that these abilities may not necessarily develop as an outcome of teachers' experience and number of years in the classroom (Eller & Poe, 2016). Given that word-decoding difficulties are a prominent feature among the profiles of many struggling readers in the early schooling years, limitations in teachers' own PA knowledge is an area that warrants investigation and support—particularly given the crucial information that PA assessment can provide for the early identification of reading problems.

Current Study

Understanding the relationship between current PA assessment practices in the preschool year and early schooling years, and between teachers' self-reported and actual PA knowledge, is critical for identifying how teachers use the measurement of precursory reading skills to inform both educational planning and the early identification of risk for reading difficulty. Although researchers have documented levels of teacher knowledge of PA (e.g., Carroll et al., 2012; Cheesman et al., 2009; Fisher et al., 2007) and have linked PA knowledge to self-beliefs and instructional practices (e.g., Alghazo & Al-Hilawani, 2010; Hammond, 2015), little has been uncovered regarding the relationships between teachers' PA knowledge, self-reported PA knowledge and the link to assessment practices for children in the preschool and early schooling years. Hence, this study addresses the following questions:

1. What constitutes current practice in PA assessment, as well as self-reported and actual PA knowledge, for EC and EYPS teachers working with children in the preschool year and the first two years of school?
2. What are the key relationships between current PA assessment practices, self-reported knowledge and actual knowledge for EC and EYPS teachers working with children in the preschool year and the first two years of school?

Method

Participants

One hundred and two Australian teachers who were working with children either in the preschool year or the first two years of formal schooling (i.e., Foundation Year or Year 1) participated in this study. All participants were working in the metropolitan capital city and were registered teachers. Forty-four per cent of participants worked in the preschool setting, 37% worked exclusively with children in either the Foundation Year (21.78%) or Year 1 (14.85%) and 19% worked with children across the preschool to Foundation and Year 1 levels. EYPS teachers represented two main roles: junior primary teacher (38.61%) and special education teacher and/or coordinator (16.83%). Preschool-based EC teachers were all self-nominated as teachers, with none being non-teaching directors or support workers.

Participants reported a range of educational qualifications and years of teaching experience. Ninety-four per cent of participants held a Bachelor of Education Degree, 4% held a Graduate Diploma in Teaching and 2% held a Master's Degree in Education. In addition, 2% held a Bachelor of Special Education and 4% had a Graduate Diploma in

Special Education or equivalent. In terms of years of experience, the majority of EC teachers had 0–5 years of experience (35.42%), followed by 6–10 years (25%), 11–15 years (16.67%), 16–20 years (10.42%) and 21 or more years (12.50%). For EYPS teachers, an even number of participants had 0–5 years of experience (31.03%) and 6–10 years (31.03%), followed by 11–15 years (25.86%). Fewer EYPS teachers reported having 16–20 years (5.17%) or 21 or more (6.90%) years of experience compared with EC teachers.

Procedure

A survey design was employed to investigate current PA assessment practices, self-reported PA knowledge and actual PA knowledge, as well as the relationship between these three areas. The survey was piloted with six individuals with varying backgrounds in the field of education to ensure that the questions were unambiguous and timely to complete. The survey was assembled on Survey Monkey and randomly distributed as an electronic link in an email to leaders of 120 sites (i.e., 60 preschool directors and 60 primary school principals). Random distribution was achieved by identifying and allocating all preschools and schools with an identification number, which was entered into a Research Randomiser Software program to identify 120 contactable sites. The number of contactable sites was calculated based on achieving a minimum of two responses per site, with a subsequent overall survey response rate of 30% (i.e., this would yield at least 72 participants), to achieve the minimum required sample size of 95 people (i.e., confidence level 80% with 5% margin of error). Preschool directors were asked to share the survey with their EC teachers who had current teacher registration and who taught children aged 4–5 years. School principals were asked to share the survey with their registered teachers who worked with children specifically in the Foundation Year or Year 1. Participants were informed of the voluntary nature of the study and that the anonymity of any responses would be preserved. Consent was indicated through the submission of responses.

Materials

For the purposes of this study, responses to 38 survey questions related to assessment practices (7), self-rated PA knowledge (1) and actual PA knowledge (30) were analysed. These questions were part of a larger survey evaluating teacher literacy practices, inclusive of demographic information, which was piloted with six professionals, including two university professors, one university senior lecturer, one PhD student, one EC teacher and one EYPS teacher to ascertain face validity and appropriateness of items. Thirty items from the 'Phonological Awareness Assessment Probe—Adult' (Love & Reilly, 2009), a tool that has been used previously in the field (e.g., Carroll et al., 2012), were used to provide an index of actual PA knowledge at the syllable (10 questions), onset-rime (4 questions as only 4 items available) and phoneme (16 questions) levels. Multiple-choice or Likert-scale question formats were used, accompanied by comment boxes to allow for elaboration. The survey took approximately 20 minutes to complete. Reliability for the 38 survey items used in the present study was 0.852 (Cronbach's α). Retrospective confirmatory factor analysis was used to determine construct validity for the 38 survey items, and identified four factors with associated Cronbach's α coefficients: assessment practice (0.741), self-appraisal (0.745), PA knowledge (0.678), and phoneme awareness knowledge (0.743). It is important to acknowledge that the survey questions analysed in this study only focused on PA, and did not

cover all skills that are important prerequisites for early reading acquisition. Examples of survey questions are provided in the Appendix.

Ethics

This research was approved by a University Social and Behavioural Human Research Ethics Committee, as well as the local educational jurisdiction involved in the study. Ethical requirements preluded comparison between state and non-state education providers.

Results

Survey responses were analysed quantitatively using descriptive statistics, between-group t-test calculations and correlational analyses. Open-ended responses provided by participants were limited and often brief, thereby precluding detailed analysis using qualitative methods.

PA Assessment Practices among EC and EYPS Teachers

Participants were asked to provide information on their frequency of PA assessment, the types of approaches they used and their reasons for assessing PA knowledge. Wide variability was identified in PA assessment practices between EC and EYPS teachers.

Frequency of PA Assessment

As illustrated in Table 1, almost half of EYPS teachers (46.15%) reported regularly assessing PA skills (i.e., each term), with one-third (33.33%) occasionally (i.e., 1–2 times per year) assessing PA knowledge. A smaller percentage rarely (7.69%) or never (12.82%) assessed PA. Less than one-quarter of EC teachers (23.91%) regularly assessed PA, while more than one-third (39.13%) occasionally measured PA and a similar number (36.96%) rarely or never assessing this skill.

Table 2 demonstrates when in the academic year teachers assessed PA. Both EYPS teachers (67.65%) and EC teachers (48.57%) were more likely to assess PA at the start than the middle or end of the year. EYPS teachers (58.82%) were nearly three times more likely to assess PA when children showed signs of difficulties with emergent literacy compared with EC teachers (20%). Twenty-eight per cent of EC teachers engaged in PA assessments when children were transitioning out of EC education into formal schooling.

Significance testing revealed that EYPS teachers engaged in significantly more regular (i.e., termly) PA assessment than EC teachers ($t(100) = 2.44$, $p = .02$). No significant differences were identified in occasional, rare or no PA assessment between EC and EYPS teachers. EYPS teachers were significantly more likely to use PA assessments at the start of the school year, when children transition from preschool to school or when children show early signs of reading difficulty compared to EC teachers.

N= 102	Regularly (%) (e.g., each term)	Occasionally (%) (e.g., 1–2 times per year)	Rarely (%)	Never (%)
EC	23.91	39.13	17.39	19.57
EYPS	46.15	33.33	7.69	12.82
Significance	$p < .01$*	$p = .26$	$p = .07$	$p = .08$

Note: * indicates a significantly different outcome in assessment frequency.

Table 1: Frequency of PA Assessment and Between-Teacher Group Differences

N=102	Point(s) Throughout Academic Year (%)				Transition EC to PS (%)	Signs of Reading/Spelling Difficulties (%)
	Start	Middle	End	Termly		
EC	48.57	40	22.86	28.57	28.57	20
EYPS	67.65	50	17.65	52.94	2.94	58.82
Significance	$p = .04$*	$p = .32$	$p = .51$	$p = .02$*	$p < 0.01$*	$p < 0.01$*

Note: * indicates a significantly different outcome in assessment frequency; percentages may not total 100%, as teachers were able to select more than one response option.

Table 2: When PA Assessment Occurs and Between-Teacher Group Differences

Types of PA Assessment Methods

As shown in Table 3, EYPS teachers were three times more likely to use standardised tools (71.43%) than were EC teachers (23.68%), which represents a significant difference between teacher groups. Of the EYPS teachers who used standardised PA measures, 95.83% used the Screen of Phonological Awareness (SPA) (Mallen, 1998) and 33.33% used the Sutherland Phonological Awareness Test—Revised (SPAT-R) (Neilson, 2003). Other instruments included the Oxford Literacy Assess (Bayetto & Steward, 2013) and the Observational Survey of Early Literacy (Clay, 2005). Of the EC teachers who used standardised measures, 71.43% used the SPA (Mallen, 1998) and 42.86% used the SPAT-R (Neilson, 2003).

Table 4 profiles use of information assessment methods. EC teachers were significantly more likely to use informal assessment methods (84.21%) compared with EYPS teachers (54.29%). This is not unexpected given the play-based programmes of many EC settings. The majority of EC teachers relied on their professional judgement (96.77%) and/or informal observations (96.77%) to gather information on PA ability. Approximately one-third of EC teachers used additional informal measures such as criterion-referenced tools (6.45%) or checklists (32.26%) to support observations and professional judgement.

N=102	Assessment Type Used (%)		If Yes, Type of Standardised Assessment (%)			
Standardised	Yes	No	SPAT-R	SPA	PIPA	Other
EC	23.68	76.32	42.86	71.43	0	2
EYPS	71.43	28.57	33.33	95.83	0	19.57
Significance	$p < .01$*	$p < .01$*	$p < .33$	$p < .01$*	n/a	$p < .01$*

Table 3: Standardised PA Assessment Practices and Between-Group Differences

N=102	Assessment Type Used (%)		If Yes, Type of Informal Assessment (%)					
Informal	**Yes**	**No**	**Mapping tools**	**PAST**	**Observ-ations**	**Check-lists**	**Site/teacher-developed tests**	**Professional judgement**
EC	84.21	15.79	38.71	6.45	96.77	32.26	17.74	96.77
EYPS	54.29	45.71	63.16	26.32	89.47	42.11	36.84	84.21
Significance	*p < .01**	*p < .01**	*p = .02**	*p < .01**	*p = .16*	*p = .31*	*p = .04**	*p = .04**

Note: Percentages may not total 100% as teachers were able to select more than one response option; SPAT-R = Southerland Phonological Awareness Test—Revised (Neilson, 2003); SPA = Screen of Phonological Awareness (Mallen, 1998); PIPA = Preschool and Primary Inventory of Phonological Awareness (Dodd, Crosbie, McIntosh, Teitzel, & Ozanne, 2000); PAST = Phonological Awareness Skills Test (Zgonc, 2000).

Table 4: Informal PA Assessment Practices and Between-Group Differences

Reasons for Assessing PA Ability

Table 5 demonstrates that the majority of EYPS teachers (80%) assessed PA to guide programme development or to monitor progress (62.86%). A further 57.14% used PA assessment to group children for reading activities, while 54.29% used it to identify children who might require additional reading support. More than half of EYPS teachers (51.43%) used PA assessment to guide reading instruction. Of those EC teachers who used PA assessment, 70% were for monitor progress and 54% to guide programme development. Less than one-third of EC teachers used PA assessment to provide information for other teachers and/or the school, and less than one-fifth (18.92%) used it to support the transition to school.

N=102	Guide Programme Development	Support Transition to School	Guide Reading and/or Spelling Instruction	Group Children for Reading Activities	Group Children for Spelling Activities	Monitor Progress	Identify Children At-Risk for Reading	Provide Information for Educators/ Site
EC	54.05	18.92	5.41	5.41	2.7	70.27	8.11	29.73
EYPS	80	20	51.43	57.14	31.43	62.86	54.29	34.29
Significance	$p < .01$*	$p = .89$	$p < .01$*	$p < .01$*	$p < .01$*	$p = .43$	$p < .01$*	$p = .63$

Note: Numbers are represented as percentage of responses to each stated survey 'reason'; percentages may not total 100%, as teachers were able to select more than one response option.

Table 5: Main Reasons for Assessing PA Knowledge (%) and Between-Group Differences

Self-Reported and Actual PA Knowledge among EC and EYPS Teachers

Participants were asked to rate their own knowledge of PA as either high, adequate, needs developing or not sure. Figures 1 and 2 profile how EC and EYPS teachers rated their own PA knowledge.

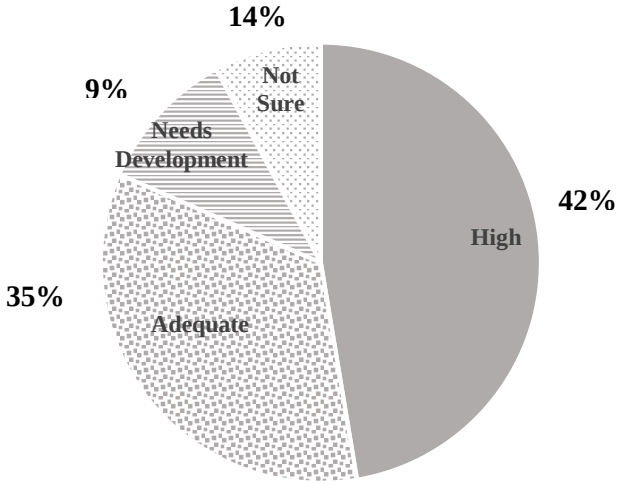

Figure 1: Self-Reported PA Knowledge of EC Teachers

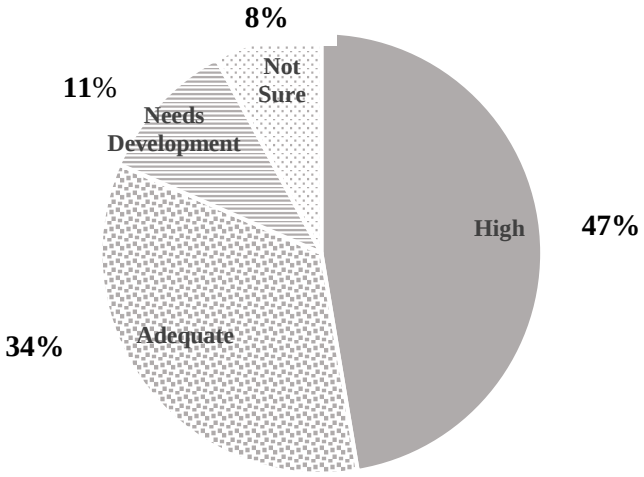

Figure 2: Self-Reported PA Knowledge of EYPS Teachers

The majority of EC (76.74%) and EYPS teachers (81.58%) rated their knowledge of PA as adequate to high. However, when aligned with actual knowledge, a mismatch was identified. Responses to the 30 survey questions probing actual PA knowledge were combined to generate a total PA knowledge score. As Figure 3 illustrates, EC teachers achieved an average total PA score of 49.03% correct, while EYPS teachers achieved a total PA score of 68.97%. This represented a significant between-group difference ($t(100)=2.05$, $p = .04$), with EYPS teachers' scores being significantly higher than those of EC teachers.

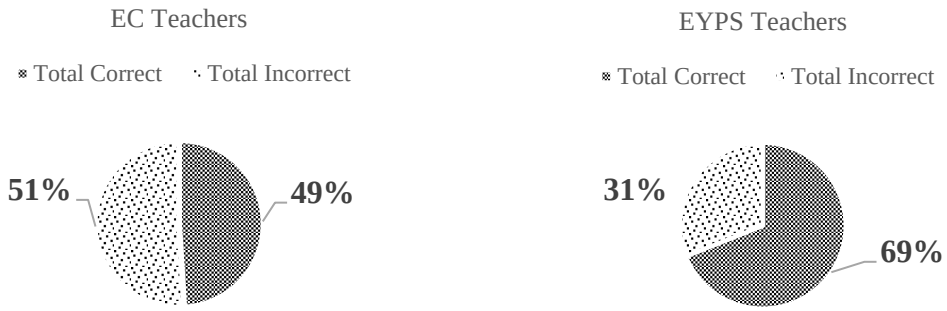

Figure 3: Total PA Scores for EC and EYPS Teachers

Research shows that PA ability at the phoneme level makes a significant contribution to early reading development. Thus, teachers' responses to 16 questions that tapped phoneme-level knowledge were analysed separately from the total PA score. As illustrated in Figure 4, EC and EYPS teachers scored 38.36% and 51.97% correct, respectively, on phoneme-level questions, representing a non-significant difference in actual phoneme-level knowledge between the two groups ($t(100)=1.37$, $p = .17$). Unlike total PA knowledge, EC and EYPS teachers do not perform significantly differently from each other on important phoneme-level tasks.

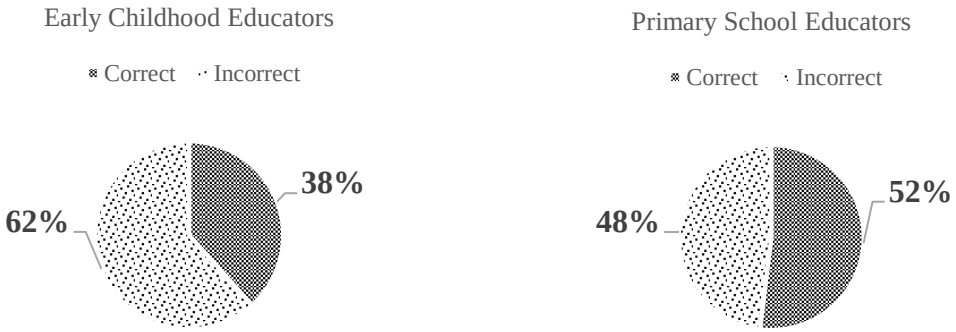

Figure 4: Phoneme-Level Awareness Scores for EC and EYPS Teachers

Key Relationships between PA Assessment Practices, Self-Reported PA Knowledge and Actual PA Knowledge

Tables 6 and 7 illustrate the key relationships identified in this study. Survey data were analysed for themes by comparing descriptive statistics and undertaking correlational analyses to quantitatively the strength and direction of relationships between practice, self-reported and actual PA knowledge.

Early Childhood Teachers					
Assessment practice		**Self-reported knowledge**		**Actual knowledge**	
Engage in assessment**	80.43%	Adequate to high	77%	Total PA score	49.03%
% use of std tools	23.68%	Needs developing	9%	Phonemic awareness score	38.36%
% use informal tools	84.21%	Not sure	14%		
Preferred assessment method	96.77% observations 96.77% professional judgement				
Preferred frequency of assessment	1–2 times per year				

*Note: ** ranges from regularly to rarely; % represents of those who responded to the question; std = standardised assessment tool*

Table 6: Relationships between EC Teachers' PA Assessment Practices, Self-Reported and Actual PA Knowledge

Seventy-seven percent of EC teachers reported their PA knowledge as adequate to high, which was 28% higher than their total PA score and 39% higher than their phoneme-level PA score; hence EC teachers believed their knowledge of PA to be higher than it was in reality. The most preferred methods of PA assessment were observations and professional judgement, both used by 96.77% of EC teachers. These assessment methods rely on strong 'actual' PA knowledge meaning that an 'actual' knowledge base of less than 50% correct on a range of PA-targeted questions and less than 40% correct on phoneme-level questions, informed the assessment practice of 96% of EC participants in this study.

Early Year Primary School Teachers					
Assessment practice		**Self-reported knowledge**		**Actual knowledge**	
Engage in assessment**	87.18%	Adequate to high	81%	Total PA score	68.97%
% use of std tools	71.43%	Needs developing	11%	Phonemic awareness score	51.97%
% use informal tool	54.29%	Not sure	8%		
Preferred assessment method	95.83% SPA 89.47% observations 84.21% professional judgement				
Preferred frequency of assessment	Termly (i.e., 4 times per year)				

Table 7: Relationships between EYPS Teachers' PA Assessment Practices, Self-Reported and Actual PA Knowledge

Eighty-one percent of EYPS teachers reported their PA knowledge to be adequate or high, representing a 12% gap with 'actual' total PA knowledge and a 29% gap with 'actual' phoneme-level knowledge. Over 80% of EYPS teachers used observations and professional judgement as assessment methods, which, like EC teachers were informed by less than 70% correct on overall PA knowledge, and less than 52% correct on phoneme-level knowledge.

Finally, correlational analyses did not identify any strong and positive correlations between PA assessment practice, self-reported knowledge and actual knowledge for either group of teachers in this study. A moderate and positive correlation was identified between whether EC and EYPS teachers assessed PA skills and their own self-reported PA knowledge (i.e., $r = 0.57$ and $r = 0.48$, respectively). A moderate and positive correlation was also identified for EYPS teachers' use of standardised PA assessments and their self-reported PA knowledge ($r = 0.56$).

Discussion

This study investigated PA assessment practices, self-reported knowledge and actual knowledge, as well as the relationship between these variables, for EC and EYPS teachers working with children aged 4–7 years. Analysis of responses to an online survey revealed unreported patterns in PA assessment practices for Australian EC and EYPS teachers, as well as similarities to existing research regarding limitations in accurate teacher self-appraisal

compared to actual knowledge. These findings have important implications for future teacher education training initiatives in Australia.

PA Assessment Practices, Self-Reported Knowledge and Actual Knowledge

Compared with international studies, which report that teachers spend little or no time planning for PA assessment (i.e., Spear-Swerling & Zibulsky, 2014), most Australian EC and EYPS teachers in this study engaged in some level of PA assessment. Up to 87% of EYPS teachers used PA assessment, and on a regular termly basis. This included both standardised assessment methods such as the SPA and informal assessment methods such as observations and professional judgement. Up to 80% of EC teachers engaged in PA assessment, although for the majority it was done on an occasional to rare basis using informal processes dominated by observations and professional judgement rather than more standardised methods. This is not dissimilar to previous research, which highlighted the preference of EC teachers for teacher-made assessment methods (Gischlar & Vesay, 2014). With PA skills beginning to develop prior to school entry (Paulson, 2004) and the known predictive power of such skills for differentiating between children who are likely to become stronger or weaker readers (Carson, Boustead, & Gillon, 2014), an important key outcome from this study in terms of assessment frequency is the need to support EC teachers to more regularly monitor PA skills, and to engage the 20% of EC teachers with PA assessment who do not already do so.

In relation to self-reported PA knowledge, up to 77% of EC teachers reported their knowledge to be adequate to high while concurrently obtaining an actual total PA score of 49.03% correct and a phoneme awareness score of 38.36% correct. Similarly, up to 81% of EYPS teachers reported their PA knowledge to be adequate to high while producing an actual total PA score of 68.97% correct and a phoneme awareness score of 51.97% correct. Consistent with existing research (e.g., Fisher et al., 2007), these findings demonstrate that teachers often overestimate their knowledge of PA, and that the gap between self-reported and actual PA knowledge is often more pronounced for teachers who have less secure PA knowledge (Cunningham et al., 2009), as is the case for EC teachers in this study.

Moreover, teachers' actual levels of PA knowledge reported here are not dissimilar to previous research (Cheesman et al., 2009; Spear-Swerling & Zibulsky, 2014). For example, EC and EYPS teachers' levels of PA knowledge identified in this study profiled the near averages reported by Carroll et al. (2012), whereby EYPS teachers achieved 74% accuracy compared with this study's participants (69%), and EC teachers achieved 54% accuracy compared with this study's participants (49%). These levels of actual knowledge support the notion of the Peter Principle, in that it is difficult to expect EC and EYPS teachers to assess and teach skills to children if they do not have high proficiency, or have been taught, these skills themselves (Moats, 2014). A key finding from this study is that a collaborative effort to support teachers in raising their actual PA knowledge, particularly in phoneme awareness, is needed across the Australian education sector.

The mismatch between self-reported and actual PA knowledge reported in this study raises concerns regarding the challenges teachers face when trying to accurately and reliably measure PA ability. EC teachers assessed PA skills rarely to occasionally primarily using observations and professional judgement; assessment methods that rely heavily on ones' own proficiency in PA. This is problematic given the limited actual PA knowledge among EC teachers reported in this study, yet this is the knowledge base used to inform the collection and interpretation of PA ability among pre-school aged children. Concerningly, this raises questions regarding, *how can observations and professional judgement as assessment*

methods be accurate if one does not have an accurate understanding of what they are looking for? Pre-primary education that supports the development of prerequisite skills for early reading, such as PA, is a significant factor contributing to successful reading development by 10 years of age (Mullis et al., 2012). Thus, an accurate measurement of such skills, aligned with proficient teacher knowledge and self-appraisal, is crucial in the EC years. As an outcome of this study, it can be argued that efforts to encourage EC teachers to supplement observations and professional judgements with more semi-structured assessment methods such as developmental checklists or criterion-based measures, alongside professional learning in PA, may help to ensure that accurate data are collected—particularly if informal assessment methods are preferred in EC environments.

EYPS teachers included the use of more regular PA assessment—particularly if they believed their PA knowledge was adequate to high. Assessment practices were more varied, with both standardised and informal methods being engaged. As with EC teachers, EYPS teachers frequently used observations and professional judgement and although these methods were used alongside other assessment methods, the data collected from observations and professional judgement were informed by a restricted phoneme awareness knowledge base. An overarching finding from this study is that Australian EC and EYPS teachers are attempting to measure PA skills in the preschool and early schooling years; however, the success with which teachers can implement PA assessment practices may depend on more adequate pre-service and in-service training focused on the links between assessment practices, enhanced self-appraisal skills, and improved actual knowledge, supported by professionals with expert knowledge in early reading development—that is, a collaborative effort is required.

Implications for Practice: Pre-Service and In-Service Training

Several factors are likely to be contributing to the profile of PA assessment practices, self-appraisals and actual knowledge among in-service teachers documented in this study. In regards to pre-service teacher training, reviews have identified that less than 10% of initial teacher education programmes devote time to teaching undergraduate students how children learn to read (Louden et al., 2000; Commonwealth of Australia, 2005). This may be further confounded by low levels of personal literacy among undergraduate students entering teacher training programmes (Fisher et al., 2007), undergraduates themselves learning to read within a whole language paradigm (Fielding-Barnsley, 2010), professional experiences with in-service teachers with low levels of knowledge about early reading development (Eller & Poe, 2016) and a paucity among some university lecturers regarding their own knowledge of language and reading (Binks-Cantrell, Washburn, Joshi, & Hougan, 2012).

Based on the outcomes of this study, it can be postulated that the inclusion of high-quality tertiary instruction in foundational skills, which are known to support early reading success, including the assessment of those skills, is paramount for supporting teachers in enhancing reading outcomes for Australian children. Strategies worthy of future investigation include: a) identifying the optimal amount of time to devote to teaching undergraduate students about the assessment of early reading skills, as well as instruction; b) ensuring high levels of personal literacy among applications into graduate programmes in addition to ways of ensuring ongoing development within programmes; c) identifying and supporting proficiency among university lecturers regarding early reading development; d) collaborative teaching opportunities with related professions, such as undergraduate speech-language pathology students or linguistic students; and e) translating skills to practice through the support of knowledgeable in-service teachers during student placements.

Moreover, it has been postulated that schooling systems and school leadership are responsible for ensuring that in-service teachers have the necessary learning opportunities to assess reading skills, including PA, proficiently (Cheesman et al., 2009; International Reading Association, 2013). In preschools and schools, one recommendation from this study is that line managers ascertain teachers' actual PA skills and undertake an audit of current practices to identify current assessment practices, how data are being interpreted, by whom and at what skill level, as well as how PA is being taught and how end-of-year information is transitioned to the next teacher. Such a process may highlight gaps within a system-wide or whole-school approach to the teaching of reading, as well as which staff may benefit from professional learning opportunities. In terms of accessing professional learning, it is critical that such opportunities are evidence-based and support teachers to tailor assessments and instructions to individual needs, as opposed to choosing a non-differentiated commercial product and applying it to all. Importantly, research shows that professional learning sessions paired with coaching are more likely to receive longer-term traction than workshops alone (Sheridan, Edwards, Marvin, & Knoche, 2009). Identifying opportunities to work collaboratively to achieve positive changes in early reading assessment across pre-service and in-service teacher education is an important consideration for experts, university lecturers, policy makers, school leaders and teachers alike.

Study Limitations

A limitation of this study is that sampling of participants was conducted from one Australian metropolitan city and focused solely on teachers in the EC and EYPS years. Future studies should endeavour to sample multiple cities across Australia and internationally to ascertain a more holistic profile of PA assessment practices, self-reported knowledge and actual knowledge. Further, the inclusion of school leaders, pre-service teachers, university lecturers and departmental leaders in future studies will enable an informative comparison of knowledge and practices within the area of early reading development at a system-wide level. Finally, the survey provided to teachers measured one skill known to be important for early reading development and did not measure other skills, such as vocabulary, reading fluency, or comprehension strategies, known to be important for reading proficiency. Future studies may wish to investigate reading assessment practices, self-reported beliefs, and actual knowledge across a range of important prerequisite skills for teaching reading.

Conclusion

PA is an important skill supporting early reading success. Capitalising on its predictive power through robust teacher assessment practices in the EC and EYPS years is one way in which all children, including those at-risk, those with typical development, and those are higher functioning or gifted, can be identified and appropriately supported to ensure all children can experience reading success. Importantly, teachers cannot be expected to know what they do not know, and with PA being a core component of early reading development, it is imperative that teachers are supported in this skill area to ensure that all young learners can prosper in early reading acquisition.

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Appendix: Examples of Survey Questions Targeting PA Assessment Practices, Self-Reported Knowledge, and Actual Knowledge

PA Assessment Practices (7 Questions)

- How often do you assess the phonological awareness skills of the children in your setting?
  Regularly (e.g., each term) / *Occasionally (e.g., 1-2 times a year)* / *Rarely* / *Never* / *Other: please comment*
- Do you use standardised phonological awareness assessments?
  Yes/No

- Please indicate which standardised phonological awareness assessment/s you use:
  Sutherland Phonological Awareness Test (SPAT) / Screen of Phonological Awareness (SPA) / Preschool and Primary Inventory of Phonological Awareness (PIPA) / Other: please name and describe
- Do you use informal phonological awareness assessments?
  Yes/No
- Please indicate which informal phonological awareness assessment/s you use:
  Phonological Awareness Skills Mapping Tool / Phonological Awareness Skills Test / Observations / Checklists / Early Childhood Centre, Kindergarten, Preschool-Developed Tests / School-Developed Tests / Teacher-Developed Tests / Professional Judgement / Other: please name and describe
- When do you assess the phonological awareness skills of children in your setting?
  Start of the year / Middle of the Year / End of the year / Each term / Transitioning out of early childhood educationto schooling / School-entry / When a child shows signs of reading and spelling difficulties / Not applicable (I don't assess phonological awareness skills) / Other: please comment
- What are you main reasons for assessing phonological awareness skills?
  To guide program development / Support transition to school / Guide reading and/or spelling instruction / Group children for activities in reading/ Group children for activities in spelling / Monitor progress/ Identify children who may need additional support with reading/ Identify children who may need additional support with spelling / Provide information for other teachers and/or the school / Not applicable / Other: please comment

Self-Rated PA Knowledge (1 Question)

- How would you rate your own knowledge of phonological awareness?
  High / Adequate / Needs Development / Not Sure / Other: please comment

Actual PA Knowledge (30 Questions)

- Please enter a numeral in the boxes provided to indicate your response to each of the following:
  How many syllables do you hear in the words: animal / inconceivable / hastily / catalyst / invincible / fortunate / caution / revolution / crustacean / stealthily
  How many sounds (not letters) do you hear in the words: flag / scone / thought / instrument / straight / rust
- Join the four pairs of words that rhyme:
  stuff – enough / basin – hasten / read – bed / some – numb / zipper (no paired word) / zither (no paired word)
- Please enter an alphabet letter/s in the boxes provided to indicate your response to each of the following:

What is the second sound (not letter) in the words: bride / bought / queen / scream / thrive
What is the last sound (not letter) in the words: laugh / giraffe / though / crisp / arrange