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Infant educators' reported conceptions of, and approaches to, infant language development:**How do they relate to educator qualification level?**

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Abstract

This study examined infant educators' conceptions of infant language development and approaches to supporting the development. The phenomenographic analyses of interviews with 59 educators identified five and six hierarchically related conceptions and approaches respectively. The conceptions were broadly distinguished as deep or surface conceptions; and the approaches were categorized as infant-centred or infant-peripheral approaches. Positive relation was found between the deep conceptions and the infant-centred approaches on the one hand, and positive association was observed between the surface conceptions and the infant-peripheral approaches on the other hand. The conceptions and approaches were also related to the educators' level of qualification. Bachelor-qualified educators tended to hold deep conceptions and to report using infant-centred approaches; whereas non-bachelor-qualified educators were more likely to have surface conceptions and to report infant-peripheral approaches. Our findings highlight the importance of the presence of well-qualified educators in supporting language development of very young children in the infant early childhood education and care programs.

Keywords: Educators' conceptions and approaches; Infant language development; Educators' qualification; Phenomenography; Early childhood education and care

Introduction

During the first two years of life, infants develop their language and communication skills at a rapid rate. Research has demonstrated that the quality of the language environment that infants experience during their day-to-day interactions with significant others plays a substantial contributing role (Hart and Risley 1995; National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network 2000; Weisleder and Fernald 2013). Importantly, the language capabilities that children demonstrate by the age of three predict their subsequent language development and academic outcomes in the early school years and beyond (Rowe 2012; Zauche, Thul, Mahoney, and Stapel-Wax 2016).

Much of the above evidence has been produced from research conducted in home or experimental contexts. In contemporary society, many infants regularly attend early childhood education and care (ECEC) services. In these countries, early childhood educators¹, including those working with infants, have a professional responsibility to promote the learning and development of all children in their programs (Davis and Dunn 2019; Degotardi 2015; Hansen and Alvestad 2018). By virtue of their professional training and duties, infant educators are responsible for providing language development experiences, which complement those offered in home contexts (Marjorano, Cigala, and Corsano 2009; Murray, Fees, Crowe, Murphy, and Henriksen 2006). Research tools designed to measure the quality of infant ECEC programs include dimensions and scales that directly assess the extent to which educators provide sufficient language modelling and extension experiences for infants in their care (Harms, Cryer, Clifford, and Yazejian 2017; Jamison, Cabell, LoCasale-Crouch, Hamre, and Pianta 2014). Indeed, the quantity and richness of educators' infant-directed speech, educators' propensity to expand and extend infants' utterances, and the extent to which educators encourage infants to verbalise and respond have been demonstrated to contribute to

¹ In this manuscript, in keeping with the professional and policy terminology used in Australia the term 'educator' is used to refer to an early childhood worker with direct responsibilities for the provision of education and care with children birth to school age.

infants' developmental trajectory (NICHD 2000; Vandell, Belsky, Burchinal, Steinberg, and Vandergrift 2010).

Recent work, however, has shown that infants' ECEC language experiences exhibit broad variation in terms of both quantity and quality (Degotardi, Han, and Torr 2018a; Torr and Pham 2016), raising concerns that infant ECEC programs may provide limited opportunities for early language development (Norris 2014; Thomason and La Paro 2009). Efforts are therefore needed to examine factors which may explain this variation. The current study approaches this issue in two ways. First, we examine infant educators' knowledge of infant language development and their reported approaches to fostering this developmental domain. As educators' knowledge base has long been theoretically linked to their professional practice (Skott 2015), an investigation of this topic has the potential to identify knowledge gaps that may constrain current practice.

Second, because early childhood professional training is designed to build educators' knowledge base, we investigate associations between these educators' knowledge and reported approaches and their level of early childhood qualification. While the qualification level of infant educators has been found to explain the quality of their interactions with infants (Burchinal, Cryer, Clifford, and Howes 2002; Degotardi et al. 2018a; Manlove, Vaquez and Vernon-Feagans 2008), research is yet to examine associations between infant educators' qualification levels and their knowledge in the domain of infant language development. Research investigating preschool teachers' knowledge about language and literacy development has produced inconsistent associations with their qualification levels (Gerde, Wright, and Bingham 2019; Hindman and Wasik 2008; Schachter, Spear, Piasta, Justice, and Logan 2016). As very few studies exist about infant educators' knowledge about language development, an examination of associations with qualification levels will identify whether early childhood preparation programs need to take measures to improve efforts to develop educators' knowledge in this domain.

Educator's knowledge and beliefs

There exists a long history of conceptual and empirical work about teachers' cognitions on the basis that their knowledge and beliefs will, to some degree, shape the way in which they approach their professional practice. In the literature, the terms 'beliefs' and 'knowledge' are sometimes used interchangeably, and are frequently treated as overlapping concepts (Murphy and Mason 2006). While it is claimed that the two constructs are difficult to disentangle (Skott 2015), definitional differences between the two have been identified. Beliefs are generally conceptualised as relatively subjective, intuitive, value-laden and subject to influence from social life experiences (Cash, Cabell, Hamre, DeCoster, and Pianta 2015). Beliefs are often strongly held and difficult to change as they assume an element of truth and reality for the individual who holds them. In contrast, knowledge is conceptualised as more objective, verifiable and subject to influence from sources of evidence (Alexander and Dochy 1995). Compared with beliefs, knowledge is more readily adaptable, as exposure with new information tends to lead to conceptual change (Alexander and Winne 2006; Murphy and Mason 2006).

While we acknowledge that educators' knowledge and their more subjective beliefs may overlap, in this study, we adopt the term 'knowledge' to refer to how early childhood educators understand language development. Due to their professional responsibilities, educators are required to hold an evidence-informed knowledge base derived at least partially, from formal or informal professional learning (Berthelsen and Brownlee, 2007). Although the terminology adopted by researchers differs, research suggests that infant educators' knowledge about infant development is, to at least some extent, evidence based. Most telling are findings that have found that educators' qualification level explains differences in the depth and sophistication of their knowledge. Manlove et al. (2008), for example, assessed the 'complexity of thinking' held by infant educators about processes of infant development, and reported that higher qualified educators tended to express more complex and evidence-informed thinking than their lesser qualified counterparts. Similarly, in a study of infant educators' beliefs about their teaching practice, Berthelsen and Brownlee (2007) found that those holding or studying towards a bachelor degree in early childhood education held

more detailed and evidence-informed beliefs than their diploma-qualified counterparts. Degotardi (2010) examined the complexity of infant educators' interpretations of observed infant behaviours. Less complex interpretations were largely descriptive and behavioural, while a higher level of complexity was evident when educators attributed infant's behaviour to their intentions and thinking. Degotardi found that degree-qualified educators expressed more complex interpretations than their less qualified peers. Combined, these studies suggest that educators' knowledge is informed by professional learning programs, and therefore moves beyond subjective conceptualisations that may be more appropriately conceptualised as naïve or uninformed beliefs (Berthelson and Brownlee).

Infant educators' knowledge about language development

While a body of work exists that examines teachers' knowledge about preschool language development and teaching (Cash et al. 2015; Gerde et al. 2019; Schachter et al. 2016), very few studies have examined infant educators' knowledge about, or their reported approach to supporting infant language development. Two recent studies examined infant educators' knowledge about infant language development. Hansen and Alvasad (2018) conducted interviews with six infant educators from centres rated as providing a high quality infant education and care program to ascertain their views on how language development is best fostered. The study identified that the educators recognized the potential of spontaneous conversations and expressed the importance of modelling rich language. Resources, such as books, toys and pictures were seen to stimulate these conversations, and asking questions about infants' interests and experiences was espoused as an effective means of encouraging infant participation. In a larger study, Degotardi and Gill (2019) interviewed 59 infant educators from centres exhibiting a broader quality range to derive their understandings of factors which support or constrain infant language development. These educators identified a complex network of factors including organizational features of the classroom, educators' teaching strategies, infant learning processes, and curriculum resources and activities. Like Hansen and Alvasad, the educators identified literacy resources and educator-led activities

such as reading and singing as important. However, Degotardi and Gill raised a concern that, when explaining processes of infant language development, many educators overlooked the infants' active contribution to their own development. Instead, development was often portrayed as innate, occurring through passive exposure to adult language, or supported by a narrow range of relatively didactic strategies and activities.

The two studies described qualitative differences in educators' knowledge about infant language development, but neither of them theoretically conceptualized nor sought to explain individual differences. If, as claimed, educators' knowledge base acts as an organizing mental structure that guides practice (Murphy and Mason 2006; Vartuli 2005), a systematic approach is needed to conceptualize the nature of individual differences and to investigate how these differences may be explained.

Phenomenography as a theoretical approach

This research adopts a phenomenographic approach to analyzing infant educators' knowledge about infant language development. Phenomenography aims to understand "qualitatively different ways in which people experience, conceptualize, perceive, and understand various aspects of, and various phenomena in the world around them" (Marton 1986, p. 31). People's knowledge of a phenomenon can be situated within a limited number of categories, which are "logically structured in a nested hierarchy of inclusiveness" (Åkerlind 2008, p. 636). This means that people's knowledge can be hierarchically ranked from exhibiting a low to high level of sophistication, with less sophisticated knowledge embedded within more sophisticated knowledge (Durden 2019).

The phenomenographic approach has been widely adopted to investigate individuals' cognitions about learning and teaching, referred to as '*conceptions of learning*' and '*approaches to teaching*' respectively. While the former focuses on knowledge about the learning process itself, the latter investigates reported use of pedagogical strategies to foster learning (Lam and Kember 2006). In a variety of disciplines, conceptions of learning have been found to be distinguished between surface and deep (Marton, Dall'Alba, and Beaty 1993; Van Rossum and Hamer 2010). Surface

conceptions understand learning as knowledge accumulation and reproducing without questioning the meaning behind it, while deep conceptions conceive of learning as meaning-making, developing novel concepts, and restructuring existing knowledge with new information (Van Rossum and Hamer 2010). With regard to approaches to teaching, phenomenographic research has consistently identified teacher-focused approaches at the lower end of a hierarchy and student-focused approaches on the top. The teacher-focused approaches emphasize didactic teacher activities, and transmission of knowledge and information with minimal attention to the learners' characteristics or participation. In contrast, the student-focused approaches value students' experience, encourage student participation, and engage students in the processes of knowledge discovery (Åkerlind 2008).

With both conceptions of learning and approaches to teaching, levels of sophistication are related to the extent to which the holder of the knowledge is able to move beyond a behavioural, teacher-centred view of the learning and teaching process to embrace a more student-centred, participatory perspective (Åkerlind 2008). The complexity of the knowledge base thus relates to the extent to which the knowledge holder can consider the perspective and contribution of the learner and the dynamic, relational interplay between the teacher and the learner.

Conceptions of children's learning and approaches to pedagogical practice in ECEC

To date, there is limited research about infant educators' conceptions of very young children's learning or their reported approaches to working pedagogically with these children. An exception is the research of Berthelsen, Brownlee and colleagues, who conducted a number of studies investigating these topics with educators of children under three. In an early qualitative study, Brownlee, Berthelsen, and Boulton-Lewis (2004) explored how six toddler educators conceptualised young children's learning. They found that educators' conceptualisations of toddlers' learning ranged from simplistic to sophisticated in hierarchically ordered categories from 'reproductive' (emphasizing observation, imitation and repetition); to 'active' (focusing on hands-on or physical engagement); to 'constructing meaning' (focusing on information processing and problem solving). Two other studies of both practicing and pre-service educators derived similar

categories, with conceptions of children's learning ranging in sophistication from a surface-level of passive acquisition to a deep-level of dynamic cognitive and interactive process (Berthelsen and Brownlee 2005; Brownlee and Chak 2007). Together, these categories of educators' conceptualisations reflect the hierarchical structure of sophistication that appears in phenomenographic studies and in those examining infant educators' knowledge: more sophisticated conceptions emphasize the learners' cognitive and interactive contribution to their own learning and development, whereas less sophisticated conceptions focus on more passive and reproductive acquisition processes (Degotardi 2010; Durden 2019; Van Rossum and Hamer 2010).

While there is an argument that educators' conceptions of development should be logically related to their pedagogical practice (Scull, Nolan, and Raban 2012; Skott 2015), studies of preschool teachers have not always found this to be the case (e.g., studies showing non-alignment: Gerde et al. 2019; Sandvik, van Daal, and Adèr 2014; studies demonstrating alignment: Hu, Fan, Yang, and Neitzel 2017; McMullen et al. 2006; Stipek and Byler 1997). Such discrepancy is also evident in research on infant-toddler educators' knowledge and practice, with Degotardi (2015) reporting a non-alignment between infant educators' understandings of, and approaches to fostering, infant peer relationships. However, Brownlee et al. (2004) described above reported an association between toddler educators' conceptions of very young children's learning and their reported pedagogical approaches. The study used videos of educators' own practice to stimulate discussions about pedagogical approaches. The results showed that educators with 'reproductive' view of learning tended to emphasize teacher-directed, or activity and skill focused pedagogical approaches, whereas those holding the 'constructing meaning' conceptions spoke about encouraging children's agency, thinking and problem solving in practice.

The present research

The above studies of infant-toddler educators examined conceptions and reported practice either in the domain of general learning or peer relationship. There remains an absence of research about conceptions and approaches in language development domain. To address this gap, our study

employed the phenomenographic approach to systematically analyze different ways that infant educators a) conceptualise infant language development and b) describe their pedagogical approach to supporting such development. As stated above, research has reported inconsistent associations between educators' cognition and their pedagogical approaches in early childhood education (Brownlee et al. 2004; Degotardi 2015; Gerde et al. 2019; Hu et al. 2017; McMullen et al. 2006; Sandvik et al. 2014; Stipek and Byler 1997), hence, we examine whether infant educators' conceptions of infant language development and their reported pedagogical approaches are related.

There now exists a strong evidence base that the overall quality of early childhood education programs is supported by the presence of specialised early-childhood-qualified educators (Manning, Wong, Fleming, and Garvis 2019). While much of this evidence has focused on programs for preschool-aged children (Whitebrook 2003), evidence is growing to show that qualification level is also an important factor when explaining differences in the quality of infant educators' thinking and practice (Berthelsen and Brownlee 2007; Brownlee and Berthelsen 2006; Burchinal et al. 2002; Degotardi 2010; Degotardi, Torr, and Han 2018b). We therefore examine association between educators' qualification level and their conceptions or approaches.

Materials and methods

Participants

The participants of the study were 59 infant educators recruited for a large-scale project investigating language environment of infant programs. Recruiting emails explained the purposes of the research to 89 ECEC centres across Sydney, Australia, and received agreement for voluntary participation from 59 centres (66% of response rate). The participating centres were a mixture of for-profit ($N=34$) and not-for-profit ($N=25$). One infant educator was recruited from each centre's infant room. All 59 educators were females and their age distribution was: below 20: 1 (1.7%); between 21 and 30: 25 (42.4%); between 31 and 40: 12 (22%); between 41 and 50: 11 (18.6%); and above 50: 9 (15.3%).

In Australia, early childhood education regulations require that all educators hold a specialised early childhood qualification at a three or four year bachelor, a one-year vocational diploma or a six month certificate level. Of the 59 focus educators, 14 held a bachelor in early childhood education, and 45 had a vocational certificate or diploma. As required by the ethics committee of the researchers' University, signed written consent forms from all the participants were collected before data collection.

Data collection

Semi-structured interviews conducted by trained research assistants with a bachelor or post-graduate degree in early childhood education, were used to elicit educators' conceptions of how infants develop language, and their pedagogical approaches to supporting language development. The two main interview prompts asked were: "How do you think infants develop language skills?" and "What do you do to support infant language development?" As the interviews were semi-structured, the interviews were open and loosely structured, which gave the interviewees freedom to determine the nature of their responses and ample time to reflect upon and elaborate as desired. Probing questions were used to ask interviewees to expand on their ideas and clarify their thoughts (e.g., "What do you mean by...?", "Could you elaborate... further please?").

As found in similar studies, educators varied widely in the amount of information they offered in response to each question, with some providing brief responses, while others were much more elaborate (Berthelson and Brownlee 2007; Degotardi et al. 2018b). On average, the interviews lasted for 9.32 minutes, with a range from four to 24 minutes. All interviews were audio-recorded and were verbatim transcribed for the analyses.

Data analysis

The data analyses involved two stages: (1) the phenomenographic analyses and (2) the quantitative analyses. All analyses were conducted by the authors, the first author has a PhD in languages and literacy education and expertise in phenomenographic research, and the second has a

PhD in early childhood education, with expertise in infant-toddler pedagogy. The details of data analyses are explained in the following sections.

Phenomenographic analysis

The phenomenographic qualitative analyses began with separating and collating responses to the questions about conceptions and approaches. The researchers read the responses thoroughly and repeatedly to determine the breadth and depth of the responses. Then a second round of more detailed readings was carried out locate and highlight key statements about either conceptions or approaches in each response. A process of open coding (Corbin and Strauss 2008) was used to identify a list of possible themes that captured the key idea(s) about conceptions or approaches that occurred repeatedly in the responses. By reading the transcripts with a focus on the highlighted parts, the dominant qualitative characteristics of educators' conceptions and approaches were detected. A constant comparison analytical approach (Corbin and Strauss) was then applied by comparing and contrasting representative quotes in each theme to develop the definitional properties for emerging categories. This progressive and iterative definitional process determined the final set of categories (Charmaz 2015), which in the case of the present study, represented distinctive conceptions or approaches.

The last step determined the hierarchy of the categories by drawing on previous phenomenographic research and studies on infant educators' knowledge and perspectives (Brownlee et al. 2004; Degotardi 2010; Durden 2019; Van Rossum and Hamer 2010). For conceptions, those portraying language development as a passive and reproductive process were at the bottom of the hierarchy; whereas the ones clearly acknowledging processes of interactive meaning-making and mental processing in language development were at the top. For educators' reported approaches, the categories emphasizing educators' role in language development were at the bottom and those acknowledging infants' contributions and participation were at the top of the hierarchy. For the response contained more than one conception or approach statements, the

category was determined by the highest level of either conception or approach that was represented in the response.

Trustworthiness and inter-judge reliability of the coding

The entire data was coded by the two authors and a trained research assistant, who has a Master's degree in early childhood education by research. Trustworthiness was established by calculating inter-judge reliability, which was computed by the percentage of agreement of assigning data using generated categories by different researchers (Säljö 1988). Researchers are encouraged to discuss and resolve the disagreement to minimize researcher bias (Han and Ellis 2019). It is suggested that the level of agreement should reach at least 80% after discussion (Säljö 1988). Table 1 presents inter-judge agreement for the initial agreement and agreement after discussion. After discussion, the agreement was between 96.6% and 100%, meeting the requirement of above 80%.

Table 1. Inter-judge agreement

coders	conceptions		approaches	
	initial	after discussion	initial	after discussion
first coder	% of agreement		% of agreement	
second coder	91.5%	98.3%	89.1%	100.0%
third coder	76.3%	96.6%	81.4%	100.0%

Quantitative data analysis

We conducted cross-tabulations in SPSS 24 to examine the association between conceptions and approaches; and between educators' qualification level and their conceptions or approaches. The Chi-square test is used to evaluate the significance of the association, and *phi* is used to determine the strength of the association. The Chi-square test, which is a non-parametric statistics, is robust even when the sample sizes of the study groups are unequal (McHugh 2013). The test requires the sample sizes of the study groups should be sufficient so that the expected frequency for each cell should be at least 1 and for 80% of the cells should be at least 5 (Greenwood and Nikulin 1996).

Results

Educators' conceptions of infant language development

Table 2 presents five qualitatively hierarchically related conceptions of how infants develop language. Categories A to C conceptualised that language development as meaning-making processes, in which cognition, interaction, and social relations were involved. These conceptions emphasized cognitive and social agency of infants, and were referred to as deep conceptions of language development. In contrast, categories D and E conceptualised language development in more behavioural terms, in which the focus was either on mechanistic behaviours or on exposure to linguistic environments. In these two conceptions, infants were construed as passive receivers of language input, hence, they were referred to as surface conceptions. The five conceptions were arranged by levels of sophistication of the understanding, with cognitive conception being the most sophisticated and exposure conception having least sophistication.

Table 2. Conceptions of infant language development

categories	representative quotes
D (A) Cognitive E conception: E Infants develop P language through cognition, such as deriving meaning from input, processing words mentally, and making linguistic connections. (6 educators, 10.2%)	E18: <i>Children make meaning from context, they hear words and they work out what's happening around them at that time. They learn facial cues and tone of voice much sooner than the actual meaning of words. And I think they make that connection from the context to what that word means.</i> E22: <i>They listen, they understand everything. Then they process that in their mind, and gradually they are able to use their communication, and then they start language.</i>
(B) Interactional conception: Infants develop language through active participation in interaction, conversation, and communication with caregivers. (18 educators, 30.5%)	E23: <i>Um, I think the interactions with primary caregivers around them, um so the adults that like the mum and the dad, if they're in early childhood settings, um those constant language interactions, ...not so much with the other children because they're all at the same age level, but yeah I think interaction is a huge thing for them at that age.</i> E44: <i>The way that they learn, is through everyday interactions. So through having conversations with them, through tuning into their non-verbal language. When they are young and haven't developed the best speech yet, through their vocalisations, and through like, their body language and things like that. So by responding to that, I think children learn that language is reciprocal, and ways to communicate what they want or what they need.</i>
(C) Social-emotional conception: Infants develop language through	E8: <i>Pretty much, to start off attachment is the most important thing. Because they won't express themselves to you if they're not attached to you.</i> E33: <i>Well firstly, I think they develop in a childcare setting</i>

	establishing a genuine and secure relationship with caregivers. (4 educators, 6.8%)	<i>through bonding particularly. That's crucial to gain their confidence, to have special bonding and to feel comfortable in their environment.</i>
S U R F A C E	(D) Behavioural conception: Infants develop language through mechanistic behaviours, such as making sounds, copying, repeating, observing, gesturing, imitating, and mimicking. (11 educators, 18.6%)	E21: <i>By mimicking adults mostly, I guess so, they, they tend to copy everything you say and just build it up!</i> E43: <i>They learn through gesturing, and cues, verbal cues. A lot of repetition. And then, eventually they form one-word sentences, and then work on two-word sentences.</i>
	(E) Exposure conception: Infants develop language through passive exposure to various forms of linguistic input from adults around them. (20 educators, 33.9%)	E26: <i>Infants develop language skills through adults. So their educators, parents, grandparents talking to them in the right language, simple language, and that's how they pick up on it.</i> E51: <i>Basically, they learn through other people talking. The way they learn is through being exposed to a language environment. So they learn through being around people, who talk all the time, and people who talk to them. So the more the adults around the child talk, the richer that their language will be. And the more complex language they use, the more complex language the child will have.</i>

Educators' pedagogical approaches to supporting infant language development

Table 3 displays the six categories of the educators' reported approaches to supporting infant language development. Educators in categories A-D described their language development practice by involving infants in cognitive and interactional processes, following infants' interests and building relationships, hence these approaches were classified as infant-centred approaches. On the other hand, categories E-F described infants as peripheral in the pedagogical practice, with a focus either on educators' provision of learning activities or their own strategies and behaviours. Thus, these categories were referred to as infant-peripheral approaches. By the level of the acknowledgement of infants' agentic role, these categories were also arranged in a hierarchical manner, with cognitive approach recognizing the most agentic role and educator input approach recognizing the least.

Table 3. Approaches to supporting infant language development

	categories	representative quotes
I N	(A) Cognitive approach: Infant language	E44: <i>I guess we try and describe what they're doing to help them learn that words have meaning. Like if they are playing on</i>

F A N T - C E N T R E D	<p>development is supported by assisting infants to connect words and meanings in cognition. (4 educators, 6.8%)</p>	<p><i>the slide, and they're going backwards down the slide, you say, "You are going backwards.", then they learn, "Oh, backwards, and this is what 'backwards' means because I can feel myself doing it."</i></p> <p>E59: <i>But also making sure that what you're saying is linked to the experiences that they're having. So the more you can talk through what you're doing and help them link your words to images or actions or experiences. So when you're talking to them about changing their nappy, saying: "This is your nappy and I'm going to put the nappy on now", so they have a real link between their experience of what is happening and the language that you're using, which I think really helps, develop those links of understanding that words are connected to things.</i></p>
<p>(B) Interactional approach:</p>	<p>Infant language development is supported by engaging them in meaningful interactions and conversations. (14 educators, 23.7%)</p>	<p>E30: <i>I think just, as I said, the environment – creating an environment where language is used every day with meaning and also having an environment where there is a need to use that language, whether it's verbal or not. ...So I think, maybe not talking for the child. And I guess with intentional teaching, creating obstacles that encourage them to, maybe use their language to communicate with you. So whether that might be putting a favourite toy a little bit higher up that they might need to gesture or ask for help.</i></p> <p>E51: <i>Making sure you actually have meaningful conversation with them. So, as well as having that day-to-day conversation... There is directive, ... you are asking them to do things. But there is also, and actually having a meaningful conversation like you would with an adult... Especially like in [this centre] we respect children's concentration. So there's times when we specifically don't talk to them because they are busy doing work. Then there are other times when we do make sure that we engage with them regularly in meaningful conversations.</i></p>
<p>(C) Motivational approach:</p>	<p>Infant language development is supported to by identifying, encouraging, and following their interests. (4 educators, 6.8%)</p>	<p>E15: <i>I think a strong way is to... we speak to the parents morning and night. So we also try using jotting forms for them to jot down, for example, "on the weekend we went to the zoo", hardly any of them do it, "and we saw O was particularly fascinated with the monkeys." So you try and hone in on an interest to try and talk to the child about that... maybe a fraction above their language level.</i></p> <p>E33: <i>Obviously talking with the children, encouraging their language, using expression, watching them closely to find out what their interests are, and encouraging those interests. You know if they have an interest in the dolls, be involved with the children, play with them, and be involved, be engaged, talk with them and just keep encouraging them because the language will come.</i></p>
<p>(D) Social-emotional approach:</p>	<p>Infant language development is supported by establishing a trustful, reciprocal, and close relationship with them.</p>	<p>E13: <i>If you... you know I mean people can talk a lot about providing language rich environments and books and all of that and we all know that's a really important part of building language, but I think that the key is getting to know the children that you're working with, so getting to know each child. Building a relationship with each child. Having knowledge of all the different ways that they communicate with you.... all the</i></p>

<u>(10 educators, 16.9%)</u>	<p><i>different...the family that they come from and all the understandings that they already have and life experiences that they already have and the culture that they're from. Understanding all that and that's how you can build that relationship with them.</i></p> <p>E20: <i>I think the first thing is building up relationships. When the children trust you, they more like to being around with you, they trust you, you have really close relationship, then they love to listen to you and they trust you, they are able to listen to you and follow the instructions....Yeah, I think the first thing is relationship. Then, because of the close relationship, sometimes you can guess and they give you little bit clue, you understand what they are trying to say. Like if they are pointing somewhere and then you know they are trying to say "water" or the things they want, then you tell them, or you ask them "Do you need water?" or "Do you want your hat?" This is the way I try to enhance their learning of language.</i></p>
<p>I (E) Activity approach: N Infant language F development is supported A through provision of a N variety of activities and T programs, such as book - reading, singing, art and P craft, free play, and E picture cards program. R <u>(15 educators, 25.4%)</u></p>	<p>E14: <i>Yeah we like to incorporate language into everything we do. So yeah through group time, reading. Even art and craft we'll talk about different language aspects. Everything that we do here... singing. Yeah... Because they respond so well to singing, we love singing.</i></p> <p>E58: <i>For our room..., well we do the picture cards as well. Like the different emotion photos, and the happy face book also. They can tell us that they are happy, like you know, they were smiling. They were angry, so they were frowning, and all those things yeah. So with programming we help them with, like also provide them with more books, or with more of the languages. Like doing a lot of songs, group time in this room, so they sing with us.</i></p>
<p>E (F) Educator input R approach: A Infant language L development is supported through educators' input, such as role modelling language use, naming objects, and simplifying language. <u>(12 educators, 20.3%)</u></p>	<p>E6: <i>We can talk through... we can explain a lot of things in simple words. So the more you verbalise to them either single words, two words through the day. What you are doing, what you are not doing, that supports their language.</i></p> <p>E41: <i>Role modelling, so using appropriate language when talking to them. Looking at them when you're talking to them, getting down and being at their level. Just basically being a positive role model.</i></p>

Association between conceptions and approaches

Using the two broad categories of conceptions (i.e., deep vs. surface) and approaches (i.e., infant-centred vs. infant-peripheral), a 2x2 cross-tabulation was conducted (See Table 4). The expected frequencies of all the cells were more than 5, meeting the requirement of the Chi-square test. The results showed a significant association between the conceptions and approaches:

$\chi^2(1)=3.98$, $\phi=.26$, $p<.05$. The educators holding deep conceptions of infant language development

tended to reported using more infant-centred pedagogical approaches (67.9%) than infant-peripheral approaches (32.1%); whereas those having surface conceptions reported using more infant-peripheral approaches (58.1%) than infant-centred approaches (41.9%).

Table 4. Association between conceptions and approaches

conceptions	approaches		total
	infant-centred	infant-peripheral	
deep	19 (15.2)	9 (12.9)	28 (28)
% within conceptions	67.9%	32.1%	100.0%
surface	13 (16.8)	18 (14.2)	31 (31)
% within conceptions	41.9%	58.1%	100.0%
total	32 (32)	27 (27)	59 (59)
% within conceptions	54.2%	45.8%	100.0%

Notes: expected frequencies are reported in brackets

Association between educators' qualification and their conceptions or approaches

Associations between educators' qualification and their conceptions and approaches are reported in Tables 5 and 6. The assumption of using Chi-square statistics was first checked and all the expected frequencies were above 5, suggesting that the sample sizes of both bachelor-qualified and non-bachelor-qualified educators were sufficient for using the Chi-square test. The results in Table 5 demonstrate significant association between the educators' qualification level and conceptions: $\chi^2(1)=4.23$, $\phi=.27$, $p<.05$. The bachelor-qualified educators held more deep conceptions (71.4%) than surface conceptions (28.6%), while those without a bachelor degree had more surface conceptions (60.0%) than deep ones (40.0%).

Table 5. Association between qualification and conceptions

qualification	conceptions		total
	deep	surface	
bachelor	10 (6.6)	4 (7.4)	14 (14)
% within qualification	71.4%	28.6%	100.0%
non-bachelor	18 (21.4)	27 (23.6)	45 (45)
% within qualification	40.0%	60.0%	100.0%
total	28 (28)	31 (31)	59 (59)
% within qualification	47.5%	52.5%	100.0%

Notes: expected frequencies are reported in brackets

Table 6 shows that qualification level was also significantly associated with the educators' reported approaches: $\chi^2(1)=4.38$, $\phi=.27$, $p<.05$. The bachelor-qualified educators reported using more infant-

centred approaches (78.6%) than infant-peripheral ones (21.4%), whereas non-bachelor-qualified educators reported adopting more infant-peripheral approaches (53.3%) than infant-centred approaches (46.7%).

Table 6. Association between qualification and approaches

qualification	approaches		total
	infant-centred	infant-peripheral	
bachelor	11 (7.6)	3 (6.4)	14 (14)
% within qualification	78.6%	21.4%	100.0%
non-bachelor	21 (24.4)	24 (20.6)	45 (45)
% within qualification	46.7%	53.3%	100.0%
total	32 (32)	27 (27)	59 (59)
% within qualification	54.2%	45.8%	100.0%

Notes: expected frequencies are reported in brackets

Discussion

Infant educators' conceptions and approaches

Adopting the phenomenographic method, this study is the first to systematically examine variations in infant educators' knowledge about the process of and fostering of infant language development. The findings are significant given the contemporary ECEC context where educators' facilitation of language development is widely considered integral to infant program quality (Harms et al. 2017; Jamison et al. 2014), and where the importance of supporting language development is advanced through the Australia national early childhood curriculum (Australian Department of Education Employment and Workplace Relations 2009). These distinct conceptions and pedagogical approaches identified degrees of strength and limitation in these educators' professional knowledge base. The findings suggest where professional learning opportunities may be needed to raise infant educators' consciousness about the kinds of mutually interactive and infant-responsive interactions that have been found to effectively foster language development in ECEC contexts (Girolametto and Weitzman 2002; NICHD 2000; Vandell et al. 2010).

Most educators who held a deep conception recognized that infants' active participation in interactions and conversations contributed to their language development, reflecting the importance of mutually responsive conversational exchanges in promoting language development (Justice,

Mashburn, Hamre, and Pianta 2008), and reflecting a social-interactive learning perspective that is popular in contemporary approaches to early childhood education (Hruska and Gunn 2017). Interestingly, while domain-general infant educator research has suggested that educators focus strongly on the affective aspects of development (Salamon and Harrison 2015), our study found that a small minority explained language development from a predominantly social-emotional perspective. However, over 50% of our educators held surface conceptions of language development, in which infants were seen as playing a passive or reproductive role in their language learning experiences. This finding is concerning, given the importance placed on infants' verbalisations, active participation and meaning-making in contemporary language development research (Zauche et al. 2016). Such a view is also inconsistent with participatory views of learning widely adopted in contemporary approaches to early childhood education (Berthelsen, Brownlee, and Johansson 2009). Previous research has suggested that infant educators overlook the learning capabilities and contributions of very young children (Cheeseman, Sumsion, and Press 2015; Degotardi and Pearson 2014), which may result in a relatively passive view of infants' learning.

Our analysis of educators' reported pedagogical approaches to supporting infant language development also revealed variations. Educators who communicated an infant-centred pedagogical approach explicitly recognized the importance of being perceptive and interpretive of infants' cognition, communicative intention, and motivation as a basis for supporting meaning-making and authentic communication. These infant-centred approaches reflect a relationship-based approach to infant pedagogy, which argues that an interpretive understanding of the infant is central to responsive teaching practices (Degotardi 2010, 2015; Papatheodorou 2009). In contrast, the infant-peripheral approaches, expressed by around 45% of our participants, share similarities with the activity or teacher-focused pedagogy reported to be commonly held by infant educators in Australian and elsewhere (Brownlee et al. 2004; Degotardi and Gill 2019; Lim and Lim 2013). While it is possible that teacher-led language experiences may provide infants with opportunities to hear language, research has suggested that they are less optimal at encouraging infants' use of their

communicative skills (Soderstrom and Wittebolle 2013; Torr 2019). Our findings point to the need to ensure that pre-service and on-going professional learning opportunities emphasize the active ways that infants contribute to their language development and the strategies that infant educators can apply to encourage such language participation.

Association between conceptions and approaches

Our study is one of the first in early childhood education to statistically examine the association between infant educators' conceptions and their approaches in the domain of early language development. We found that infant educators holding deep conceptions reported more infant-centred approaches, while those holding surface conceptions reported more infant-peripheral approaches in their practice. Our findings are inconsistent with research which showed a non-alignment between preschool teachers' beliefs and practices (Gerde et al. 2019; Sandvik et al. 2014). The discrepancy could be due to the different ways of conceptualising approaches in these studies: Gerde et al.'s practice categories focused on teachers' understandings of children's motivations to write, while Sandvik et al.'s practices comprised the reported frequency of pre-determined literacy practices.

In contrast, the conceptions and approaches categories in the present study both captured, to some degree, the extent to which educators attended to infants' perspectives and participation, so some level of alignment is understandable. Our study indeed show consistency with studies sharing similar conceptualisations of conceptions and approaches in preschool settings. These studies reported that teacher who endorsed child-cantered beliefs were positively associated with practices showing more accepting and respectful responses towards children (Stipek and Byler 1997), emphasizing more child-directed play time (McMullen et al. 2006), or displaying higher quality of teacher-child interactions in classrooms (Hu et al. 2017). This was also the case with Brownlee et al.'s (2004) qualitative study, which discerned that infant-toddler educators who held more sophisticated beliefs about children's learning tended to express a social-constructivist pedagogical approach focusing on supporting infants' active role in learning. Those with less sophisticated

beliefs prioritized teacher-focused approaches, which de-emphasized the infants' contribution to their own learning. Our findings strengthen the theoretical claim of this smaller-scale study that the connection between deep or sophisticated conceptions of learning and learner-centred pedagogical approaches would appear logical.

Implications of educators' qualification

This study found that bachelor-qualified educators would be more likely than their less qualified counterparts to hold a more sophisticated and infant-centred knowledge base about infant language development. Despite inconsistent findings of relationships between educators' qualification level and the quality of educator-child interactions in infant-toddler and preschool classrooms (Degotardi and Sweller 2012; Early et al. 2007; Manlove et al. 2008; Manning et al. 2019; NICHD 2002; Whitebrook 2003), recent studies have found qualification-related difference in the quality of language learning environments in infant-toddler programs (Degotardi et al. 2018b, Degotardi, Torr, and Nguyen 2016; Hu, Degotardi, Torr, and Han 2019; Hu, Torr, Degotardi, and Han 2019, Norris 2014). These recent studies and the findings from the current study suggest that the presence of well-qualified infant educators is important in the domain of developing very young children's language.

Limitations and future directions

In conclusion, we acknowledge limitations which may be addressed in future research. First, we have an imbalance between the bachelor- and non-bachelor-qualified educators. Although the employment of early childhood degree-qualified educators is relatively uncommon in Australian infant ECEC programs (Cheeseman et al. 2015), the small sample size of the bachelor-qualified educators in our study might not be sufficiently representative of the population. The present findings of relationships between educator qualifications and their conceptions or approaches should therefore be interpreted cautiously until future research with more bachelor-qualified educators is conducted to triangulate our results. Second, in alignment with phenomenographic studies, the pedagogical approaches were based on self-report, as opposed to analyses of educators'

actual practice. While it is frequently assumed that educators' beliefs underpin their pedagogical practice, in early childhood education this alignment is not always straightforward (e.g., studies showing non-alignment: Degotardi 2015; Gerde et al. 2019; Sandvik et al. 2014; studies demonstrating alignment: Brownlee et al. 2004; Hu et al. 2017; McMullen et al. 2006; Stipek and Byler 1997). Future research is needed to empirically investigate relationships between infant educators' stated conceptions and approaches and their language-supporting practices in the classroom. In this way, research will be able to examine the dynamic interplay between educators' knowledge and their practice, and will comprehensively inform both educators and policy-makers about how to ensure that our youngest children benefit from high quality ECEC language-learning environments.

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