Infants' Expressive Language in Early Childhood Education and Care Settings:

Communicative Functions and Activity Contexts

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Table of Contents

List of Abbreviations ……...……...6
List of Tables……..……7
List of Figures……..……..7
Abstract ……8
Statement of Candidate ……9
Acknowledgements……..……10
Chapter 1: Introduction and literature review……...……...12
1.1. The importance of infants' expressive language …….……..12
1.2. Socio-cultural tradition ……..15
1.3. Participatory Learning Theory and grounded perspective…….……17
1.4. Context and its mediating relation to infants' expressive language output……..……21
1.5. Communicative goals and functions of expressive language……25
1.6. The present study……...26
Chapter 2: Methodology……..27
2.1. Introduction…….…….…..27
2.2. General methodological approach…….……..…….…..27
2.3. The larger study…….…….29
2.3.1. Data resource…….……29
2.3.2. Ethical statement…….……..30
2.4. Principles of data selection for the present study…….…… 31
2.4.1. Number of episodes…….……..31
2.4.2. Episodes selection criteria.……31
2.4.3. Participants……31
2.5. Procedure……34
2.5.1. Data processing and preliminary analysis……..34
2.5.2. Definition of utterance……..…..34
2.6. Coding……35

2.6.1. Activity context……..35
2.6.2. Communicative functions..……37
2.7.2. Reliability..…….……...…… 38
2.8. Quantitative analysis procedure……39
2.9. Chapter summary……..……39
Chapter 3: Results……41
3.1. Qualitative analysis…….……..41
3.1.1. Requesting..…….……..41
3.1.2. Informing..…….……45
3.1.3. Sharing...……48
3.1.4. Self-guiding. …….……50
3.1.5. Short Reply. ….…….……52
3.1.6. Word Play. ……52
3.2. Quantitative results……54
3.2.1. Children's individual differences in the amount of utterances…….……55
3.2.2. The function of these infants' utterances……...…...……55
3.2.3. How many utterances occur in the four different activity contexts? …….……56
3.2.4. Did these infants use expressive language for different purposes in different activity contexts? ……..……58
3.3. Chapter summary……..……60
Chapter 4: Discussion……...……61
4.1. Communicative functions associated with infants' produced utterances…….……..……61
4.2. Relationship between Infants' expressive language use and the context of their activities……63
4.3. Implications for practice……67
4.4. Limitations of the present study and recommendations for future research ……69

4.6. Thesis conclusion……..……71
References…….…..73
Appendix A. Ethics approval of the study……..……80
Appendix B. Correlation of our six communicative functions and the functions proposed by Tomasello (2008) and other scholars……..…….82
Appendix C. The six communicative functions and their description…….83
Appendix D. Sam's utterances coding sheet – Extract…….….. 84
Appendix E. Consent forms…….87

List of Abbreviations

ECED	Early childhood education and care
LENA	Language environment analysis system
DPL	Digital language processor
EYLF	Early Years Learning Framework

List of Tables

Table 2.1 Participating infants……..…...……33

Table 3.1 Frequency and percentage of utterance functions in the full data set……..……..56

Table 3.2 Amount of utterances produced in the four focus activity contexts…….....57

Table 3.3 Function and activity context cross tabulation……...59

List of Figures

Figure 3.1. Children's individual differences in the amount of utterances…….55

Abstract

Recent work suggests that a rich linguistic environment in early childhood education and care (ECEC) centers plays an important role in infants' emerging expressive language. While some studies have explored how educators support infant language development, very few have examined the infants' participation in this process. This study adopted the perspective that infants' participation in educator-infant and peer interactions is integral to the learning and developmental potential of these interactions. Therefore, it aimed to examine the children's linguistic output to determine what communicative functions are associated with produced utterances and whether there is the relationship between infants' expressive language use and the context of their activities.

The study employed qualitative and quantitative research methods to analyse 3-hour audio-visual observations of 6 children, aged 17-24 months, as they participated in the normal activities in their early childhood center. A qualitative analysis of the transcripts and video footage of infant vocalizations permitted the development of 6 categories to represent the communicative functions of these infants' utterances. Quantitative coding then permitted an analysis of the extent to which each function was apparent in four activity contexts (Mealtime, Toy Play, Book Experience and Talk). Findings suggest that infants use their own linguistic resources for a range of purposes, but that these functions differ according to the activity context in which they occur.

Statement of Candidate

I certify that the work in this thesis entitled "Infants' expressive language in early childhood education and care settings: Communicative functions and activity contexts" has not been previously submitted for a degree, nor has it been submitted as a part of requirements for a degree, to any other university or institution other than Macquarie University. I certify that all information sources and literature used are indicated in the thesis. I also certify that this thesis is an original piece of research written by me. The research presented in this thesis was approved by Macquarie University Ethics Review Committee. Reference number: 5201400388, approval date 16th May 2014.

Signature .....

Natalie Brand

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Infants' Expressive Language in Early Childhood Education and Care Settings: Communicative Functions and Activity Contexts

Chapter 1: Introduction and Literature Review

This study aims to explore expressive language in infants (17 – 24 months-old children) through examining their spoken utterances in the context of early childhood education and care (henceforth ECEC) center. In particular, the study aims to assess the extent to which the infants' expressive language use varies according to the context of their activities and communicative functions. In Australia, as in many countries around the world, a substantial numbers of infants are attending ECEC centers. In 2014, for example, 22.2% of all Australian infants were attending in ECEC centers (Australian Bureau of Statistics, 2015). The ECEC center, therefore, represents an important environmental context for infants, so the experiences that they offer can serve to guide and influence infants' development.

1.1. The Importance of Infants' Expressive Language

It is now well established that verbal expressive language is fundamentally important for infants' development in many areas, including their ability to participate in social interaction (Vallotton, 2009), their language acquisition (Haliday, 1969; Swingley & Aslin, 2000), and cognition (Papic, 2007; Vygotsky & Luria, 1993; Winsler et al., 2003). In the Australian context, the National Curriculum document for early childhood educators[*], the Early Years Learning Framework (henceforth EYLF) (Department of Education,

[*] In this thesis, I adopt the Australian practice of referring to any person in a direct teaching/caring role with young children, regardless of their qualification, as an 'educator'.

Employment and Workplace Relations, 2009) states that expressive language is essential to ensure successful learning outcomes, such as building strong connections to the world, developing a sense of identity and wellbeing, and being confident learners and communicators. It is, therefore, important for early childhood educators to know how to foster infants' expressive language use and development.

Infants' expressive language has a number of important roles to play in their development, one of which is to maintain positive relationships with adults and peers. Infants' early relationships with others have long-standing and well-documented implications for their subsequent development and well-being (Hinde, 1992; Monti & Crudeli, 2007; Selby & Bradley, 2003; Shin, 2010; Woodward & Fergusson, 2000). In the early childhood education context, research by Vallotton (2009) shows that toddlers' ability to express themselves through language provides their caregivers with an insight into their ideas and wants, which supports the establishment of strong and positive relationships. Vallotton's research focuses on gestural communication, but it would be reasonable to assume that the findings can be equally applicable to verbal expressive language. Infants' expressive language may also have implications for peer relationships. Hay (2006) and Dionne et al. (2003), for example, argue that conversational competence, where expressive language is an indispensable component, is key to the establishment of smooth relationships with peers especially in the context of play, conflict resolution and aggression management.

Infants' expressive language also contributes significantly to processes of early learning, providing a means of gaining, processing and demonstrating new information and knowledge. According to Swingley and Aslin (2000), who investigate infants' language perception, "children's speech is an invaluable resource for revealing early linguistic knowledge" (p.149). Indeed, one of the aspects of infants' linguistic knowledge is, for

example, their vocabulary, which they demonstrate and expand in the process of frequent verbal participation in discussions with their caregivers (Hart, 2004). Also, active participation in conversations is crucial not only for storing new vocabulary items, but also for rethinking or 'sharpening the edges' of previously acquired concepts, which is especially important for developing abstract ideas and notions beyond one's own experience (Nelson, 2005). For example, when toddlers talk using vocabulary that describes patterns, it becomes evident to the educators that the toddlers have understood this concept of early numeracy (Papic, 2007; Department of Education, Employment and Workplace Relations, 2009). Infants' expressive language can also be a predictor of future academic success, as it fosters the development of certain skills crucial for learning to read, including the ability to sound out words (Deacon, 2012), and construct a sentence demonstrating syntactic awareness (Nation & Snowling, 2000).

The relation of cognition and expressive language can be also discussed through the notion of self-talk, which is a linguistic activity when infants talk aloud to themselves. Wertsch (1979) argues that self-talk has social origins, and develops from guided or 'other-regulation' to independent or 'self-regulation'. Self-talk is essential for such important cognitive processes in very young children, as memorizing and systematizing new concepts, problem solving, planning and guiding their own activity and behavior (Diaz & Berk, 1992; Vygotsky & Luria, 1993; Wertsch & Tulviste, 1992; Winsler et al., 2003).

In summary, there are strong relations between infants' expressive language and infants' development. As Nelson (2005) argues, theories and data, explaining the processes of language acquisition and its role in cognitive development, abound. Meanwhile, very little has been investigated on how children *use* the language that they acquire and "how these uses serve cognitive and communicative needs" (p.8). To my best knowledge, this gap has been

currently addressed in only a small amount of research and even less in regards to the expressive language of the infants attending ECEC centers. In order to contribute to a better understanding of the use of expressive language in infants in ECEC settings, this study sets out to examine infants' expressive language in consideration of i) its activity context and ii) its communicative functions.

This chapter reviews the existing literature on the mediating role of the context and communicative functions in infants' expressive language with reference to contemporary theoretical approaches to early childhood pedagogy. Section 1.2 explores socio-cultural theory and its realization in modern educational philosophy, and provides an overview of Participatory Learning as it is currently applied to early childhood education. Section 1.3 is devoted to the defining and discussing grounded perspectives and their applicability to exploring infants' early language production. Section 1.4 outlines the potentially mediating role of situational context and infants' expressive language output, with a particular focus on the language production in very young children in the context of ECEC centers. Section 1.5 provides an overview of existing systems of communicative functions that can apply to children's expressive language. The chapter concludes by identifying a gap in the reviewed literature, leading to a statement of the research questions to be addressed in this thesis.

1.2. Socio-cultural Tradition

The identified research problem for this study is to assess the extent to which infants' expressive language use varies according to the context of their activities, and communicative intentions. In order to explore this problem it is necessary to examine infants' naturally-occurring expressive language production in the context of their everyday experiences. Modern technologies of non-intrusive video and audio recording allow the collection of data

on infants' naturally occurring activities and voices in naturalistic settings of home and early childhood centers. This 'grounded' perspective to exploring infants' direct experience in context is underpinned by contemporary ideas of participatory learning and socio-cultural theory, particularly the idea that the socio-cultural context determines child's development. According to Vygotsky (1978), children construct their understandings through social interactions and "grow into the intellectual life of those around them" (p.88). Drawing on Vygotsky's theoretical position, Rogoff (2003) argues that participation in the cultural practices of the community also influences children's development. She explains that the ways, in which people participate depend on factors, such as the accepted cultural meaning of the events, attitudes to the process of learning, and the specific roles people carry out in their activities.

Rogoff (2003) underlines that in some societies it is culturally accepted to grant infants the autonomy to participate in certain activities to the extent that would seem inappropriate for outsiders. Such controversial undertakings include, for instance, cutting fruit with a large machete trusted to infants in Efe People community in Middle Africa (Wilkie, personal communication as cited in Rogoff, 2003, p. 5). At the same time, there are "societies that segregate children from adult activities" (Rogoff et al., 1998, p.236), and prevent their participation in various aspects of community life. Hoff (2006), in her review of language development literature, states that in some instances, such as in some communities in Mexico, infants are segregated from participation in linguistic activities, such as conversations with their caregivers and other adults, as infants are not seen as appropriate conversational partners. The contrasting degree of participation in the examples of infants from Middle Africa and Mexico illustrate how different practices may reflect cultural expectations of children, and how these differences may result in children's levels of active

participation (Hedges & Cullen, 2012). The tension between 'high' and 'low' expectations of very young children has been debated in the context of introduction of Participatory Learning Theory in the discipline of early childhood educational research and practice. The following section discusses the central ideas of Participatory Learning Theory, shows how these ideas are incorporated in the early childhood pedagogy in Australia, and explains how participatory learning aligns with the adoption of a grounded approach to exploring infants' productive language in ECEC settings.

1.3. Participatory Learning Theory and Grounded Perspective

In the last few decades, contemporary early childhood pedagogies has undergone a shift from deriving expectations of very young children from developmental stage theories to deriving pedagogies reflecting socio-cultural theoretical tenets, such as those outlined above (Hedges & Cullen, 2012). In one theoretical approach, known as Participatory Learning Theory, the process of learning is seen as becoming a community member. Therefore, a child is no longer perceived as 'too small' to be a confident and capable participant in community activities from a very young age and is given agency of his or her own learning (Berthelsen, 2009; Cole, 2005).

There is growing worldwide recognition of participatory learning ideas in the early childhood pedagogy. In the Australian context, a participatory learning philosophy is reflected in the principles and outcomes of teaching practice stated in the document of EYLF (Department of Education, Employment and Workplace Relations, 2009) in general:

> It is about the present and them [children] knowing themselves, building and maintaining relationships with others… and meeting challenges in everyday life. The early childhood years are not solely preparation for the future but also about the present (p.7).

And in relation to the expressive language, educators are directed to:

> Model language and encourage children to express themselves through language in a range of contexts and for a range of purposes…[children] interact with others to explore ideas and concepts, clarify and challenge thinking, negotiate and share new understandings (p.40).

The essential and active role of infants' active participation in interactions for their information processing and creation of their own understandings was recently explored by Kultti and Pramling (2015). The authors qualitatively examined interactions between infants and educators during mealtime in ECEC settings. Infants were found to be capable of conceptualizing or "sense-making and exploration of the world" (p. 108) by participating in mutual communication of different experiences and perspectives.

However, research conducted by Brownlee and Berthelsen (2009) demonstrates that tensions do exist when considering the active role of very young children in their own learning processes. Their study examined interviews of 12 early childhood educators about their reflections on toddlers' learning. The results demonstrated that these educators generally believed that toddlers learn in a constructivist way, and expressed the opinion that children conceptualize reality through participations in various experiences and social interactions. However, when requested to identify concrete experiences that demonstrated that the toddlers in their care had learnt something, their responses focused on the instructional, adult-lead role of the educator, rather than on the child's contribution to their learning.

These tensions and the fact many educators concentrate more on their own role can be seen as 'naturally occurring' if the theoretical shift identified earlier is taken into consideration. As Hedges and Cullen (2012) point out, the holistic and synergistic views of learning articulated in EYLF challenge the previously dominant, domain-based traditions.

Therefore, scholars and practitioners are seeking to find ways to incorporate the participatory learning pedagogies into their everyday teaching life in infant and toddler classroom (Berthelsen, 2009; Luff, 2009; McMullen & Dixon, 2009; White, 2016). How notions of participatory learning may apply to infants' early language development in the ECEC context is, however, currently unclear.

Some recent research studies that have explored the qualities of infant-educator interactions (Degotardi, 2010; Girolametto et al., 2000; Huttenlocher et al., 2010; Hamre et al., 2012; Gevers Deynoot-Schaub & Riksen-Walraven, 2008; Norris, 2014; Rosenquest, 2002; Rudd, Cain, & Saxon, 2008; Thomason & La Paro, 2009) reflect ideas of participatory learning such as acknowledgement of children's autonomy and promoting sensitive, interactive and meaningful communications. At the same time, these studies primarily focus on investigating pre-determined qualities of educator-infant interactions, therefore, they largely encapsulate a 'top-down' perspective - in the sense that they measure of ECEC quality using relatively "global, theoretically driven questions" (Stigler, Gallimore, & Hiebert, 2000, p. 96).

The research by Norris (2014), for example, compared the results of quality assessment of two types of ECEC centers in terms of experiences supporting language development in 0-3-year-old infants and toddlers. The assessment of three areas was performed via observations of teacher-child interactions: child-responsive communication, activity-embedded communication and language facilitating strategies. The quality of each classrooms' book reading area was also rated according to a Language/Literacy Environment Scale, which was derived from relevant items contained with in Infant/Toddler Environment Rating Scale – Revised (ITERS–R; Harms, Cryer, & Clifford, 2006). The results of the study revealed that the quality of experiences facilitating early language is measurable and depends

on language stimulating environment features and certain aspects of teacher-child communication. Therefore, if some areas the quality of language facilitating experiences are identified as low, they can be improved through reconsidering the role of the teacher in infant-teacher interactions.

The findings of Norris (2014) are consistent with those of Kultti and Pramling (2015), who took a contrasting approach in investigating of infants' emerging language. The unit of their analysis was the 'grounded' discourse, consisting of infants' produced language. The shift of the focus from educators' to individual child's participation reflected participatory learning ideas and accentuated the active role of a very young child in educator-infant interactions in ECEC settings. Kultti and Pramling looked at the situation when toddlers (1-3 years of age) were motivated to share ideas in discussions with educators and peers. During their conversation over mealtime, the infants and educators were co-constructing the notions of scent, flavor and colour of limes and lemons. The study showed a significant enhancing effect on the process of young children's expressive language, learning and meaning making when educators 'take a step back' and mediate conversations in a way that the content remains multidimensional, but when the autonomy to pass information and take control of the experience is given to the children.

Hedges and Cullen (2012) detail how a participatory learning approach in ECEC settings is based on the idea that children's "meaningful knowledge building occurs in the context of self-motivated participation in authentic activities" (p. 925). The value of the participatory learning philosophy is that it encourages researchers to take a closer look at what immediate cultural, social and physical contexts mean for a child. It raises questions like what motivates a child to participate in an activity and what occurs when they do, and, finally, what developmental opportunities are presented to the child as a result of this

participation.

1.4. Context and its Mediating Relation to Infants' Expressive Language Output

Expressive language can be seen as a means by which very young children actively participate in an experience, and this experience in turn is the context their expressive language. Research studies by Yont, Snow and Vernon-Feagans (2002) and Ødegaard (2006) explore the role of context for infants' expressive language. The evidence presented by Yont, Snow and Vernon-Feagans suggests that infants' use of their expressive language is sensitive to the context of their immediate activity. The study compared communicative intentions and the expressive language output of 25 twelve-month-old infants during interactions with their mothers in two different activities: toy play and book reading, both in the home settings. The results demonstrate infants' sensitivity to the situational contexts through variations in non-verbal behavior, as well as the usage of early syntax and vocabulary. Therefore, it can be argued that the context has a power to both trigger and constrain infants' production of verbal expressions.

Ødegaard (2006) explored toddler's ability to construct narratives in encompassing a wide range of emotions. She concluded that the context of emotional state can be a context controlling children's utterances, and summarized: "Emotions… influence what is said and how it is said" (p. 90). Thus, Ødegaard proposed that context is the inner state of an infant. This idea echoes Halliday's (1969) stance that children communicate their feelings in words, they learn the possibility to make public notions that are individual and private through words.

Alternatively, Tomasello (2008) defines context as a common ground established between the speaker and the recipient. This idea is developed by Kultti and Pramling (2015),

who argue that, when infants are concerned, the common ground is fundamentally a result of negotiation constantly occurring among communicative partners, in other words it is a process of 'making sense'. They refer to 'negotiation' as the coordination of i) perspectives, such as adult's and child's viewpoints ii) modalities, such as taste and vision and iii) temporal and location standpoints: past and present, and here and there. A common goal or shared intentionality for all the communication participants is another important aspect of context for early language production. Tomasello argues that infants start using their expressive language only when they begin "participating with others in collaborative activities structured by joint attention at around the first birthday" (p. 337).

Also, according to Keller-Cohen (1978), communication partners are diverse in their verbal and non-verbal behavior, perceptual and social properties. Therefore, participants aspire to establish a certain common ground to be able to achieve mutual understanding (Tomasello, 2008). Therefore, internal and external factors, as well as attempting to achieve a common goal provide variable circumstances for all communication participants, including very young children, and impact their expressive language.

It appears evident that there is relation between a context and expressive language use in very young children. However, there is very little research that has investigated whether context is related to infants' use of expressive language in ECEC. Two notable exceptions are studies by Soderstrom and Wittebolle (2013) and McLeod, Elwick and Stratigos (2013). These studies contribute not only to the understanding of context and early language relationship, but also provided insights about infants' language in the context of ECEC settings. In their research, Soderstrom and Wittebolle examined and compared early language production in ECEC and home settings. The study included a comparison of the number of infant utterances spoken by infants (12-29 months) in various situations, such as mealtime,

story reading, organized play and transition, in the contexts of the two broader types of settings. The authors found no significant differences in the overall amount of vocalizations produced at home compared with at the ECEC center. However, variation could be explained with reference to the activity that the child was engaged in. In both home and ECEC settings the highest ranked activity was storytime. In the ECEC setting, outside play was ranked alongside storytime closely followed by organized playtime. In the ECEC context, mealtime produced the least amount of vocalizations. In contrast, in the home setting, personal care produced a high amount of vocalizations, while mealtime produced almost twice as many vocalizations as those produced in ECEC settings. The authors conclude that the context of an activity has an influence on the richness of infants' expressive language output. As various activities have different content and goals, the expressive language produced in these situations varies.

McLeod, Elwick and Stratigos (2013) also investigated infants' expressive language in the two contexts that of home and ECEC settings. The authors contrasted the vocabulary checklists contained within the Macarthur Communicative Development Inventory (Fenson et al., 2007) completed by parents and educators of the infants to compare expressive language use at home and the ECEC center. Results showed that parents reported more items on the checklist than the educators, suggesting that infants may produce more words at home than in ECEC settings. For example, 7 out of 10 parents, but only 3 out of 10 educators reported the word 'book' spoken by the children. So, McLeod, Elwick and Stratigos conclude that the words produced at home and at ECEC settings vary in quantity as well as in content, which leads to the supposition that the differences in the contexts are reflected in the differences in the young children expressive language output.

The discussed above studies showed that infants' expressive language use may, to

some extent, be regulated by the context of their activity. The potential mediating role of the context on infants' verbal output can be also explored through the lens of Super and Harkness' (1986) developmental niche or "the micro-environment of the child" (p.552), and its two of its subsystems. The first subsystem is "the physical and social settings in which the child lives" (p.552). As social environments, ECEC settings are, at heart, group-based; therefore, infants are constantly engaged in one to one and multiparty conversations with numerous peers and adults (Arthur et al., 2007; Kultti & Pramling, 2015). Also, at ECEC settings infants take part in multipurpose interactions in play and routine contexts (Degotardi, 2010). McLeod, Elwick and Stratigos' (2013) research illustrates how the peculiarities of physical environment of ECEC settings, like children wearing hats on the playground, are reflected in educators' reports of infants' language. The authors observed infants may use the words 'hat' and 'outside' at ECEC settings more often than at home.

The second subsystem of the developmental niche is "culturally regulated customs of child care and child rearing" (Super & Harkness, 1986, p.552). It can be argued that at ECEC settings the relationships between educators and children are different to the relationships between children and their family members due to such factors as the level of formality, the number of children in care and established relationships. McLeod, Elwick and Stratigos (2013) observed, for example, that infants vocalize the word 'no' more often at home, than in ECEC settings. Perhaps, infants have the understanding that open rejection or protest is not culturally appropriate in the center, or, as the authors suppose, "it maybe that children have more agency to make choices at home in contrast to the routines of ECEC settings" (p. 180). In both suppositions young children demonstrate the sensitivity of their expressive language to the cultural peculiarities of a given context.

1.5. Communicative Goals and Functions of Expressive Language

The contextual differences, described above, suggests that different activity contexts may motivate infants' to use their developing expressive language capabilities to a greater or lesser extent. It has been argued that language use is driven by certain communicative intentions (Nelson, 2005) and, according to Tomasello (2008), human communicative intentions revolve around collaborative activities, the ultimate purpose of which is achieving common goals. Tomasello suggests that young children use language to achieve three main communicative functions: to request, inform and share. Requesting involves asking for objects and controlling the behaviour of others. Informing is for explanation and referring to objects and events. Sharing characterizes expressing emotions, feelings and attitudes.

Haliday (1969) also examines the expressive language of young children to determine its functions. Unlike Tomasello (2008), Halliday's (1969) system is based on the idea that collaboration is only one of the aspects of the process of construct reality through the language. As a result, Halliday (1969) extends beyond Tomasello's three functions and includes Heuristic or "tell me why" and Imaginative or "let's pretend" functions. Further, Buekelman and Mirenda (2013) propose self-talk as a communicative function described as an intention "to communicate with oneself or to conduct an internal dialogue" (p.10). The importance of self-talk in young children's cognitive development has been presented in Section 1.1.

The significance of the communicative functions associated with infants' expressive language use is highlighted when consideration is given to the contextual differences revealed in the studies by Soderstrom and Wittebolle (2013) and McLeod, Elwick and Stratigos (2013). If infants are producing varying levels of verbal output in particular situational contexts, this suggests that the motivation to use their emerging verbal capabilities may also

differ according to the context. It is, therefore, interesting to note that there are, at present, no studies that have examined the communicative functions inherent in infants' expressive language production in ECEC contexts. Current understandings of infants' communicative functions are restricted to research conducted in home contexts. Given the contextual differences between home and ECEC contexts, an investigation of how and when infants use their developing expressive language capabilities is clearly warranted.

1.6. The Present Study

It is apparent that a gap in research knowledge exists in regards to the communicative functions of infants' expressive language in the context of ECEC centers. Also, it is unknown to what extent the context of concrete activities determines the production of utterances in infants during their day in a childcare center. The present study, therefore, aims to investigate infants' expressive language use with the goal of developing a system of communicative functions for infants' expressive language in ECEC settings. It then aims to examine whether the quantity and function of infants' utterances is associated with the activity context in which they occur. In particular, the research will address the following questions:

1) What communicative functions are associated with infants' produced utterances?

2) Is there relationship between infants' expressive language use and the context of their activities?

Chapter 2: Methodology

2.1. Introduction

In Chapter 1, I reviewed the literature on the importance of expressive language production for infants' development. Also the roles of context and communicative purpose in infants' expressive language were discussed. The identified gap was associated with i) the relation between infants' expressive language and the context of their activity, and ii) the manifestation of this relation in different communicative functions of produced utterances. This chapter provides an overview of the research methodology used to investigate the research questions.

Section 2.2 outlines how the general approach taken in this study is reflected in the chosen methods for the data analysis. Section 2.3 presents the recruitment and data collection procedures performed in the larger Australian Research Council Discovery project "Investigating Educator-Infant Talk and Infant-Peer Interactions in Long Day Care," from which the data analyzed in the present study was drawn. The ethical considerations are also stated in Section 2.3. Section 2.4 gives an overview of the criteria use for the selection of participants and video episodes in the present research. Section 2.5 identifies the data processing steps, followed by the data coding criteria. In the final two sections the qualitative and quantitative analyses are described.

2.2. General Methodological Approach

The present study analyzes data generated from video and audio recordings of children as they spend their normal day in the ECEC center. The method of using video and audio recording became common in field-research, including early childhood studies (Walsh et al., 2007). Gathering non researcher-generated data, in particular video observations of

children in naturalistic settings, can be classified as an anthropological approach, the main feature of which is "the study of people as they go about their everyday lives" (Buchbinder et al., 2006, p.47). This approach can be also defined as microethnography or "microanalysis of films and videotapes of everyday happenings at schools" (Erickson & Wilson, 1982, p. 43).

The anthropological approach allows first-hand insights into the language of individuals (Edmond, 2005), which suited the purpose of this research, that of examining infants' natural use of their expressive language. For this study it was important to bring the focus of the study to the specific context, in this case, the ECEC setting and the activities in which the children were engaged. The participatory learning theoretical approach adopted in this research requires attention to be drawn to how children participate within specific contexts and, in the case of this study, enabled i) the observation of a full range of children's linguistic behavior to produce the full corpus of utterances and ii) the capturing of as much detail of the situation as possible to be able to determine the communicative function of each infant utterance. According to Pole and Morrison (2003) these conditions are best met through an anthropological approach.

To address the research questions, a mixed method approach was adopted. First, a qualitative approach was used to develop categories that represent the communicative functions of the infants' expressive language. This lead to the development of a coding scheme, which was then applied to the transcripts of each infants' utterances. Quantitative analysis was then performed to determine relationships between infants' expressive language, the context of their activity and the communicative functions of their utterances.

The qualitative and quantitative analyses drew on the text created from the corpus of transcribed infants' utterances generated from video observations of these infants. In modern interpretation the term 'text' can be used to define written words as well as oral discourse

(Reifel, 2007). In other studies the text derived from infants' utterances transcription has been analyzed in order to determine if infants could negotiate with peers and educators the meaning of newly acquired concepts (Kultti & Pramling, 2015), or if infants could express their ideas and feelings in co-constructed narratives (Ødegaard, 2006).

In the present study, the text was generated through the process of transcribing the focus infants' utterances. All the units of the transcription were then coded according to certain criteria (for the coding criteria see Section 2.6). Stigler, Gallimore and Hiebert (2000) argue that the process of coding of individual units is consistent with a grounded perspective; attending to the issues related to research aims by "letting the bigger questions suggest themselves as analysis proceeds" (p. 96).

2.3. The Larger Study

2.3.1. Data resource.

The present study uses data collected for the Australian Research Council Discovery project "Investigating Educator-Infant Talk and Infant-Peer Interactions in Long Day Care" being conducted at the Department of Educational Studies at Macquarie University. The Project has generated video and audio recordings of 60 infants, aged 6 to 24 months, attending 60 ECEC centers within and around the Sydney metropolitan area, Australia. Data was collected in the centers randomly selected for 500 ECEC centers held by Macquarie University in a practicum placement database.

Each center was invited to nominate one educator and one focus infant. The research assistants visited each educator 4 times. The first 2 visits were organized for familiarization and collecting information about the educator and the child. During visits 3 and 4, educator and infant interactions during their normal day in the center were video recorded for 3 hours

in total. All video footage was taken with a palm-held camcorder. In the first sessions a focus educator, wearing a portable bluetooth microphone, was recorded. In the second session, a focus infant was filmed.

This study examines the recordings of infants only. To complement the video recording of the focus infant, audio recordings were taken using the LENA (Language Environment Analysis System) system (see http://www.lenafoundation.org/lena-pro/). LENA is a two component system consisting of the Digital Language Processor (henceforth DPL) and recorded sound analysis software developed to produce statistical measures of various aspects of the child's linguistic environment. The DPL is a small wireless digital sound recorder, weighing approximately 50 grams. The DPL is placed in in the chest pocket of a custom made comfortable-to-wear infant vest, which is put on the infant's normal clothing in a position to allow the production of a high quality recording of all the sounds experienced by the infant, as well as all the sounds produced by the infant. In this study, the DPL was used to ensure a high quality of sound recording of the infants' vocalizations, so analysis software from LENA was not used.

Before the analysis was performed, the sound track from DPL and the video footage recorded on the camcorder were synchronized with Movavi Video Editor 3 software. This enabled the use of the external video footage to capture the context and the focus infants' non-verbal behaviours and the clear audio generated by the DLP to capture the infants' vocalizations.

2.3.2. Ethical statement.

The participation of the centers in the Project was voluntary. The directors of the centers, the classrooms educators, the parents of the focus infants and of other children in the classroom signed information and consent forms. All the Ethical requirements of Macquarie

University Human Ethics Committee were met, including the Ethical Approval to use the data for the purposes of this thesis issued to myself (see Appendix A). As the parts of this study included examples of infants' utterances, for ethical and privacy reasons all the focus infants have been given pseudonyms.

2.4. Principles of Data Selection for the Present Study

2.4.1. Number of episodes.

As the present study draws on the video and audio material collected for the larger project, it was necessary to make a selection from 60 available episodes. Each episode lasted for 3 hours and provided observation of 1 focus infant. In total 6 episodes were selected. This number of episodes was determined considering the amount of data sufficient for exploratory findings consistent with the scope of a Masters of Research study. This sample size also allowed the thesis, including the planning, coding, analysis and discussion, to be completed within the 9-month time frame allowed for a Masters of Research study at Macquarie University.

2.4.2. Episodes selection criteria.

The study adopted Flyvbjerg's (2006) sample selection strategy of Random selection of stratified samples. To avoid systematic bias, the focus infants for this study were randomly selected from the larger pool of data taking into account infants' age and gender as the selection criteria. The characteristics of the participants are presented in the following section.

2.4.3. Participants.

The infants selected for this study were 3 girls and 3 boys between 17 to 24 months. The infants attended one of 60 centers in Sydney metropolitan area in Sydney, which represented

a relatively broad spectrum of population. However, the demographic and language background information about the focus infants was not specifically collected. All the infants spoke English during the video recording. The educators working in the focus infants' rooms had various qualifications obtained through a university degree (Early Childhood Teacher) and through other vocational education providers (Diploma in Early Childhood Education and Certificate III).

To ensure coherence with the research goals and validity of the results, the participant selection had three criteria. The first criterion was the age of the children. Infants between 17 and 24 months of age were selected. The low mark was based on the theoretical assumption that by 12 months of age infants typically say their first words (McLeod, Elwick & Stratigos, 2013). So, at 17 months children it was expected that infants would produce an amount of verbal expressions sufficient for the analysis. The high mark was determined by the age when children are usually transitioned from the infants' room to the toddlers' or junior preschool classroom, and also represents the oldest age of children participating in the larger study.

The second criterion was the time of their attendance in the ECEC center in total, and in the proportion to the time they spend at home or in other care giving settings. The infants had all attended their center for a minimum of 3 months, and attended a minimum of 3 days per week. It was assumed that the infants, who met these criteria were familiar with their ECEC center well enough to feel comfortable and express themselves verbally with minimal or no psychological barriers.

The third and final selection criterion was the gender of the infants. In her study Ødegaard (2006) mentions that older boys seem to be more eager to talk. However, to our best knowledge there are no research findings specifically identifying the relation of gender to the ability or motivation to actively produce oral utterances in young children.

Nevertheless, in order to enhance objectivity, an equal gender division was maintained through selecting 3 boys and 3 girls. The pseudonyms, ages and genders of the focus infants are presented in Table 2.1 below.

Table 2.1

Participating Infants

Participants	Age in months	Gender
Sam	21	Male
Tom	19	Male
Jack	24	Male
Ella	17	Female
Lisa	21	Female
Romy	21	Female

2.5. Procedure

2.5.1. Data processing and preliminary analysis.

The preliminary analysis began with systematic and repetitive viewing of the episodes adopting the process proposed by Erickson (1992). The first stage was to watch the episode at regular speed without stopping. This stage allowed uninterrupted overview of the events. During the next viewing, the major constituent parts of the footage were identified, in order to note what activities, for example, block play or book experience, and routine contexts, like mealtime or group time, the focus child participated in. The third stage was to identify aspects and relationships within the major parts of the event to gain a substantive understanding of the activity contexts unfolding in the episode.

Fourthly, the actions of the focus infant were thoroughly observed in order to transcribe this infant's utterances and prepare for the qualitative analysis and coding. The transcription of the utterance excluded vegetative sounds like a laugh or cry, but included all linguistically relative verbalizations, including conventional interjections (for example, uh-oh, wow, ouch) and onomatopoeic sounds (for example, wraf-wraf, ta-da). Norrick (2008) argues that interjections are an indispensible part of spoken language, carrying clear pragmatic functions. Also, interjections and onomatopoeic sounds are included in MacArthur Communicative Development Inventory (Fenson et al., 2007), the document used for assessment of infants' expressive language development (McLeod, Elwick, & Stratigos, 2013). The definition of an utterance and coding criteria are described in the following sections.

2.5.2. Definition of utterance.

In some research investigating infants' vocabulary and expressive language use in

ECEC settings, the unit of analysis was the word or vocalization (McLeod, Elwick, & Stratigos, 2013; Soderstorm & Wittebolle, 2013). In other research, examining the role of educators in early language development in ECEC centers, a co-constructed narrative was analyzed (Ødegaard, 2006; Kultti & Pramling, 2015). This study adopts the notion of utterance as the unit of analysis. The utterance is defined as a natural segment of speech preceded and followed by a distinct pause (Huttenlocher, et al., 2007), regardless of the number of words or clauses it contains and the intonation pattern it represents. The choice of the utterance as opposed to the word is determined by the communicative nature of the utterance - it as a part of a dialogue or a link in a communicative chain (Bakhtin, 1986). The utterance was therefore determined to be an optimal unit of analysis to meet the research objective of describing the relation between the context of infants' activities and their expressive language through its communicative functions.

2.6. Coding

In preparation for the coding the transcription of each utterance was placed in a separate cell of one of Microsoft Excel sheet. The total number of utterances generated across all six focus infants was 1057. Each utterance was then coded to identify its activity content and its communicative function.

2.6.1. Activity context.

The first stage of the coding was to determine activity contexts to use as a basis for comparing the number of infant utterances and the functions that they used in these contexts. As each infant attended a different ECEC center, their activities naturally varied widely, as their experiences reflected both their own preferences as well as the organizational features of their ECEC room. Therefore, there was no pre-determined set of anticipated situations.

Instead, each focus-infant video was watched in order to determine a set of common activities, which could then be compared.

Each utterance was examined separately and the context was described according to the observer's judgment. The descriptions were formulated in one or two words, for example, art experience, book experience and singing. After coding all the utterances in this manner, a pool of activity contexts was revised in order to choose 4 situations for further analysis to examine whether and how the activity contexts and infants' expressive language were related. The four activity contexts, described below, were selected on the basis that they were amongst the most frequent, and that these activity contexts were previously discussed in recent research publications on infant's language and literacy development in the home and ECEC context.

Mealtime. Infants' verbal contribution to mealtime discourse has been the focus of a few recent studies, with the suggestion that mealtime can be a rich context of infant verbal participation (Johansson & Berthelsen, 2013; Kultti & Pramling, 2015; Soderstrom, & Wittebolle, 2013). This study adopted Soderstrom and Wittebolle's (2013) description of mealtime as the situation "when a child was given food while sitting at a table… Mealtime was considered to be over when the child finished eating and/or moved from or was removed from, the location where the food was served" (p.4).

Toy Play was defined as "a child is playing with a toy" (p.4), the description adopted from Soderstrom and Wittebolle's (2013) explanation of the activity context of Playtime. The toys could be traditional and electronic (Sosa, 2016).

Book Experience in this study is defined as infant's engaging with a book. This could take the form of the infant sharing the experience with an adult in a group of peers (Soderstrom & Wittebolle, 2013), a short few seconds shared book reading with an adult

(Honig & Shin, 2001), independent use of books from book area (Norris, 2014) or playing with books as toys (Sosa, 2016).

Talk was the one of the most frequent activity context, and presented as the infants' participation in a conversation. It is a conversation per se, where a dialogue or a polilogue forms the activity context. For example, an infant and an educator may be sitting on the playground bench chatting about the child's grandfather. This activity context emerged during my analysis of the produced utterances in my focus infants and, to my knowledge, has not been included as a specific activity context in previous ECEC language development research.

2.6.2. Communicative function.

The second phase of the analysis involved the coding of communicative functions. In Chapter 1, I proposed that infants' activity may be related to their expressive language use, given that utterances have different communicative functions in various activity contexts. To my best knowledge there is no comprehensive system of infants' language functions that has been generated in an ECEC context, so in this study, a coding system was developed. To achieve this, a qualitative analysis of infants' utterances was performed in the following way.

All the utterances were coded according to the set of four communicative functions derived from the review of literature (see Appendix B for details). The communicative functions were Requesting, Informing, Sharing and Self-Guiding. The category "Other" was reserved for any utterance which did not match any of these four functions. Keller-Cohen (1978) and Bloom (1970) underline the important role of the context in interpreting children's speech. Therefore, the utterances were marked according to their meaning and with the support of the video recordings showing verbal and non-verbal context, including gestures, intonation and the reactions of communicative partners.

The qualitative analysis produced a set of six communicative functions, which are described and explained in detail in Chapter 3. A brief summary is presented here for the purpose of outlining the full method of coding used in the qualitative and subsequent quantitative analysis.

The utterances coded as *Requesting* comprized the meaning of requesting physical objects and controlling communicative partner's behavior (Tomasello, 2008). *Informing* was for the utterances produced to pass information (Tomasello, 2008). The utterances produced to share emotions and attitudes were coded as *Sharing* (Tomasello, 2008). Utterances produced as self-talk involved talk addressed to the self were coded as *Self-guiding* (Beukelman & Mirenda, 2013). More communicative purposes of utterances and other markers of the communicative functions are presented in Appendix C.

At the next stage of the analysis I revised the utterances initially fallen under the category "Other". Scrutiny of the data consistent with this category identified two further categories. The first, coded as *Word Play*, combined utterances produced when the infants appeared to 'play with the language'. The examples of the utterances from this group included nursery rhymes and interjections mimicking the sounds of animals and vehicles. The second category, coded as *Short Reply,* comprized utterances serving as short replies to yes-no questions and mostly consisted of words yes, no and ok.

2.7.2. Reliability.

Halliday (1976) argues that children learn to use utterances to serve multiple functions. While such cases are rare in infancy, in some, infrequent instances, I coded the utterance with the function, which appeared to be dominant. The reliability of the coding criteria for the function of utterances was determined by comparing the coding used in this thesis with the coding of a second coder on a proportion of the transcribed utterances. A

second coder used the qualitative criteria (reported in Chapter 3, Section 3.1) to code utterances from one focus-infant video, chosen at random. Coding was completed on 200 consecutive utterances, comprizing 19% of the full data set. Agreement was determined at 84.3%, yielding a Cohen's kappa coefficient of .81, $p<.001$.

2.8. Quantitative Analysis Procedure

Descriptive and inferential statistics were used to explore relationships between infants' expressive language use, the context of their activity and their communicative functions. In order to illustrate broad individual differences, the total number of utterances produced by each focus infant in the 3-hour observation is presented. Then the number of utterances in each category of communicative functions, as well as in each activity context, was calculated and presented in raw numbers as well as in percentages. Finally, a chi-square test was implemented to determine the relationship between the frequency of functions and the activity contexts. Norris (2014) previously adopted a similar approach to compare the quality of infants' literacy and language development areas in two types of ECEC centers.

2.9. Chapter Summary

This chapter has summarized the methodological approach and procedures applied to collect and analyse data previously collected for a larger study "Investigating Educator-Infant Talk and Infant-Peer Interactions in Long Day Care". Section 2.2 explained how the general participatory learning approach adopted in the present study reflects in the chosen methodology examining not researcher-generated data derived from naturalistic observations. Section 2.3 identified the recruitment and recording collection procedures in the larger study. Ethical Statement was presented in the second part of this section. Section 2.4 explained the criteria of selection of the six episodes to proceed to generating a text compound of the

infants' utterances and coding these utterances. The data processing information was given in Section 2.5 and the coding criteria were identified in Section 2.6 On the basis of the coding qualitative and quantitative analyses were performed. The description of these analyses was presented in the final sections of this chapter. The results of the performed analyses are outlined in the next chapter.

Chapter 3: Results

This chapter presents the qualitative and quantitative analyses of the data collected from video and audio footage of six infants during their normal day in an ECEC center. Section 3.1 presents the results of the qualitative analysis, which aimed to derive the functions of infants' utterances. Section 3.2 presents quantitative findings on i) the infants' individual differences in the number of produced utterances; ii) distribution of the six infants' expressive language functions across the whole corpus of the utterances; iii) the distribution of infant utterances across the four activity contexts (Mealtime, Experience, Toy Play and Talk) and iv) the examination of relationships between the frequency of utterance functions and the four activity contexts. A summary of the findings concludes the chapter.

3.1. Qualitative Analysis

The qualitative analysis considered non-verbal and verbal behaviour to derive six functions: Requesting, Informing, Sharing, Self-guidance, Short Reply and Word Play. In the next section, I define each function and provide data to illustrate these verbal and non-verbal characteristics.

3.1.1. Requesting.

One of the first functions to emerge from the qualitative analysis was that of Requesting. Consistent with the function identified by Tomasello (2008) as requesting help from others, it was also close to Light's (1988) definition of seeking to meet the speaker's needs and wants. Requesting was evident when infants were placing a request for an object through a use of short, order-like sentences. For example, Sam requested a drink by saying 'Water!' while Romy communicated her desire to hold her toy by stating 'Bunnie, Bunnie, Bunnie.'

Halliday (1969) examines the language of children from 5 years of age and refers to the communicative functions of children's interactions as Models. According to the author, the term Models highlights "the many-sidedness of his [child's] linguistic experience" (p.28). According to Halliday there are two Models of request utterances. The first one is Instrumental when requesting physical objects. For example, Jack wanted to get some fruit for his morning tea, and in order to obtain them he said to the educator 'Apple, orange, banana!' In this case Jack was talking to the educator who was holding a tray with fruit pieces, so the demanded object was present. In other instances, like the example below, the meant object was not present:

> In conversation with her educator Ella stated 'Goggles, goggles!' Perhaps due to the absence of any gestural reference to the object shown by Ella the educator understood that Ella's statement was not informing, but a request. The teacher responded accordingly. She explained that the goggles had been left on the playground, therefore, she cannot give them to Ella immediately.

This example confirms Halliday's argument that children demand an object regardless of its immediate presence.

Halliday's (1969) second function is the Regulatory Model, which serves to regulate the actions of communicative partners. An illustrative example was when Lisa wanted her peer to stop crying and told him rather directly to 'Stop!' Lisa's sentence appeared to be aiming to influence the behavior of the listener in order to meet the needs of the speaker, in this case reducing distress caused by the sound of crying. The Regulatory Model therefore represents utterances, which controlled the behavior of others by requesting to start or, in Lisa's case, stop an action. Also, the Regulatory Model was observed to manifest itself in

infants' utterances communicating specific directions of how the listener should act. For example Romy instructed her peer to sit down - 'Sit bottom sit!' Similarly, Jack told his educator to put a toy to a certain place - 'This down there.' These observations are consistent with Halliday's argument that children very early acquire the language of rules and instructions.

There was a number of requesting utterances which can be defined both as Instrumental and as Regulatory depending on the interpretation of their meaning and communicative goals. The examples of such instances include Romy crying out 'Teacher!' and Jack, who seemed to be willing to start a conversation with his educator, so he spoke out 'Tina!' Here Requesting was displayed as calling someone. These utterances can be interpreted as a demand for the person as an object in a closer proximity; alternatively, the utterance could be a request for this person to act in some way, for example establish eye contact with the speaker. Correspondingly, Instrumental or Regulatory Models will be concerned. Therefore 'calling someone' utterances were characterized as Requesting.

Grammatical features of Requesting utterances varied and often also depended on the communicative goal. For example, when requesting objects, infants often used one word sentences like when Romy requested her water bottle by saying 'Bottle' Other times, requests were made for actions, which frequently required a use of more complex grammatical constructions. Tomasello (2008), for example, describes two grammatical combinations: "action + object" and "action + location" (p.252). The examples from the data illustrating these combinations are as follows. Jack requested 'We need some butter!' He constructed an 'action + object' sentence. The communication goal of his utterance was requesting the next ingredient for the dough during a cooking experience. Sam used the other combination

'location + action' to show his peers where it was necessary to collect the toys 'Here pack, pack, pack!'

Apart from constructions based on Noun (object, location) and Verb (action) combinations, a significant number of examples involved interjections, proper names, prepositions and idiomatic (Verb + Preposition) expressions. For instance, Sam requested a peer to stop banging on the table by vocalizing 'Shh!' (an interjection). Lisa expressed her wish to start a conversation with a peer by speaking out his name 'Wayne!' (a proper noun). Jack looked at the educator and at the peers, who were going to have lunch and walking towards the tables, he then said 'Come on!' (an idiomatic expression).

Requests were often interpreted with reference to nonverbal actions and cues from the activity context, as evident in the example below:

> The children were asked to start packing the toys away, as it was time for morning tea. Sam followed the educator to the kitchen corner of the classroom. He stretched his arms towards the educator, maintained eye contact, and with the intonations of obvious impatience said 'Tea! Tea! Tea!' The teachers responded with 'Let's go. Get ready for morning tea now'.

In the above example the utterance consisted of three one-word sentences, and no grammatical markers of requesting were evident. However, the situational factors such as context, intonation, gestures and the reaction of the communicative partner led to the decision of coding Sam's verbalization as Requesting.

3.1.2. Informing.

The second function of infants' expressive language under analysis was Informing. Tomasello (2008) defines Informing as communicating "things about which the recipient is currently ignorant" (p.271). In Halliday's (1969) system, Informing corresponds to his Representational or, as he shortly defines it, "I've got something to tell you" – Model (p. 34). In the present data, Informing was evident in the following examples:

> A. Ella was having lunch. She looked at the bowl placed in front of her, then she looked at her educator and said 'Hot. Hot'.
>
> B. Sam was playing with play dough. He rolled a piece of dough in a shape of a long cylinder, picked it up with his fingers, left the table and ran after an educator crying out to her 'Snake! Snake!'

In Example A, Ella produced her utterances to inform the listener about the fact that the food was still hot. In Example B, Sam was informing the educator either that his creation was a snake or, in the pretend play context, that the snake was near and it could be dangerous. In these both cases the infants were referring their utterances to the elements of their environment, which identifies the first observed reason for Informing.

The second reason to produce Informing utterances, as the qualitative analysis showed, was to inform about own or someone else's current or future actions. For example, when it was time to choose another book to read together, Ella informed the educator 'I'll do it.' She then went to the shelf, picked a book, gave it to the educator and sat next to her. It looked like Ella was ready to listen to the new story. Sam was also looking at the picture book with his educator. The book was about airplanes. Sam pointed at an illustration and told the educator -'It's flying!'

The third aspect of Informing was apparent when the infants answered questions posed by others. The infants' replies were specific and informative. For example,

> A. Sam was informing the educator that he did not wish for more food, answering her question 'Did you have enough?' by saying 'Enough'.
>
> B. Romy was replying the question form her teacher 'Can you show me your bag?' – 'This'.

Fourthly, in some instances, Informing corresponded to Halliday's (1969) Heuristic Model, when the communicative intention was investigating the reality via informing self. Indeed, the infants participating in this study frequently encouraged others to share information by asking questions. For example,

> A. Ella looked at the educator, then pointed at the door to the playground and said with the intonation of a question 'Outside?' The educator replied 'We'll go outside later'.
>
> B. Jack inquired 'Where is the green sheep?' following the plot of the picture book read by the educator for a group of infants during a story time.

According to Nelson (2005), developing a narrative is another important aspect of Informing, as it is by nature a process of passing information. Tomasello (2008) notes that "Informing prototypically involves events and participants beyond me and you and here and now" (p. 271). Children's utterances, the meaning of which is extended beyond 'here and now,' may be regarded as narratives (Dickinson & Tabors, 2002; Ødegaard, 2006). The content analysis of infants' verbalizations showed that in practically all of the cases the utterances were related to the immediate activities or objects, including elements of their

environment, such as present people and toys, craft creations (like dinosaurs from play dough) and picture book characters. There was one exception, when infants talked about family members who were not present or not represented in any kind of objects or images:

> A. Sam was talking to the educator. She asked if someone from Sam's family was wearing glasses. Sam replied 'Glasses. Grandad'.
>
> B. Tom was talking to the educator. They looked at a camera together. Tom said 'Mum, mamma, mamma' He spoke with the intonation, which did not suggest any distress, rather opposite, it seemed to encourage the listener's interest. Perhaps Tom wanted to tell that his mother had a similar camera.

Concerning the formal features of Informing utterances, it was observed that in some cases, like in the example below, Informing utterances had the same qualities as Requesting utterances (see Section 3.1.1).

> Ella was sitting at the table during mealtime. Suddenly someone rang at the door. Ella pointed towards the door and said 'Doorbell! Doorbell!' Then she looked at the educator with an expression of curiosity and seemed to wonder who had come and who was going to answer the door.

Ella's Informing verbalizations were combined with a specific context (a sounding door bell), nonverbal behavior including pointing. Finally, a 'I need to tell you something' intonation together with no evident distress signs or imperative intonations, lead to the conclusion that the utterance has the function of Informing.

3.1.3. Sharing.

Sharing was the third Function. This function occurred in the context of socially oriented interactions and served multiple social purposes, such as i) expressing emotions and attitudes, ii) confirming to social conventions of etiquette and politeness, iii) establishing social closeness and iv) consolidating people in groups (Beukelman & Mirenda, 2013; Halliday, 1969; Light, 1988; Tomasello, 2008). The term Sharing is used by Tomasello to describe the communicative function of sharing emotions and attitudes. A similar communicative purpose of making public one's individuality through verbalizing feelings and attitudes is characterized by Personal Model in Halliday's system of communicative functions. The following examples demonstrate the infants sharing their emotions and attitudes through their expressive language:

> A. Lisa was playing with a teddy bear. She looked at the toy, smiled and said 'Wow' possibly articulating her admiration of the toy.
>
> B. Romy held on a car toy and moved it forward. Then she tripped, dropped the car and said 'Oh, dear!' Romy appeared to be expressing surprise and excitement from the unexpected fall.

Apart from the direct expressions of feelings and attitudes, Sharing also involved producing verbal expressions in accordance with the norms of social etiquette (Beukelman & Mirenda, 2013; Light, 1988). The linguistic demonstration of manners often had the character of a ritual, and by knowing and using ritual ways of greeting, farewell and thanking, infants demonstrated that they confirmed to the customs culturally accepted in the society (Halliday, 1969). The social disposition and ritual nature of Sharing were evident in situations, such as

when Jack greeted his educator with 'Hello Tina!' and Romy expressed her gratitude to a peer who shared a toy with her in the sand pit by saying 'Thank you'.

Another type of Sharing functioned to maintain social relationships including the creation of social closeness (Beukelman & Mirenda, 2013; Light, 1988). Across the presented data set the cases of Sharing for social closeness were evident in the situations when the infants used personal names. For example,

> A. Romy was playing outside. She climbed up and down the slide. A peer joined her. Romy seemed very happy, she smiled, waved her hands in the air and loudly exclaimed 'Olie, Olie, Olie!'
>
> B. A baby sat next to the educator on the mat. They were playing with pompoms. Ella approached them and sat on the mat as well. She looked at the baby, smiled and said 'Albos!' The boy smiled back.

These occurrences were different from the cases when the infants called out a name to request the attention of another (see Section 3.1.1. Requesting). Here the nonverbal behavior of a focus infant showed that the name of other was pronounced in order to express affection and affiliation, and therefore the utterances were more consistent with the function of Sharing.

The final type of Sharing was evident when the infants verbally communicated a sense of belonging to a group. As Halliday (1969) explains, "language is used to define and consolidate the group, to include and to exclude, showing who is "one of us" and who is not" (p.30). According to Tomasello (2008), one of the ways to reassure integrating into a group of other people a speaker use loose grammatical constructions, "How ya doin'?" and "I dunno" (p.297). The informality of these slang-like expressions 'de-crowns' the official tone,

and communicates that a person feels comfortable and accepted in the group. The participating infants practically never used loose forms of grammatical constructions, but this form of Sharing was apparent through their use of specific words, in particular, the 'loose' word 'yeah' in the meaning of 'yes', and 'hey' in the meaning of 'hi'. For example, Jack ran enthusiastically to join a group of peers on the mat for a group time saying 'Yeah!' Romy greeted another child with the phrase 'Olie, hey, Olie!'

There were two common features of Sharing identified in the analysis. Firstly, the infants were observed to produce Sharing utterances in the context of having a communicative partner, as well as during self-talk. Secondly, in both contexts mostly interjections were used. This observation corresponds to Norrick's (2008) argument that emotions are often expressed through emotional interjections:

A. Ella was playing alone. She stepped on a lizard toy and exclaimed 'Eeee!'

B. Sam and his peers were watching a block tower fall down. Sam said 'Oh, no!'

3.1.4. Self-guiding.

The fourth function of infants' expressive language was that of Self-guiding, which reprezented self-talk. The formal features of self-talk were reversely derived from the characteristics of a dialogue by Winsler et al. (2005). Particularly, self-talk was accompanied by contexts of solitary play or an independent exploration. Further, the nonverbal behaviour included an obvious concentration on an object, absence of eye contact and occurred a significant distance from other people. According to Goffman (1978), in self-talk, remarks are addressed to self, as the only intended recipient, or to someone, who is not present. Therefore, the main defining feature of Self-guiding utterances was their communicative

context, particularly the situation when the speaker and the listener were the same person. Self-talk is evident in the following example:

> Sam was sitting at the table modelling play dough. He then took the scissors and started to cut a piece of play dough stating 'Scissors, scissors, scissors'.

The infants appeared to engage in Self-guiding talk for a number of purposes. The first purpose was to describe the environment (Winsler et al., 2003), as evident in Sam's example above. The second purpose related to keeping organized and solving problems (Beukelman & Mirenda, 2013). For example,

> Ella was playing with a plastic letter box. She was moving the door of the box in hesitation. Then she said 'This can close' and shut the box.

According to Winsler et al. (2003), Winsler and Dias (1995) and Berk (1986), children's self-talk is aligned with their concurrent activity, and therefore, is often associated with describing the speaker's own immediate actions. This was the third purpose of Self-guiding function observed across the data set, and the example of labelling one's own actions included Jack, who was walking to the kitchen corner, simultaneously stating 'I go to the kitchen'.

The next purpose of Self-guiding appeared to be to focus the speaker's attention (Diaz, 1992), evident in the following example: Jack found himself in front of the toy oven in the kitchen corner. He said 'What I am cooking?' Jack seemed to be asking himself a question to start concentrating on his new activity. Finally, planning actions, often in the form of a command to self, was also realized through self-talk (Winsler et al., 2005; Winsler et al., 2003). For example,

A. Ella stood next to the box with books. She picked up one and said to herself 'Read this!'

B. Sam was placing the toys to the containers on the shelves while saying to himself 'Pack! Pack!'

3.1.5. Short Reply.

Our data showed that children produced a significant number of utterances that could be classified as Short Replies. The purposes of Short Reply utterances produced by the infants were, firstly, to answer so-called yes-no-questions, and, secondly, to indicate their response to a statement. The examples of answering questions include Ella replying 'No' when the educator asked 'Is baby asleep?' Sam saying 'Yes' to the educator's question 'Shall we read another book?' and Tom responding 'No' to the question 'Can you hop on one foot?'

Another purpose of Short Reply utterances was to react to a statement. For example, the educator stated 'Shoes off' and Romy agreed 'Yeah!' According to Allwood, Nivre and Ahlsen (1992), such reaction can be interpreted as commitment, acceptance, agreement and confirmation. The possibility of different interpretations of the reaction is evident in the following example:

The educator said 'Ice cream one' offering Ella a bib with a picture of an ice cream on it. Ella replied 'Ok' confirming that either she wanted the bib with an ice cream on it or she just noticed this picture.

3.1.6. Word Play.

The final category of infants' expressive language functions to emerge from the qualitative analysis was Word Play. The utterances assigned to this function contained words and interjections including sounds, such as animal sounds, sounds of vehicle conventional,

typical and understandable for all native speakers. Word Play can be illustrated by the following examples:

A. Romy was playing with a peer hiding behind a curtain and saying 'Peekaboo!'

B. Lisa took off her bib after finishing her meal and said loudly 'Ta-da!'

C. Sam was singing alone "Row, row, row, row'.

As evident from the examples above, the utterances served the purpose of experimenting with words by mimicking, singing songs or to produce "the out-loud version of reverie" (Goffman, 1978, p.788). Dramatic games with words, which create a special, imaginary, sort of reality or environment, are characterized by Halliday's (1969) as Imaginative Model. Halliday compares children's linguistic play with building a house of cards, when the cards' face values do not matter. In other words, infants produce utterances to realize an imaginative play scenario:

A. Tom was making dog sounds 'Woof-woof!' while sharing a toy play with an educator.

B. Jack was playing with a car alone and verbalizing 'Bee-bee-bee!'

Also, as evident in the examples above, these infants produced Word Play utterances in the context of interactions with others as well as during self-talk. The latter was also observed, for example, in the study on slightly older children (3-4 years) by Winsler et al. (2003). The utterances produced in the context of self-talk were characterized as Word Play, as opposed to Self-guiding, in two cases; firstly, when an infant was singing or using recognizable songs or nursery rhymes lines, or, in the other case, onomatopoeic and mimicking interjections (Examples A and B above).

Regarding the formal content features, all the Word Play utterances could be divided into two large categories. The first was sound effects, expressed through the use of interjections. For example,

> Lisa is held a lion toy pretending that the lion is roaring 'Warf-warf!'

The second category was conventional words, mostly onomatopoeic (which sound like the sounds of the objects they define) or song lines:

> A. Sam was sitting alone at the craft table and cutting with scissors 'Snip-snip-snip-snip-snip-snip'
>
> B. Sam was singing 'Sleeping bunnies' with a few other children during a group time.

3.2. Quantitative Results

As detailed in Chapter 2, Section 2.6.2, the function categories that were derived from the qualitative analyses were then used to code each infant utterance as either Requesting, Informing, Sharing, Self-guiding, Short Reply, or Word Play. The utterances were also coded with the context in which they occurred. This yielded a data set of 1057 utterances in total, each coded for function and activity context. In this section, I present the results of the quantitative analysis of the frequency of infant utterances. I begin by presenting descriptive statistics related to individual differences in the number of utterances produced by each of the six focus infants. I then use the full data set to examine the frequency of utterances coded as each function and the frequency of utterances within each of the four activity contexts. Finally, I examine relationships between the utterance functions and the activity context.

3.2.1. Children's individual differences in the amount of utterances.

On average, the 6 infants produced 176.33 utterances over the 3-hour period (*M*=104.03). There was, however, broad individual variation in the number of utterances produced. Figure 3.1 shows the total amount of utterances recorded for each child during 3 hours of observation, and illustrates this range. Lisa produced only 57 utterances in the 3-hour period, whereas Sam, at 289 utterances, produced over five times that amount.

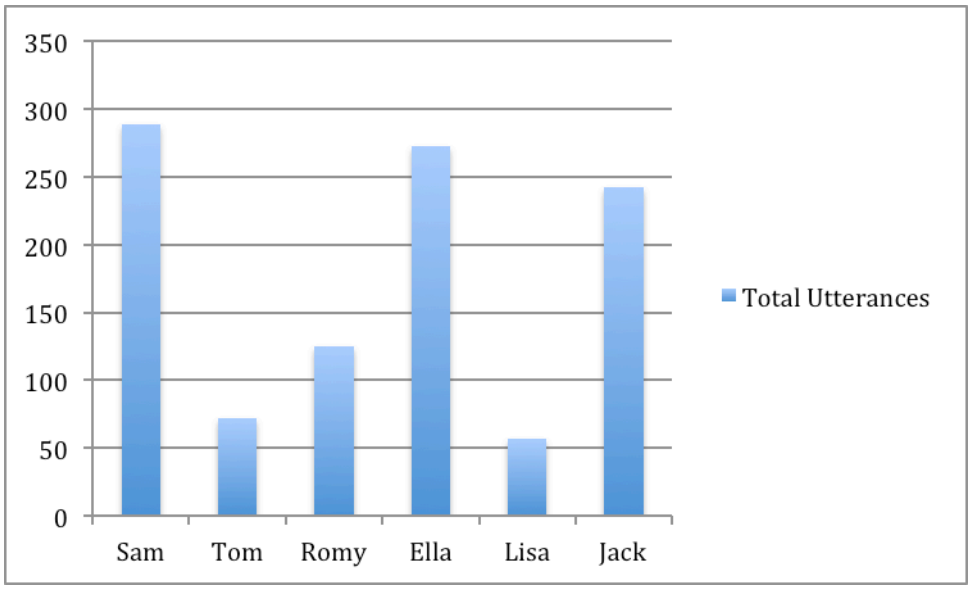

Figure 3.1. Children's individual differences in the amount of utterances.

3.2.2. The function of these infants' utterances.

The second step was to examine the frequency of the six function of utterances across the full 3 hours of observation time. We combined all utterances produced by the infants into one data source to compare these frequencies (See Table 3.1). The most frequent function was that of Informing, comprizing 46.9% of all utterances. Requesting and Sharing were less

frequent, at 19.3% and 14.6% respectively. Self-guiding, Short Reply and Word Play were infrequent, comprizing 5.6%, 5.0% and 8.7% of the data, respectively.

Table 3.1

Frequency and Percentage of Utterance Functions in the Full Data Set

Function	Frequency	Percent
Requesting	203	19.2
Informing	496	46.9
Sharing	154	14.6
Self-guiding	59	5.6
Short Reply	53	5.0
Word Play	92	8.7
Total	1057	100.0

3.2.3. How many utterances occur in the four different activity contexts?

The third step was to examine the percentage of utterances that took place in the four activity contexts (Mealtime, Talk, Toy play and Book Experience). Table 3.2 provides the

percentage distribution and raw frequency of produced utterances in the four activity contexts. Note that of the total data set of 1057 utterances, 223 utterances or 23% did not occur in any of these four contexts. These utterances were coded as 'Other' and were excluded from further analysis. Across the remaining data set of 834 utterances, Toy Play contained the most utterances, comprizing 40.4% of the data. The context of Talk produced the next highest amount of utterances, at just over 25% of the total utterances count. Mealtime and Book Experience were less frequent, comprizing 20.3 and 13.9% of the data respectively.

Table 3.2

Amount of Utterances Produced in the Four Focus Activity Contexts

Activity context	Frequency	Percent of all utterances	Percent of utterances in the four activities
Mealtime	169	16.0	20.3
Talk	212	20.1	25.4
Toy Play	337	31.9	40.4
Book Experience	116	11.0	13.9
Other	223	21.1	
Total	1057	100.0	

3.2.4. Did these infants use expressive language for different purposes in different activity contexts?

The final step was to determine relationships between the frequency of functions and the activity contexts. The result of a 4 (Activity context) x 6 (Function) Cross-Tabulation with Chi-square analysis was significant, χ^2 (15, N=834)=51.54, p<.001. Table 3.3 presents the distribution in percentage and raw counts of utterance functions across the four activity contexts. Between-activity context comparisons revealed a significant difference in the frequency of the function of Request between Mealtime (32%) and Book Experience (11.2%). The percentage of utterances coded as Short Reply occurred significantly more often in Talk (8.5%) compared with Toy Play (3.3%). Informing occurred significantly more often in Book Experience (64.7%) than in the other activity contexts (Mealtime, 42%; Talk, 44.8%; Toy Play, 44.2%). Sharing, on the contrary, occurred significantly less often in Book Experience (4.3%) than in Talk (17.9%) and Toy Play (20.2%). The functions of Self-guiding and Word Play were evenly distributed across the four activity contexts.

Table 3.3

Function and Activity Context Cross Tabulation

Function		Activity context				TOTAL
		Mealtime	Talk	Toy Play	Book Experience	
Requesting	Count	54_a	39_b	69_b	13_b	175
	% within activity context	32.0%	18.4%	20.5%	11.2%	21.0%
Informing	Count	71_a	95_a	149_a	75_b	390
	% within activity context	42.0%	44.8%	44.2%	64.7%	46.8%
Sharing	Count	$20_{a, b}$	38_b	68_b	5_a	131
	% within activity context	11.8%	17.9%	20.2%	4.3%	15.7%
Self-guiding	Count	7_a	13_a	19_a	6_a	45
	% within activity context	4.1%	6.1%	5.6%	5.2%	5.4%
Short Reply	Count	$7_{a, b}$	18_b	11_a	$9_{a, b}$	45
	% within activity context	4.1%	8.5%	3.3%	7.8%	5.4%
Word play	Count	10_a	9_a	21_a	8_a	48
	% within activity context	5.9%	4.2%	6.2%	6.9%	5.8%
	TOTAL	169	212	337	116	834
		100.0%	100.0%	100.0%	100.0%	100.0%

Note: Each subscript letter denotes a subset of activity context categories whose column proportions do not differ significantly from each other at the .05 level.

3.3. Chapter Summary

Chapter 3 presented the results of qualitative and quantitative analyses of the data, which were designed to answer the two research questions. In Section 3.1 the findings of the qualitative analysis were described. These findings showed that infants' utterances could be characterized by six communicative functions – Requesting, Informing, Sharing, Self-guiding, Short Reply and Word Play. The functions were derived from the literature as well as from the qualitative analyses of data of the six infants spending their normal day in ECEC center. Section 3.2 presented quantitative findings showing the individual differences in the number of produced utterances by the six focus infants and, more importantly, the distribution of the six infants' expressive language functions across the four activity contexts (Mealtime, Book Experience, Toy Play and Talk). These results suggest that the relationship between infants' expressive language use and the context of their activity is evident through the extent to which the frequency of utterance functions varies across the four activity contexts. The presented findings are discussed in the following chapter.

Chapter 4: Discussion

The present chapter summarizes the key findings of the study and discusses them in relation to the research questions and the existing literature addressed in Chapter 1. First, the communicative functions system, developed as a result of the qualitative analysis of infants' utterances is reviewed. The next section reflects on the findings contributing to our understanding of the relation between infants' expressive language use and the context of their activities through the notion of communicative functions. The chapter concludes with the implications for practice followed by the limitations of present study and suggestions for further research.

4.1. Communicative Functions Associated with Infants' Produced Utterances

The curriculum document for Australian ECEC centers, the EYLF (Department of Education, Employment and Workplace Relations, 2009), states: "Children interact verbally and non-verbally with others for a range of purposes" (p.39). This stance inspired the first research question – What communicative functions are associated with infants' produced utterances? To answer this question I aimed to describe the purposes for which very young children use their expressive language. As, to my best knowledge, there is no existing system of communicative functions of infants' expressive language in ECEC settings, I employed a qualitative approach to determine and develop a coding scheme of specific communicative functions. This approach permitted the description of both verbal and non-verbal communicative behaviours associated with these functions.

A review of the existing literature on general communicative functions of language informed the development of four functions - Requesting, Informing, Sharing and Self-guiding (for details refer to Appendix C). I coded the infants' utterances with these four

functions, according to communicative intentions they represent. For example, asking for physical objects and regulating the behavior of others were the communicative intentions of Requesting. The description of this function was adopted from Tomasello (2008) and Light (1988). In the process of coding I defined the common features of infants' utterances with in each function. However, not all the utterances fitted the functions derived from the literature. Such utterances were put in the category 'Other' for further examination.

In sum, the qualitative analysis of all infants' utterances allowed this study to extend the system of existing communicative functions. The proposed system of functions reflects, more comprehensively, infants' motivational purposes to use their expressive language within the ECEC context. This system also provides insights on the important role of expressive language in infants' development. As discussed in Chapter 1, Section 1.1, early expressive language is proposed to facilitate infants' development in two main ways. Firstly, producing utterances has the potential to boost cognitive processes, such as new concept acquisition (Werker et al., 2002), categorizing previously learned concepts (Nelson, 2005), applying this knowledge (Papic, 2007), as well as self-regulation and problem solving (Winsler et al., 2003). These processes are likely to be realized through the communicative functions of Informing, Self-Guiding and Word Play, which all appear to represent knowledge and ideas, or to guide cognitive functions such as problem-solving. The second developmental potential involves how infants' expressive language supports social development and relationship building with educators and peers (Hay, 2006; Valloton, 2009). This important aspect of early development appears to be reinforced by Requesting, Sharing and Short Reply, the communicative functions, which occurred mostly in interactive activity contexts.

4.2. Relationship between Infants' Expressive Language Use and the Context of their Activities

The second research question asked whether there is relationship between infants' expressive language use and the context of their activities. In order to answer this question I chose four different activities - Mealtime, Toy Play, Book Experience and Talk (see details in Chapter 2, Section 2.6.1). I then investigated how the occurrence of these communicative functions varied quantitatively across the four activity contexts.

The most vocal activity was Toy Play, attracting the largest number of infant utterances. A prevalence of one certain function in this context was not observed. However, Short Reply was the least present in Toy Play, at only 3.3%. This might suggest that Toy Play did not stimulate much infant-educator interaction that required infant confirmation. Alternatively, it is possible that educators in this context used more open-ended questions or other interactive language supporting techniques that resulted in more expansive responses.

Mealtime was half as vocal in comparison with Toy Play. This result is in line with Soderstrom and Wittebolle's (2013) finding that mealtime is middle-ranked in terms of infant vocalizations in ECEC settings, possibly because eating was the main area of infants' concentration due to their young age. At the same time, asking for food and drinks seemed to be stimulating infants' expressive language use. Therefore, Requesting was proportionally the highest represented communicative function in the activity context of Mealtime.

The proportional representation of the Informing function was the largest in the Book Experience context, comprizing over 60% of all utterances in that context, and attracting significantly more Informing utterances than any other context. This finding is not surprzing in light of culturally accepted practice in Western middle class society to expose very young and often prelinguistic children to book sharing. Van Kleeck and her associates (1996)

examined this practice in home setting. The authors found that shared book reading encouraged infants and their mothers to process information in various ways, including item labelling, event elaboration, motive/cause and evaluation/reaction discussion, referencing notions to the real world, and describing actions and pictures. In the present study, the findings suggest that infants also express information-related views in the Book Experience context, and are possibly responding to the educators' use of information-related talk.

Despite of the apparent value of Book Experience for information processing and, hence, cognitive development in infants in ECEC settings, this activity was the lowest-ranked in terms of total utterance count. This result contrasts with Soderstrom and Wittebolle's (2013) research, showing that storytime produced the highest number of infants' words in ECEC settings. The discrepancy might have occurred due to the various lengths of observations. In the present study the observations were three hours as opposed to the entire day with the associated potential of observing multiple instances of storytime in the research by Soderstrom and Wittebolle. Alternatively, as discussed by Soderstrom and Wittebolle, the present finding may suggest that educators are not sufficiently capitalizing on the cognitively and language-rich and stimulating activity potential of this activity context.

The next activity context examined this study was Talk, defined as infant-educator or peer conversations with no other predominant parallel activity. To my best knowledge, Talk, as a definition of infants' activity context, has not been investigated in previous research. In this study, however, Talk was the second most productive activity context in terms of total number of produced utterances. The social nature of Talk was reflected in the finding that this activity context encouraged the largest proportion of Short Reply utterances. This finding is important as it suggests that educators may tend to ask many closed questions in 'chat'-like interactions with infants despite the on-going recommendations to use more open-ended

questions (Honig & Wittmer, 1982; Norris, 2014). This conclusion is consistent with de Rivera, Girolametto, Greensberg and Weitzman's (2005) research, examining the types of educators' questions addressed to toddlers and preschoolers, where the authors also found a predominance of closed questions asked by educators despite their assertion that those children were capable of answering open-ended question equally well as closed questions. Similarly, Davis and Torr (2016) also found that educators of infants showed a preference for closed, 'confirm' questions in their talk with infants, but provide the important suggestion that, in some instances, such questions can function to gain feedback from relatively pre-verbal infants, which can then support the maintenance of the experience or conversation. When considered with the present findings, their findings suggest the need for more precise analyses of the interactive and pedagogical potential of educator questions and infant responses.

The highest occurrence of Sharing was equally distributed between the contexts of Talk and Toy Play. It is important to note that the function of Sharing involved expressions of emotional responses as well as those reflecting social conventions. These aspects were quite predictable for Talk. Indeed, in this context infants were often observed to express empathy and greet each other. Meanwhile, in the context of Toy Play, Sharing was expressed in two ways. In the first, Toy Play elicited a wide range of emotions, from positive, like admiration to negative, like disappointment. For example, when Ella was playing with a musical post box toy, she responded with 'Oh Wow' when the music started to play. Sam said with disappointment 'Oh, no!' when the tower that he was building fell. The prevalence of these kinds of expressions illustrates how Toy Play, often characterized as a cognitive activity for infants and toddlers (Whiteboard et al., 2009), is also a rich context for emotional expression. The second group of utterances was politeness words including those for sharing toys 'Ta',

'Thank you' and talking to the toys, for example, Ella said to her doll 'Hello, princess!' Degotardi and Pearson (2015) underline that Toy Play or, as they refer to it, play with materials, is a valuable context for creating group cohesion, so these forms of expression may reflect the emerging socialization of individual infants into the norms and expectations of the group.

The communicative functions of Self-guiding and Word Play were evenly distributed across four activity contexts. The function of Self-guiding draws largely on the notion of self-talk. The even distribution of Self-guiding across all the contexts in this study is consistent with research by Winsler and his colleagues (2003) who investigated self talk of slightly older children in the laboratory settings. They found that self-talk was also equally spread across all the experimental activities. Another study by Winsler, Manfra, & Diaz's (2007) examined Vygotsky's idea that self talk enables cognition, particularly problem solving, in very young children. The authors reported that the toddlers in their research could not stop producing self talk while attending a task in an experiment even when instructed to do so and that toddlers performed better when they were instructed to use their expressive language. Taking into account these findings, it may be that each activity context in the present study presented these infants with cognitively challenging components, and that they used Self-guiding utterances as a means of overcoming these challenges.

Similar to Self-guiding, the communicative function of Word Play was also found in almost equal proportion across all the activity contexts. If the reason for this pattern of distribution is coping with cognitive challenges, then it may be supposed that Word Play also supports infants' cognitive development. Infants often express their ideas and newly acquired concepts via available to them linguistic means, such as short onomatopoeic interjections, as their vocabulary is still in the early stages of development. For example, when Ella said

'Bang, bang!' while playing the drum, and her utterances perhaps represented 'I am playing the drum'. The potential of this verbal representation is supported by Singer (1995), who, when discussing young children's practice of verbalizing aspects of their play, argues that they are "hearing themselves use words and practicing them" (p.201). In this way, word play may both reflect children's developing representations as well as support their emerging vocabulary.

4.3. Implications for Practice

One of the major findings of this study was that Informing, the function of expressing and supporting cognitive processes, was the most common function used by the infants across all four activity contexts. The activity context of Book Experience, comprizing structured and spontaneous experiences with books, was a particularly rich context for infants' use of Informing. However, the present study also found that Book Experience produced relatively low number of utterances than the other activity contexts. While Soderstrom and Wittebolle's (2013) found that structured playtime, including book reading, produced the most infants' vocalizations, they also cautioned that book reading may not be as prevalent or as interactive in ECEC contexts as in home contexts. Therefore, the present results suggest that increased attention to the occurrence and interactive quality of book reading in ECEC infant-toddler settings may be needed. This suggestion is supported by Norris (2014), who includes the inclusion and condition of reading areas and resources as a component of the quality of language and literacy environments of infant-toddler rooms in ECEC settings. As little research currently exists that examines the ways in which book reading or book resources are used with very young children in ECEC settings, future research is needed in order to more fully understand the potential and limitations of educational practice in this area.

It is interesting to note that Informing was the most prevalent function of infants' expressive in this study. The EYLF recommends that educators "maintain high expectations of each child's capabilities (p.22), and the infants' relatively high use of language to inform demonstrate that they are contributing both verbally and cognitively to their language environment. At the same time, recent research by Davis and Degotardi (2015) suggests that, in their everyday practice, Australian early childhood educators reported that they notice many nonverbal ways in which infants communicate, yet seem to overlook their verbal contributions. The present finding that infants are capable of using linguistic expression for a range of purposes across a range of contexts may increase educators' perceptiveness of infants' language capabilities, which may then flow on to their language-supporting teaching practices.

This study also contributes to the image of a young child as a confident communicator worthy of high expectations through the findings that infants communicate using their expressive language for a range of communicative functions. The findings suggest that the importance of specific activities, such as guiding contexts for infants' emerging expressive language use, should not be undervalued. Educators can use the knowledge that different activity contexts are associated with different kinds of language use to both support infants' use of that language function and bolster efforts to expand the use of other functions across all activity types. Infants need to be intentionally involved in conversations around the concurrent activity as well as in turn-taking exchanges, and this can be encouraged by educators' careful use of questions and sensitivity to infants' communication attempts and articulated ideas (Norris, 2014). The present study also suggests that, in addition to educator-directed interactions, many activities encourage Self-guiding and Word Play utterances,

which might be overlooked and underestimated 'underground dialogues' (White, 2016), but which should also present important learning value.

4.4. Limitations of the Present Study and Recommendations for Future Research

The first limitation of the present study is its small sample size of six focus infants. It is particularly important to be aware of this limitation in regards to the communicative functions of Self-guiding, Short Reply and Word Play. Relatively small numbers were attributed to these functions possibly to the small sample size. Therefore, caution must be taken when interpreting how these functions were distributed across the activity contexts. Future studies should examine these functions further with in a larger number of participating infants and therefore, a larger overall corpus of infant utterances.

Second, there were large individual differences in the production of utterances between these six focus infants, but the sample size prevents us from determining the reason for these differences. It is possible that individual differences can be explained with reference to personality traits, as some infants are simply more talkative than others (Ødegaard, 2006). Infant age and development are also likely to explain differences in expressive language production. For example, Werker et al. (2002) found the vocabulary size of toddlers to be related to their age, and de Rivera et al. (2005) found that toddlers' and preschoolers' ability to answer different types of questions was correlated to their age and expressive language capability. Further, educators have been found to be more sensitive with older infants (Degotardi, 2010; Gevers Deynoot-Schaub & Riksen-Walraven, 2008), and perhaps this elicits more verbal responses from these older children.

Another possible reason for large individual differences in the six focus infants was the level of encouraged participation. According to Norris (2014) intentional encouragement of infants to participate in meaningful interactions with adults contributes to the literacy

environment and language outcome of infants in ECEC centers. So, the level of verbal participation of individual infants could be a result of the extent to which they were or were not actively encouraged to speak with their educators. The question of individual differences can be address with future, larger studies that examine the extent to which infants' language is influenced by contextual features such as educator practice or ECEC room quality, or whether it is created by unique patterns of participation of different children.

Another limitation of the present study related to the duration of recording. I analysed three hours of audio-video recordings of each child, generating a substantial amount of infant utterances, 1057 in total. However, the three hours comprized a relatively small portion of infants' day in the center, and may have restricted the ability to detect broader differences across contexts. Also, the recordings were not collected at exactly on the same time of the day. Soderstrom and Wittebolle (2013) investigated the influence of the time of day on infants' expressive language, and concluded that "researchers need to be cautious about the possibility of time of the day effects… in comparing across the samples" (p.10).

In addition, this small scale study examined only four activity contexts, which was significantly less than in the study by Soderstrom and Wittebolle (2013). While the qualitative viewing of the entire video recordings indicated some potentially rich contexts with in ECEC settings in terms of expressive language production in infants, the need to choose activities that occurred in all videos for comparison meant that some of these contexts were not included in this study. Therefore, future case study research using all day observations could provide insights on the ways that infants use their expressive language across a wider range of activity contexts.

The final limitation concerns the applicability of the findings to non-Western cultures. For example, the present findings showed that Mealtime was rich in the communicative

function of Requesting. This might not be the case, for example, in certain Eastern European cultures where often silence at Mealtime is valued (Blum-Kulka, 1997). As cultural contexts have been found to influence the rate and processes involved in children's language development (Rogoff, 2003), and given the multicultural reality of contemporary Australian society, future studies are needed to investigate cultural realities related to infants' productive language.

4.6. Thesis Conclusion

This thesis drew on theoretical ideas related to language development and participatory learning to explore the expressive language of infants in the ECEC settings. While exploratory, the findings contribute to a deeper understanding of the ways in which infants use their emerging expressive language abilities in specific contexts. As differences in distribution of communicative functions across activity contexts were observed, the study concludes that infants are sensitive to the context of their activity and produce utterances according to the communicative needs determined by this particular context. This supposition is in line with Soderstrom and Wittebolle (2013) and McLeod, Elwick, and Stratigos (2013), who also reported that infants' activity may well influence their linguistic output and participation.

Caution should be taken in generalizing the findings of this thesis mainly due to its relatively small scale. The study nevertheless provides valuable insights for contemporary early childhood philosophy and pedagogy. The chosen grounded perspective used in the methodology for examining the infants' utterances, highlighted infants' active involvement in interactions occurring in ECEC settings. The findings suggest that infants have the capacity to exhibit agency in own language leaning, and have the potential for confident, unique and beneficial community participation. The findings of this study, therefore, make infants'

expressive language visible and meaningful for early childhood practitioners and other stakeholders. Rethinking the extent, role and potential of infants' expressive language may contribute a great deal to the perpetually shaping image of the very young child as worthy of high expectations within the ECEC setting.

References

Allwood, J., Nivre, J., & Ahlsen, E. (1992). On the semantics and pragmatics of linguistic feedback. *Journal of Semantics, 9,* 1-26.

Arthur, L., Beecher, B., Death, E., Dockett, S., & Farmer, S. (2007). *Programming and planning in early childhood settings.* South Melbourne: Cengage Learning.

Australian Bureau of Statistics (2015). Childhood Education and Care, Australia, June 2014. Retrieved from http://www.abs.gov.au/ausstats/abs@.nsf/0/F924A95E815CD063CA257657001619DE?Opendocument

Bakhtin, M. M. (1986). *Speech genres and other late essays.* (C. Emerson & M. Holquist, Eds.; V. W. McGee, Trans.). Austin: University of Texas Press.

Beller, S. (2008) *Fostering language acquisition in daycare settings: What does the research tell us? Working Paper No. 49.* The Hague, The Netherlands: Bernard van Leer Foundation.

Berk, L. (1986). Relationship of elementary school children's private speech to behavioral accompaniment to task, attention, and task performance. *Developmental Psychology, 22(5),* 671-680.

Berk, L. & Winsler, A. (1995). *Scaffolding children's learning: Vygotsky and early childhood education.* Washington, DC: National Association for the Education of Young Children.

Berthelsen, D. (2009). Paticipatory leaning: Issues for research and practice. In D. Berthelsen, J. Brownlee, & E. Johanson (Eds.), *Participatory leaning in the early years: Research and pedagogy* (pp. 1- 11). London: Routledge

Beukelman, D., & Mirenda, P. (2013). Augmentative and alternative communication processed. In D. Beukelman & P. Mirenda (Eds.), *Augmentative and alternative communication: Supporting children and adults with complex communication needs* (pp. 3 - 17). Baltimore, MD: Paul H. Brookes Publishing Co.

Bloom, L. (1970). *Language development form and function in emerging grammars.* Cambridge: Mass MIT Press.

Blum-Kulka, S. (1997). *Dinner talk: Cultural patterns of sociability and socialization in family discourse.* London: Routledge.

Brownlee, J., & Berthelsen, D. (2009). Beliefs about toddlers' learning in child care programs in Australia. In D. Berthelsen, J. Brownlee, & E. Johanson (Eds.), *Participatory leaning in the early years: Research and pedagogy* (pp.93-108). London: Routledge

Buchbinder, M., Longhofer, J., Barrett, T., Lawson, P., & Floersch, J. (2006). Ethnographic approaches to child care research. *Journal of Early Childhood Research, 4(1),* 45-63.

Cole, M. (2005). Cultural-historical activity theory in the family of socio-cultural approaches. *International Society for the Study of Behavioural Development Newsteller, 47*, 1-3.

Davis, B., & Degotardi, S. (2015). Educators' understandings of, and support

for peer relationships in early childhood settings. *Journal of Early Childhood Research*, *13(1),* 64-78. doi: 10.1177/1476718X14538600

Davis. B., & Torr, J. (2016). Educators' use of questioning as a pedagogical strategy in long day care nurseries. *Early Years, 36(1),* 97-111. doi: 10.1080/09575146.2015.1087974

De Rivera, C., Girolametto, L., Greensberg, J., & Weitzman, J. (2005). Children'sresponses to educators' questions in day care play groups. *American Journal of Speech-Language Pathology,14,* 14–26.

Deacon, H. (2012). Sounds, letters and meanings: The independent influences of phonological, morphological and orthographic skills on early word reading accuracy. *Journal of Research in Reading, 35(4),* 456-475.

Degotardi, S. (2010). High-quality interactions with infants: Relationships with early childhood practitioners' interpretations and qualification levels in play and routine contexts. *International Journal of Early Years Education, 18(1),* 27-41.

Degotardi, S., & Pearson, E. (2014). *The relationship worlds of infants and toddlers: Multiple perspectives from early years theory and practice.* Maidenhead, Berkshire: Open University Press

Department of Education, Employment and Workplace Relations. (2009). *The early years learning framework for Australia: Belonging, Being, Becoming.* Retrieved from http://www.coag.gov.au/sites/default/files/early_years_learning_framework.pdf

Diaz, R. M., & Berk, L. B. (1992). Preface. In R. M. Diaz, & L. B. Berk (Eds.), *Private speech: From social interaction to self-regulation* (pp. v-vi). Hillslide, New Jersey, Hove and London: Lawrence Erlbaum AssociatesPublishers.

Dickenson, K, & Tabors, P. (2002). *Beginning literacy with language.* Illinois: Brookes Publishing.

Dionne, G., Tremblay, R. E., Boivin, M., Laplante, D., & Perusse, D. (2003). Physical aggression and expressive vocabulary in 19-month-oldtwins. *Developmental Psychology, 39,* 261–273.

Duren, T., & Dangel, J. R. (2008). Teacher-involved conversations with young children during small group activity. *Early Years: An International Research Journal, 28(3),* 251-266. doi:10.1080/09575140802393793

Edmond, R. (2005). Ethnographic research methods with children and younger people. In S. Greene & D. Hogan (Eds.), *Researching children's experiences: Approaches and methods* (pp.123-140). London: Sage.

Erickson, F. (1992). Ethnographic microanalysis of interaction. In M. LeCompte, W. Millroy, & J. Preissle, (Eds.), *The handbook of qualitative research in education* (pp. 201-225). New York: Academic Press.

Erickson, F., & Wilson, J. (1982). *Sights and sounds of life in schools: A resource guide to film and videotape for research and education.* East Lansing: Institute for Research and on Teaching, Michigan State University.

Fenson, L., Marchman, V. A., Thal, D., Dale, P., Reznick, J. S., & Bates, E. (2007). *The MacArthur-Bates Communicative Development Inventories: MacArthur-Bates CDI words and sentences*. Baltimore: Paul H. Brookes Publishing. Retrieved from http://www.uh.edu/class/psychology/dev-psych/_docs/MCDI-ShortVersion.pdf

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry, 12(2)*, 219-245. doi: 10.1177/1077800405284363

Gevers Deynoot-Schaub, M.J., & Riksen-Walraven, J.M. (2008). Infants in group care: Their interactions with professional caregivers and parents across the second year of life. *Infant Behavior and Development, 31 (2),* 181–9.

Girolametto, L., Weitzman, E., van Lieshout, R., & Duff, D. (2000). Directiveness in Teachers' Language Input to Toddlers and Preschoolers In Day Care. *Journal of Speech, Language, and Hearing Research, 43(5),* 1101–1014.

Goffman, E. (1978). Response cries. *Language, 54 (4),* 787–815.

Hart, B. (2004). What toddlers talk about. *First Language, 24(1),* 91-106. doi:10.1177/0142723704044634

Halliday, M. A. K. (1976). Functions and universals of language. In G. R. Kress (Ed.), *Halliday: System and function in language* (pp. 26-32). London: Oxford University Press.

Halliday, M.A.K. (1969). Relevant models of language. *Educational Review, 22(1),* 26-37. doi: 10.1080/0013191690220104 Link http://dx.doi.org/10.1080/0013191690220104

Hamre, B. K., Pianta, R. C., Burchinal, M., Field, S., LoCasale-Crouch, J., Downer, J. T., et al. (2012). A course on effective teacher-child interactions: Effects on teacher beliefs, knowledge, and observed practice. *American Educational Research Journal, 49*, 88–123.

Harms, T., Cryer, D., & Clifford, R. M. (2006). Infant/toddler environment rating scale-revised. New York, NY: Teachers College Press.

Hay, D. F. (2006). Yours and mine: Toddlers talk about possessions with familiar peers. *British Journal of Developmental Psychology, 24,* 39-52.

Hedges, H. & Cullen, J. (2012). Participatory learning theories: a framework for early childhood pedagogy. *Early Child Development and Care, 182(7),* 921-940. doi: 10.1080/03004430.2011.597504

Hinde, R. (1992). Developmental psychology in the context of other behavioral sciences. *Developmental Psychology, 28*, 1018–1029.

Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review, 26*, 55-88.

Honig, A. S., & Wittmer, D. S. (1982). Teacher questions to male and female toddlers. *Early Child Development and Care, 9,* 19–32.

Honig, A. S., & Shin, M. (2001). Reading aloud with infants and toddlers in child care settings: An observational study. *Early Childhood Education Journal, 28,* 193–197.

Huttenlocher, J., Waterfall, H., Vasilyeva, M., Vevea, J., & Hedges, L. V. (2010). Sources of variabiluty in children's language growth. *Cognitive Psychology, 61(4),* 343-365. doi:10.1016/j.cogpsych.2010.08.002

Huttenlocher, J., Vasilyeva, M., Waterfall, H. R., Vevea, J. L., & Hedges, L. V. (2007). The varieties of speech to young children. *Developmental Psychology, 43(5),*1062-1083.

Johansson, E., & Berthelsen, D. (2013). The birthday cake: Social relations and professional practices around mealtimes with toddlers in child care. In L. J. Harrison & J. Sumsion (Eds.), *Lived spaces of infant-toddler education and care: Exploring diverse perspective on theory research and practice* (pp. 75-88). London: Springer.

Keller-Cohen, D. (1978). Context in child language. *Annual Review of Anthropology, 7,* 453-482.

Kultti, A., & Pramling, N. (2015). Limes and lemons: Teaching and learning in preschool as the coordination of perspectives and sensory modalities. *IJEC*. Published online:10 January 2015. doi:10.1007/s13158-015-0130-4

LENA (TM) Research Foundation (2014). *LENA Pro*. Retrieved from http://www.lenafoundation.org/lena-pro/

Light, J. (1988). Interaction involving individuals using augmentative and alternative communication systems: State of the art and future directions. *Augmentative and Alternative Communication, 4(2),* 66-82. doi: 10.1080/07434618812331274657

Luff, P. (2009). Looking and listening for participatory practice in an English day nursery. In D. Berthelsen, J. Brownlee, & E. Johanson (Eds.), *Participatory leaning in the early years: Research and pedagogy* (pp. 129-144). London: Routledge.

McLeod, S., Elwick, S., & Stratigos, T. (2013). What infants talk about: Comparing parents' and educators' insights. In L. J. Harrison & J. Sumsion (Eds.), *Lived spaces of infant-toddler education and care: Exploring diverse perspective on theory research and practice* (pp. 173-186). London: Springer.

McMullen, M., & Dixon, S. (2009). In support of a relationships-based approach to practice with infants and toddlers in the United States. In D. Berthelsen, J. Brownlee, & E. Johanson (Eds.), *Participatory leaning in the early years: Research and pedagogy* (pp. 109-128). London: Routledge

Monti, F., & Crudeli, C. (2007). The use of infant observation in nursery (0–3 years). *Infant Observation: International Journal of Infant Observation and its Applications, 10*, 51–8.

Nation, K., & Snowling M. J. (2000). Factors influencing syntactic awareness skills in normal readers and poor comprehenders. *Applied Psycholinguistics, 21*, 229-241.

Nelson, K. (2005). Cognitive functions of language in early childhood. In B. D. ChiHomer & C. S. Tamis-LeMonda (Eds.), *The development of social cognition and communication* (pp. 7-28). Mahwah, New Jersey, London: Lawrence Erlbaum Associates, Publishers.

Norrick, N. R. (2009). Interjections as pragmatic markers. *Journal of Pragmatics, 41,* 866-891.

Norris, D. J. (2014). Comparing language and literacy environments in two types of infant–toddler child care centers. *Early Childhood Education Journal*. Published online: 11 November 2014. doi: 10.1007/s10643-014-0679-9

Ødegaard, E. E. (2006). What's worth talking about? Meaning-making in

toddler-initiated co-narratives in preschool. *Early Years: An International Research Journal, 26(1)*, 79-92. doi: 10.1080/09575140500507892

Papic, M. (2007). Promoting repeating patterns with young children more than just alterating colours. *Australian Primary Mathematics Classroom, 12(3),* 8-13.

Pole, C., & Morrison, M. (2003). *Ethnography for education. Maidenhead:* Open University Press.

Reifel, S. (2007). Hermeneutic text analysis of play: Exploring meaningful early childhood classroom events. In A. Hatch (Ed.), *Early Childhood Qualitative Research* (pp.25-42). London: Routledge.

Rogoff, B. (2003). *The cultural nature of human development.* New york: Oxford University Press.

Rogoff, B., Mistry, J., Göncü, A., & Mosier, C. (1998). Toddlers' guided participation with their caregivers in cultural activity. In M. Woodhead, D. Faulkner, & K. Littleton, (Eds.), *Cultural Worlds of Early Childhood* (pp. 225–249). London: Routledge.

Rosenquest, B. B. (2002). Literacy-based planning and pedagogy that supports toddler language development. *Early Childhood Education Journal, 29*, 241–249.

Rudd, L. C., Cain, D. W., & Saxon, T. F. (2008). Does improving joint attention in low-quality child-care enhance language development? *Early Child Development and Care, 178*, 315–338.

Selby, J. & Bradley, B. (2003). Infants in groups: extending the debate. *Human Development*, *46*, 247–249.

Shin, M. (2010). Peeking at the relationship world of infants and caregivers. *Journal of Early Childhood Research, 8*, 294–302.

Shukla, M., White, K. S., & Aslin, R. N. (2011). Prosody guides the rapid mapping of auditory word forms onto visual objects in 6-mo-old infants. *Proceedings of the National Academy of Sciences of the United States of America, 108,* 6038–6043.

Singer, J. L. (1995). Imaginative play in childhood: Precursor of subjunctive thought, daydreaming, and adult pretending games. In E. D. Pellegrini (Ed.), *The future of Play Theory: A multidisciplinary inquiry into the contributions of Brian Sutton-Smith* (pp.187 – 219). Albany: State University of New York Press.

Soderstrom, M., & Wittebolle, K. (2013). When do caregivers talk? The influences of activity and time of day on caregivers speech and child vocalizations in two childcare environments. *PLoS ONE, 8(11),* 1-12. doi:10.1371/journal.pone.0080646

Sosa, A. V. (2016). Association of the type of toy used during play with the quantity and quality of parent-infant communication. *JAMA Pediatrics, 170(2),* 132-137.

Stigler, J. W., Gallimore, R., & Hiebert, J. (2000). Using video surveys to compare classrooms and teaching across cultures: Examples and lessons from the TIMSS video studies. *Educational Psychologist, 35*, 87-100.

Super, C. M., & Harkness, S. (1986). The developmental niche: A

conceptualization at the interface of child and culture. *International Journal of Behavioral Development, 9,* 545 – 569.

Swingley, D., & Aslin, R. N. (2000). Spoken word recognition and lexical representation in very young children. *Cognition, 76*, 147-166.

Thomason, A. C., & La Paro, K. M. (2009). Measuring the quality of teacher–child interactions in toddler child care. *Early Education and Development, 20*, 285–304.

Tomasello, M. (2008). *Origins of human communication*. England: A Bradford Book The MIT Press.

Van Kleeck, A., Alexander, E. I., Vigil, A., & Templeton K. E. (1996). Verbally modeling thinking for infants: Middle-class mothers' presentation of information structures during book sharing, *Journal of Research in Childhood Education*, *10(2),* 101-113. doi: 10.1080/02568549609594893

Vallotton, C. D. (2009). Do infants influence their quality of care? Infants' communicative gestures predict caregivers' responsiveness. *Infant Behavior and Development, 32,* 351–365.

Vandell, D. & Mueller, E. (1980). Peer play and friendships during the first two years. In H. Foot, A. Chapman, & J. Smith, (Eds.), *Friendships and Social Relations in Children (*pp. 181–208). Chichester: Wiley.

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Vydotsky, L. S., & Luria, A. R. (1993). *Этюды по истории поведения: Примат. Примитив. Ребенок. [Essays on history of behavior. Ape. Primitive. Child]*. Moscow: Pedagogika-Press.

Walsh, D. J., Bakir, N., Byungho Lee, T., Chung, Y., Chung, K. et al. (2007). Using digital video in field-based research with children: A primer. In A. Hatch, (Ed.), *Early childhood qualitative research* (pp.43-62). London: Routledge.

Werker, J. F., Fennel, C. T., Corcoran, T. M., & Stager, S. L. (2002). Infants' ability to learn phonetically similar words: Effects of age and vocabulary size. *Infancy, 3(1),* 1-30.

Wertsch, J. V. (1979). From social interaction to higher psychological processes: A clarification and application of Vygotsky's theory. *Human Development, 22*, 1-22.

Wertsch, J. V., & Tulviste P. (1992). L. S. Vygotsky and contemporary developmental psychology. *Developmenatl Psychlogy, 28(4),* 548-557.

White, E. J. (2016). *Introducing dialogic pedagogy: Provocations for the Early Years.* New York: Routledge.

White, F., Hayes, B., & Livesey, D. (2005). *Developmental psychology: From infancy to adulthood.* Prentice Hall: Pearson.

Whiteboard, P., Coltman, P., Jameson, H., & Lander, R. (2009). Play, cognition and self-regulation: What exactly are children learning when they learn through play? *Educational and Child Psychology, 26(2),* 40-52.

Winsler, A., Manfra, l., & Diaz, R. M. (2007). "Should I let them talk?": Private

speech and task performance among preschool children with and without behavior problems. *Early Childhood Quarterly, 22*, 215-231.

Winsler, A., De Leon, J. R., Wallace, B. A., Carlton, M. P., & Willson-Quayle, A. (2003). Private speech in preschool children: developmental stability and change, across-task consistency, and relations with classroom behaviour. *Journal of Child Language, 30,* 583-608. doi:10.1017/S0305000903005671

Winsler, A., & Diaz R. M. (1995). Private speech in the classroom: The effects of activity type, presence of others, classroom context, and mixed age grouping. *International Journal of Behavioural Development, 18(3),* 463-487.

Winsler, A., Fernyhough, C., McClaren, E.M., & Way. E. (2005). Private speech coding manual. *Unpublished manuscript*. George Mason University, Fairfax, VA, USA. Available at: http//classweb.gmu.edu/awinsler/Resources/PsCodingManual.pdf

Woodward, L. J., & Fergusson, D. (2002). Childhood peer relationships problems and later risks of educational under-achievement and unemployment. *Journal of Child Psychology and Psychiatry, 41,* 191–201.

Yont, K. M., Snow, C. E., & Vernon-Feagans, L. (2003). The Role of context in mother-child interactions: An analysis of communicative intents expressed during toy play and book reading with 12-months-olds. *Journal of Pragmatics, 35,* 435-455.

Appendix A

Ethics Approval

MACQUARIE UNIVERSITY

Office of the Deputy Vice-Chancellor (Research)
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16 May 2014

Dr Sheila Degotardi
Institute of Early Childhood
Faculty of Human Sciences
Macquarie University
NSW 2109

Dear Dr Degotardi

Re: 'Investigating educator-infant talk and infant-peer interactions in Long Day Care'

Thank you for your recent correspondence. Your response was considered by the Executive of the Human Research Ethics Committee (Human Sciences and Humanities).

This research meets the requirements set out in the *National Statement on Ethical Conduct in Human Research* (2007) and your application has been approved.

Details of this approval are as follows:

Reference No: 5201400388

Approval Date: 16 May 2014

This letter constitutes ethical approval only.

The following documentation has been reviewed and approved by the HREC (Human Sciences and Humanities):

Documents reviewed	Version no.	Date
Macquarie University Human Research Ethics Application	2.3	Jul 2013
Correspondence from Dr Degotardi addressing the HREC's feedback		09 May 2014
Educator Survey		
Educator Interview		
Initial Centre Information Letter	2	08 May 2014
Information & Consent Form- Centre	2	08 May 2014
Information & Consent Form- Focus Educator	2	08 May 2014
Information & Consent- Other Educators	2	08 May 2014
Information & Consent Form- Parents of Focus Infants	2	08 May 2014

Information for Parents of Other Infants in the Room	2	08 May 2014
General Information about Focus Child and Infant Room Table		
Room Educator Qualifications & Experience Table		
Permission to Use Images for Conference Presentations or Publications	2	08 May 2014

Please ensure that all documentation has a version number and date in future correspondence with the Committee.

Standard Conditions of Approval:

1. Continuing compliance with the requirements of the *National Statement,* which is available at the following website:

http://www.nhmrc.gov.au/book/national-statement-ethical-conduct-human-research

2. Approval is for five (5) years, subject to the submission of annual reports. Please submit your reports on the anniversary of the approval of this protocol.

3. All adverse events must be reported to the HREC within 72 hours.

4. Proposed changes to the protocol must be submitted to the Committee for approval before implementation.

It is the responsibility of the Chief investigator to retain a copy of all documentation related to this project and to forward a copy of this approval letter to all personnel listed on the project.

Please do not hesitate to contact the Ethics Secretariat should you have any questions regarding your ethics application.

The HREC (Human Sciences and Humanities) wishes you every success in your research.

Yours sincerely

Dr Karolyn White
Director, Research Ethics & Integrity
Chair, Human Research Ethics Committee (Human Sciences and Humanities)

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) National Statement on Ethical Conduct in Human Research (2007) (the National Statement) and the CPMP/ICH Note for Guidance on Good Clinical Practice.

Appendix B

Correlation of Our Six Communicative Functions and the Functions Proposed by Tomasello (2008) and Other Scholars

Functions of infants' expressive language	Description of intentions	Tomasello (2008)	Halliday (1969)	Light (1988)	Beukelman and Mirenda (2013)
Requesting	Control and manipulating the material environment and behaviour, expressing needs and wants.	Requesting	Instrumental Regulatory	Expression of needs and wants	
Informing	Getting information (asking questions), passing on information, explanation and narration.	Informing Requesting	Heuristic Representational	Information Transfer	
Sharing	Showing good manners, direct expression of feelings and attitudes, belonging in the group, initiating and maintaining social contact, conveying to the social etiquette.	Sharing	Ritual Interactional Personal	Social Closeness Social Etiquette	
Self-guiding	Solving problems, remaining organized, tracking actions of self and others.	-	-	-	Self guiding
Short Reply	Reacting to statements and yes-no questions.	-	-	-	-
Word Play	Mimicking, playing with words, singing.	-	Imaginative	-	-

Appendix C

The Six Communicative Functions and Their Description

Function	Content and grammar features	Nonverbal behaviour	Intention	Context and object	Par-tici-pants	Predicta-bility	Challenge
Requesting	Verb+Noun, Noun+Verb, Adverb+Noun, Verb+Verb-ing	Gestures of requesting	Control of behaviour of the communication partner Manipulating of the material environment	Personal needs or wants	1 to 1	Predictable	Close to informing
Informing	Message Narration i.e. indications of time, participants and correlation of events Questions	Pointing Gestures of story-telling. Hesitation pauses	Passing/sharing information Explanation Requesting information	Information	1 to 1 and 1 to many	Not predictable	Close to requesting
Sharing	Interjections Modal verbs Loose grammatical constructions Words of politeness	Emotional gestures	Sharing emotions, attitudes Initiating and maintaining social contact Social etiquette	Social closeness Group activities Emotions Attitudes	1 to 1	Predictable	Close to Informing
Self-guiding	Naming actions Constructive 'inner speech'	Signs of concentra-tion No eye contact Distance from others	Remaining organized Tracking actions of self and others Solving problems	Solitary and parallel play Commenting on actions of self, Independent exploration	Self	Not predictable	Exclude dialogue
Short Reply	Interjections, e.g Yes, Yeah, Nope, No, Ok, Mm, Ah-ah	Eye contact	Replying	Answering yes-no-questions. offers, statements	1 to 1	Predictable	A longer utterance may become informing or Sharing
Word Play	Conventional interjections of play e.g. sounds of animals, cars; songs, poems, reverie, talking to toys and objects etc.	Play actions	Realization of play scenario Mimicking	Imaginary play Play with words	Self, 1 to 1 and 1 to many Predictable		Exclude vegetative sounds

Note: The table is adopted from Beukelman and Mirenda (2013)

Appendix D

Sam's Utterances Coding Sheet - Extract

Utterance	Func. (1=R, 2=I; 3= Sh, 4=Sg; 5=SR; 6=WP)	Context	Notes
Ta Rowrie	3	Talk	
Shh	1	Art Exp	C is requesting a peer to stop banging on the table
Group time	2	Talk	Ed: We are going to have group time. C: Group time!
Here pack pack pack	1	Pack away time	C is telling everybody to pack the toys away
Pack pack	4	Pack away time	C is packing the toys away
Tea tea tea	1	Talk	C is seems to asking for morning tea
Back	2	talk	C is repeating ed's words
Help	1	Care	C is washing hands
Shh	1	Mealtime	
Bird	2	Mealtime	
Sultanas	2	Mealtime	C is repeating ed's words
Happy	2	Mealtime	
Delicious	2	Mealtime	
Rest	2	Mealtime	
Juicy	2	Mealtime	
Juicy	2	Mealtime	
More	1	Mealtime	
Juicy	2	Mealtime	
Yes	5	Mealtime	
Thank you	3	Mealtime	
Piece	2	Mealtime	

Biscuit	1	Mealtime	
Swallow	1	Mealtime	C is repeating ed's request addressed to a peer
Enough	2	Mealtime	Ed: C, did you have enough?
Orange orange	2	Mealtime	
Sit	4	Talk	C is walking to the group time mat
Stories	4	Talk	C is walking to the group time mat
Gina	4	Talk	The name of the ed, who is about to do the group time
Mathew Mathew	2	Pictures	C is saying the name of a peer in the picture - Group time
Claudia	2	Pictures	
Turn away	1	Talk	
Wrist	2	Talk	
Bells bells bells bells bells	1	Object	Ed is handling out wrist shakers - group time (GT)
Shh	6	Singing	Singing along with Ed - GT
Pillars pillars pillars	1	Talk	Caterpillars GT
Help please help please	1	Toy play	C is putting the 'caterpillar' toy on his hand GT 00:45:00
Help help	1	Toy play	
Nyam nyam nyam	6	Singing	S is singing a caterpillar song GT
Arm	2	Talk	GT
Bye bye	3	Talk	Saying bye to the caterpillars
Music	2	Talk	
Baa-baa	6	Singing	GT
Mess	2	Talk	GT
Goats	2	Talk	GT
Yeah	5	Talk	Ed: Shall we read another book?
Snake	2	Book	GT
Mat	4	Transition	All move to the mat
Row row row row row row	6	Singing	Row down the river
Row row row row row row	6	Singing	Children keep singing

Sleeping bunnies	6	Play	GT
Hop hop	6	Play	GT
Rorr rorr	6	Play	GT
Scissors scissors scissors	2	Object	
Raaa	6	Toy play	Gorilla's sound
Gorilla	2	Toy play	
Gorilla gorilla	2	Toy play	
Prints	2	Toy play	At Playdough table
Scissors	2	Object	At Playdough table
Snip snip	6	Object	
Snip snip snip snip snip snip	6	Object	Time 01:06:00
Snip snip snip snip snip snip	6	Object	
Snip snip snip snip snip snip	6	Object	
Snip snip snip	6	Object	
Scissors	2	Object	
Snip snip	6	Object	
Snip snip	6	Object	
Rorr rorr	6	Toy play	C is playing with a tiger toy 01:12:15
Rorr rorr	6	Toy play	
Rorr rorr	6	Toy play	
Snake snake snake	2	Toy play	C made a snake from his playdough
Baa baa baa baa	6	Toy play	Sheep toy
Baa baa baa baa baa baa	2	Toy play	C is giving the sheep toy to the ed.
Sheep baa baa	2	Toy play	
Scissors scissors scissors scissors scissors	4	Object	
Scissors scissors scissors scissors	4	Object	Time 01:17:00

Appendix E

Consent Forms

Dr Sheila Degotardi
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Information and Consent Form: Focus Educator

Name of Project: *Talk and Interactions in the Infant Room*

Dear Educator
We would like to invite you to participate in an Australian Research Council funded study of the talk and interactions that occur in long day care infant rooms. The purpose of the study is to explore

- the characteristics of educator - infant interactions
- how infants interact with each other
- any links between educator characteristics (e.g., qualifications, professional learning and work perceptions) infant characteristics (e.g., age, gender) and the quality of educator - infant interactions.

As the first, comprehensive Australian study of this topic, our ultimate aim is to develop a deep understanding of how educators and infants communicate and to determine the kinds of interactions and contexts that are most supportive of infant language development.

The study is being conducted by Dr Sheila Degotardi, Associate Professor Jane Torr, both of the Institute of Early Childhood, Macquarie University, and Professor Ben Bradley, of Charles Sturt University. All are experienced lecturers and researchers with a particular interest in providing optimal environments for infants and toddlers. Please see our contact details at the top of this letter.

If you decide to participate, you will be asked to allow a trained Research Assistant to video record you for 2 one-and-a-half-hour sessions. The visits will occur at a time to suit you, the other educators and the children. The person doing the video

recording will endeavour to be as unobtrusive as possible and will take measures to become familiar with the educators and infants in the room before the video recording commences. We would like to capture the everyday spontaneous conversations and activities, without you doing anything special or different from your normal activities.

You will be also asked to undertake a short interview, with the Research Assistant, about how you think that infant language development occurs within your room. This will be accompanied by a short, confidential survey on your qualifications, professional learning and perceptions of your work environment.

Please note that all investigators in this project have extensive experiencing researching infants and their educators, so are sensitive to any signs of upset. Should any child become upset by the methods used in this study, we will stop our data collection and will not recommence until we have discussed with you and the educators how best to proceed. Please feel free to contact Dr Sheila Degotardi, using the contact details over the page, should you have any questions.

Any information or personal details gathered in the course of the study are confidential (except as required by law). No individual will be identified in any publication of the results. Only ourselves and our Research Assistant will have access to the data. Participation in this study is entirely voluntary: you are not obliged to participate and if you decide to participate, you are free to withdraw at any time without having to give a reason and without consequence. Your decision regarding participation in this research will not influence any ongoing or future relationship you may have with the Institute of Early Childhood, Macquarie University or Charles Sturt University.

We do hope that you will consider participating in this study. Please feel free to contact us should you have any questions.

Yours sincerely

Dr Sheila Degotardi. Associate Professor Jane Torr. Professor Ben Bradley

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I, ...(*participant's name*) have read *(or, where appropriate, have had read to me)* and understand the information above and any questions I have asked have been answered to my satisfaction. I agree to participate in this research, knowing that I can withdraw from further participation in the research at any time without consequence. I have been given a copy of this form to keep.

Participant's Name:_____
(Block letters)

Participant's Signature: _____Date:_____

Investigator's Name: Sheila Degotardi

Investigator's Signature: _____ Date: 5/1/2015

The ethical aspects of this study have been approved by the Macquarie University Human Research Ethics Committee. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Committee through the Director, Research Ethics and Integrity (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Dr Sheila Degotardi
Macquarie University
Phone 9850 9895
Email:
sheila.degotardi@mq.edu.au

Associate Professor Jane Torr
Macquarie University
Email: jane.torr@mq.edu.au

Professor Ben Bradley
Charles Sturt University
Email: bbradley@csu.edu.au

Information and Consent Form: Educators

Name of Project: *Talk and Interactions in the Infant Room*

Dear Educator
We would like to invite you to participate in an Australian Research Council funded study of the talk and interactions that occur in long day care infant rooms. The purpose of the study is to explore the characteristics of educator – infant interactions as well as how infants interact with each other. As the first comprehensive Australian study of this topic, our ultimate aim is to develop a deep understanding of how educators and infants communicate and to determine the kinds of interactions and contexts that are most supportive of infant language development.

The study is being conducted by Dr Sheila Degotardi, Associate Professor Jane Torr, both of the Institute of Early Childhood, Macquarie University, and Professor Ben Bradley, of Charles Sturt University. All are experienced lecturers and researchers with a particular interest in providing optimal environments for infants and toddlers. Please see our contact details at the top of this letter.

What is involved?
During the course of the study, a researcher will visit your room 4 times, during which time she or he will observe and take video and audio recordings of the talk and interactions that take place. A colleague and one nominated child (with parental consent) have kindly agreed to be the focus of these recordings. Your colleague will be recorded twice, for an hour and a half each time, in order to record video and audio footage of her or his interactions with the children in the room. The focus infant will be video-recorded for up to 4 hours and will wear an item of clothing containing a small recording device which will capture the talk that he/she hears and his/her vocalisations during the course of that day.

As we are trying to obtain as natural footage as possible, it is possible that you may also be captured on the video and/or audio footage. We would like to capture the

everyday spontaneous conversations and activities, without you doing anything special or different from your normal activities. The visit will occur at a time to suit you, the other educators and the children. The person doing the video recording will endeavour to be as unobtrusive as possible and will take measures to become familiar with the educators and infants in the room before the video-recording commences.

Privacy

Any information or personal details gathered in the course of the study are confidential (except as required by law). No individual will be identified in any publication of the results nor will any information be shared with anyone else within your centre. Only ourselves and our Research Assistants will have access to the data. A summary of the findings will be sent to your centre on the completion of the research.

Consent

Participation in this study is entirely voluntary: you are not obliged to participate and if you decide to participate, you are free to withdraw at any time without having to give a reason and without consequence. Your decision regarding participation in this research will not influence any ongoing or future relationship you may have with the Institute of Early Childhood, Macquarie University or Charles Sturt University.

We do hope that you will consider participating in this study. Please feel free to contact Sheila Degotardi using the contact details over the page, should you have any questions.

Yours sincerely

Dr Sheila Degotardi. Associate Professor Jane Torr. Professor Ben Bradley

I, ...(*participant's name*) have read and understand the information above and any questions I have asked have been answered to my satisfaction. I agree to participate in this research, knowing that I can withdraw from further participation in the research at any time without consequence. I have been given a copy of this form to keep.

Participant's Name:_____
(Block letters)

Participant's Signature: _____ Date:_____

Investigator's Name: _____Sheila Degotardi_____

Investigator's Signature: _____ Date:5/1/2015

Dr Sheila Degotardi
Macquarie University
Phone 9850 9895
Email:
sheila.degotardi@mq.edu.au

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Professor Ben Bradley
Charles Sturt University
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Research Project: *Talk and Interactions in the Infant Room*

General Information for Parents

Dear Parents,

This letter is to advise you of an Australian Research Council funded study of the talk and interactions that occur in long day care infant rooms that will be taking place in your centre. The purpose of the study is to explore the characteristics of educator – infant interactions as well as how infants interact with each other. Your centre, and the educators in your child's room have kindly agreed to participate in this Research Project. As the first comprehensive Australian study of this topic, the study aims to develop a deep understanding of how educators and infants communicate and to determine the kinds of interactions and contexts that are most supportive of infant language development. We are therefore very pleased that your centre will directly contribute towards increasing knowledge in this important area. This letter is to provide you with information about the video recording and to ensure that you are comfortable with the procedures that are involved.

The study is being conducted by Dr Sheila Degotardi, Associate Professor Jane Torr, both of the Institute of Early Childhood, Macquarie University, and Professor Ben Bradley, of Charles Sturt University. All are experienced lecturers and researchers with a particular interest in providing optimal environments for infants and toddlers. Please see our contact details at the top of this letter.

What will the research process involve?
A researcher will visit your child's room 4 times, during which time she or he will take video and audio recordings of the talk and interactions that take place in the room. An educator and another child in the room are going to be the focus of these recordings. However, as we are trying to obtain as natural footage as possible, it is possible that your child may also be playing with or near to his/her educator or peer, and therefore may also be captured on the video footage.

The visits will occur at a time to suit both the educators and children. The person doing the video recording will endeavour to be as unobtrusive as possible and will

take measures to become familiar with the educators and infants in the room before the video recording commences. We would like to capture the everyday spontaneous conversations and activities, without your child doing anything special or different from his or her normal activities.

Please note that we all have extensive experiencing researching infants and their educators, so are sensitive to any signs of upset. Should any child become upset by the methods used in this study, we will stop our data collection and will not recommence until we have discussed with the educators about how best to proceed. Please feel free to contact Sheila Degotardi should you have any questions or concerns.

What will happen to the recordings?
The recordings will be used for the purpose of this Research Project only, and will be stored on a password protected computer at the Institute of Early Childhood, accessible only to the Research Team. Your child will not be the focus of this analysis so no identifying details, such as your or your child's name and address are required. The video or audio recordings *will not* be played in any presentations, and in any transcripts used for publications we will always use pseudonyms to refer to the children, educators and your centre. A summary of the findings will be sent to your centre on the completion of the research.

Consent:
If you consent to your child's interactions being captured by this video-recording process, you need take no further action other than to keep this letter for your own records. ***However, if you DO NOT wish your child to be captured on the video or audio footage***, please sign the form below and return it to your child's educator as soon as possible. We will then take all measures possible to ensure that your child is not recorded, and, in the event of such inadvertent recording, will not use this footage in our analysis.

With kind regards,

Dr Sheila Degotardi. Associate Professor Jane Torr. Professor Ben Bradley

Please only sign this section if you DECLINE TO CONSENT.

I, ... *(name)* have read *(or, where appropriate, have had read to me)* and understand the information above and any questions I have asked have been answered to my satisfaction. I **DO NOT WISH** my child to be video or audio-recorded during his/her room's participation in this Research Project. I have been given a copy of this letter to keep.

Child's Name:_____

(Block letters)

Parent/guardian's Signature: _____ Date:_____

Investigator's Name: _____Sheila Degotardi_____

Investigator's Signature:_____ Date: 5/1/2015

The ethical aspects of this study have been approved by the Macquarie University Human Research Ethics Committee. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Committee through the Director, Research Ethics and Integrity (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.