How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?

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Abstract

The intent of this research was to add to the existing literature regarding hearing the voices of pre-verbal early years' children with complex and special educational needs and to inform and contribute to the development of communication and interactive methods for this population. This research will be pertinent to the local and national context and recent legislation that promotes collaboration and participation with children, young people and their families.

The exploratory research took a post-positivist pragmatic position, with elements from a transformative paradigm. This stance allowed flexibility in the way reality can be captured from this heterogeneous and potentially vulnerable population. This mixed-methods research study included a collective case study of children, parents and teaching staff sampled from a special educational needs school in the UK. Various data gathering methods such as eye-tracking software, questionnaires and observations were used.

The findings imply that each child required individualised communication methods and adaptations were informed through observations and parental and teacher information. The findings also indicated a common thread across the case studies, which placed emphasis on adapting and considering the systems around the child, as well as the individual needs of the child themselves. This research will add to the limited, but growing body of literature exploring the barriers to hearing the voices of pre-verbal early years children with complex and SEND, as well as inform Educational Psychology (EP) practice by demonstrating how the views and opinions of this complex population can be included in the decisions that are made about them.

Table of Contents

List of Abbreviations

AAC	Augmentative and Alternative Communication
ASD	Autistic Spectrum Disorder
BESD	Behavioural, Emotional and Social Difficulties
BPS	British Psychological Society
CASP	Critical Appraisal Skills Programme
C-BiLLT	Computer-Based Instrument for Audio-video Language Testing
CoP	Code of Practice
CP	Cerebral Palsy
DECP	Division of Educational and Child Psychology
EAL	English as an Additional Language
EHCP	Education Health and Care Plan
EP	Educational Psychology
EPS	Educational Psychology Service
IPA	Interpretative Phenomenological Analysis
MTHFR	Methylene Tetrahydrofolate Reductase
NAS	National Autistic Society
OFSTED	Office for Standards in Education, Children's Services and Skills
PE	Physical Education
PMLD	Profound and Multiple Learning Difficulties
P-V	Pre-Verbal
QCA	Qualitative Content Analysis
RDLS	Reynell Developmental Language Scales
SCERTS	Social Communication/Emotional Regulation/Transactional Support
SEND	Special Educational Needs and Disabilities
SSPI	Severe Speech and Physical Impairments
TEP	Trainee Educational Psychologist
UEL	University of East London
UK	United Kingdom
UN	United Nations
USA	United States of America
YP	Young People

Tables

Figures

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Chapter 1

Introduction

1.1 Overview of Chapter

In this chapter I discuss my professional and personal interest in the topic of hearing the voice of children and Young People (YP), before outlining the professional and political context for the research and theoretical underpinnings. This chapter outlines the significance of the issue and justification for the research, leading on to its background and purpose. A brief outline of the chosen methodology is explained before considering the potential contribution and implications of the findings.

1.2 The Author's Professional and Personal Interest in Hearing the Voice of Children and Young People

As a trainee educational psychologist, I have an interest in the social world, communication and interaction, individual differences and hearing people's stories. Working with children allows for an insight into the world of a child in the 21st century that as practitioners and researchers may impose or construct our own understanding of, having never experienced it. Helping children achieve their potential and to be happy is at the heart of what drives my commitment to my work and training. To do this I believe adults and professionals need to be able to communicate with children and YP to hear their preferences, thoughts, views and opinions.

For children and young people with more complex needs a co-ordinated assessment process and the new 0-25 Educational Health and Care Plan (EHCPs) may be requested. In England, Educational Health and Care Plans (EHCPs) were introduced in 2014 (Department for Education and Department of Health, 2014) and placed emphasis on children, YP and their families being at the heart of the legislation. The Code of Practice (CoP) encourages professionals to consider the child or young person's views, wishes and feelings, to place importance on their participation in decisions, to provide information and support to enable them to make decisions, and to support them to facilitate their development. Through my Educational Psychology (EP) training I have

listened to professionals and experienced the barriers faced when completing statutory work with P-V children with Special Educational Needs and Disabilities (SEND). It raises the question of how children with difficulties in language, speech or writing with SEND can contribute their own views other than by proxy.

The Children and Families Act 2014 defines a child or young person as having special educational needs, if they have a learning difficulty or disability, which requires special educational provision to be made for them. Children who have been diagnosed with an illness, disability or sensory impairment that needs a lot of additional support for them to live day to day, might be described as having "complex needs" (NHS, 2016). EPs and other professionals who work with children and YP should be able to access a toolbox of effective methods tailored to the individual to enable children to have their voice heard, communicate and be a participant in the decisions made about their own future. Hearing the voices of the children is a requirement in statutory documents (e.g., EHCPs), regardless of age or the special educational need. It may be beneficial for effective methods and approaches that can be appropriately adapted to hear the voices of children with diverse to be widely available and utilised just as frequently and confidently as the cognitive assessments and consultation frameworks.

Historically, children have often been denied agency and possibly deemed vulnerable and incompetent (Komulainen, 2007). Another aim of this research was to have a positive influence on the participants themselves through presenting an understanding of their views and opinions as well as their parents/carers and school staff through practice-based implications from the findings. The research holds an action agenda for reform and maintains the idea of conducting research *with* and *for,* rather than *on,* participants. As a researcher and a trainee EP, I aim to create positive change with those I work with and uphold key axiological beliefs of social justice, respect and beneficence.

Although some academic authors avoid writing in the first person, possibly to create an objective, neutral or uninvolved tone, my involvement and active role in data gathering and analysis is integral so the research will be written in first person to reflect this. The APA Publication Manual (2010) recommends using first person, when appropriate, to avoid ambiguity (McAdoo, 2009).

1.3 Professional and Political Context

To explore the relevance and importance of this research I first consider the current legislation and guidance for practice. EP practice further evolved with the Children and Families Act 2014, which showed the involvement of children, YP and parents to be at the heart of the legislation. This is reflected in the new SEND CoP (Department for Education and Department of Health, 2014) which places emphasis on involving the children or young people and their parents in decision making. For children with significant additional needs, the assessment process may now result in them receiving an EHCP. EHCPs encompass children and YP aged 0 to 25 years old and the document hopes to reflect the child's aspirations for the future, as well as their current needs. This is reinforcing Norwich's (2000) and Stobie's (2002) views of the EPs role is a fluid one, as practitioners need to adapt to meet the standards and demands of new legislation and cope with an increasing population against a changing political and social landscape.

This research includes participants aged four to five years old who are P-V with SEND and explores how professionals can develop their approaches and methods to hear the voices of these children. This is to fulfil our statutory requirement during an EHCP needs assessment, which is to listen to and address any concerns raised by children themselves (Department for Education and Department of Health, 2014). This research is also in line with Articles 12 and 13 of the United Nations (UN) Rights of the Child (The United Nations Convention on the Rights of the Child, 1989), which states that all children have the right to express their views and feelings, to have them considered and taken seriously. The UN also required that adults must facilitate children and YP to have their views, feelings and aspirations elicited and placed at the centre of plans for the future. This condition was reported by Shier (2001) to be "one of the provisions most widely violated and disregarded in almost every sphere of children's lives" (p. 108). The UN convention places responsibility on adults to engage in creative and developmentally appropriate ways of facilitating children's communication (Hill et al., 2016).

In order for this research to be beneficial and constructive in promoting a positive change in practice, it is helpful to consider the research within the local and national context, bearing in mind current issues and priorities.

> "The social and cultural climate remains ambivalent about hearing the voices of children and young people. There is a context that is apparently supportive of asking for children and young people's views, but is often resistant to really hearing and acting on these views" (Hardy & Hobbs, 2017, p.174)

All too often children and YP report that they have not been involved in the decisions affecting their lives, they have failed to be provided with adequate information and they have not understood what is happening to them (DfE, 2015). The SEND CoP requires those who work with children to listen to and address any concerns raised by children themselves. (Department for Education and Department of Health, 2014). Recent research by Children's Trust 'in York (UK), known as YorOK (2015) provides a helpful set of questions that support the challenge and development of exploring effective methods of hearing the voice of the child: "How do we hear the voices of children and YP? How do messages we hear shape our priorities? How have we used these messages to make a difference? How do we know YP feel safe?" (Yor-ok.org.uk, 2015).

1.4 Significance of the Problem

Inclusion in education requires most children to have their needs met in local mainstream early years providers, schools or colleges (Department for Education and Department of Health, 2014). The SEND code of practice promotes high-quality teaching that is differentiated and personalised in order to meet the individual needs of all children. EP input can sometimes be sought after the schools have exhausted all their efforts to support the child, or if the needs of the child are very complex and therefore significantly impacts their ability to learn. SEND can be thought of in four main areas: communication and interaction; cognition and learning; social, emotional and mental health; and sensory and/or physical needs colleges (Department for Education and Department of Health, 2014). Often children with complex needs can have needs across all areas, for example, speech language and communication needs can feature alongside other learning, health, physical or sensory needs.

Children with complex and SEND are an extremely diverse population and include potentially vulnerable children, and for some children verbal communication may be particular challenging; therefore, eliciting the child's views can be difficult. These children are often believed to have little agency, ability to voice experiences or opportunity to participate in society (Simmons & Watson, 2014). The children and

YP's workforce needs to be equipped with greater skills for understanding children's 'voice' in P-V children and YP (Yor-ok.org.uk, 2015). Developing skills in this area can help professionals keep children safe, ensure that they are receiving support they want and need, that they are happy and healthy, as well as helping children achieve their potential. This research will develop methods which allow the experiences of children to be heard and provide insight into the lives of P-V young children with complex and SEND. The research will be carried out in a UK city.

1.5 Educational Psychology Practice

Todd, Hobbs & Taylor (2000) argue that the primary concern of every EP should be how to develop professional practice that genuinely enables the views of children and YP to be heard. Research suggests that hearing the views and opinions of children and YP with SEND and involving them in assessment, planning and review processes are beneficial for several reasons. Some of the advantages include increased motivation; independence; perception of personal control; the development of meta learning skills such as reflection, planning and monitoring; knowledge of learning styles and individual strengths and difficulties; personal responsibility for progress; and a greater personal responsibility for change and progress (Roller, 1998). According to Rose (2005), YP from marginalised groups, such as those with disabilities, have remained on the outside of decision-making processes in education, even though it is quite likely that the outcomes could have a profound impact on their lives.

The aim of this research will be to improve methods that adults and EPs can facilitate communication when working with pre-verbal, pre-school children and to help children communicate their needs and make choices. Furthermore, this research will be an opportunity to use practice-based evidence which hopes to inform evidence-based practice for EPs as well as informing person-centred consultation methods as promoted in the Children and Families Act (2014).

1.6 Background and Purpose to the Research

1.6.1 Terminology

The population of children included in this research are children aged five or younger, who have complex and special educational needs and disabilities needs and may be pre-

verbal or non-verbal. This research uses the term 'complex and SEND' to encapsulate the needs of these children.

In the literature and in practice the terms 'non-verbal' and 'pre-verbal' are used interchangeably for children who do not currently use verbal communication.

"Given that toddlers and preschoolers are chronologically young, the extent to which they may be just *preverbal* (they are delayed in their language now but will use spoken language in the near future) versus *nonverbal* (they do not use spoken language now and will continue to not use spoken language in the near to far future) is unclear" (Tager-Flusberg & Kasari, 2013, p. 2).

The term pre-verbal was chosen for the purpose of this research as it was understood that this may suggest that although the child is not currently verbally expressing him/herself, there is a positive connotation shared that they may, one day use verbal communication (whether primarily or alongside augmentative and alternative communication).

Throughout this research the term 'pre-school' will be used interchangeably with 'early years' to describe the young population of children who are the focus of this research.

1.6.2 Children's Voices

Before discussing the methods of eliciting and gaining children's perspectives, opinions and views, it is important to explain the term 'voice', both as a metaphorical and non-metaphorical term. This section then explores the delicate topic of interpretation and highlights possible issues and pitfalls when eliciting children's voices. Research suggests that there is a continued need to explore issues surrounding how best to elicit and understand the voices of children and for them to have an active role in their lives (Harding, E., & Atkinson, C, 2009).

A child's voice is a means of directing others' attention, not only to where the child is located but also to how they feel. "A child's voice can at times be a powerful event, sometimes heard by unintended hearers in the whole neighbourhood" (Kupfer, 2011, p.102). Listening to children's voices can allow others to recognise their emotional states such as joy, curiosity, satisfaction, boredom, anger or despair (Harcourt, Perry, & Waller, 2011) and, more than gaze, posture and gestures, voice gives value to their

feelings and allows for greater expression. Voice is a basic means for directing others' attention in a social situation and establishing an encounter (Goffman, 1981).

Professionals working with children and YP may view listening to their voices the most important aspect of their role for recognising and understanding the important and worrying issues for those children. The term voice, metaphorically speaking, can prove capable of merging weighty issues and discourses that represent the current landscape of childhood studies, such as children's rights, participation, social inequality, perspectives (Schnoor, 2012) as well as inclusivity or autonomy. There is also the non-metaphorical meaning of voice that relates to aspects of the anatomy that produces vocalisations and sounds. Although these two points differ, they can be closely related. For example, without the physical ability to vocalise and form words children and young people may then need to overcome barriers relating to participation and equality.

Listening to the voices of P-V children and recovering their intended meaning can sometimes require trial and error. The interpretation of gestural pre-linguistic communication can be supported by a joint-attentional frame and shared experiences between both communication partners, as well as an attentive recipient; otherwise the possibilities for interpretation are limitless. Nevertheless, it can be argued that the adults who are most familiar with the child, and therefore have more shared experiences with that child, such as teachers and family members, are the most likely to have the highest degree of emotional involvement (Knight & Oliver, 2007), and a consequence of this factor is a lack of validity (Carpendale and Lewis, 2004). Porter, Ouvry, Morgan & Downs (2001) however, emphasises that staff, family and friends are influential in enabling the communication. Sharing crucial information about methods of communication can allow others to gain a more accurate interpretation of the child's views and wishes. The use of multiple data formats such as observations, conversations and video recordings will facilitate sensitive interpretation and validation of inferences (Grove et al., 1999).

There are dangers that the interpretation of children's voices elicited by researchers can be marked by the mixed motives of the adults involved (Prout & Hallett, 2003). Ethnographers have been criticised for portraying the illusion of being able to convey authentic voices by directly quoting what children say (James, 2007). Roberts (2000) does warn that listening to children can be intrusive and can cause distress if that act of

listening does not mean hearing the child. Therefore, finding the correct methods that suit the needs of each child is fundamental when thinking about gaining the voice and hearing what they have to say.

1.6.3 Communicating with Children with Complex and Special Educational Needs

This section explores how varied and unique children with complex and SEND are and highlights the need for unique and flexible methods of communication. The term 'communication' is defined, and emphasis is placed on the importance of aiding understanding between the communicator and the recipient. It is important to acknowledge the necessity of facilitating the child's communication skills and as well as the methods of communication.

Children with complex and SEND are likely to have significant communication difficulties. They may be P-V and have other disabilities that could affect their ability to react and respond to stimuli in their environment. This population of children is a heterogenic group, and therefore creative adaptations and diverse methods and tools to capture the child's attitudes, views and preferences are required. The unique communication patterns can pose challenges for those working with these children, not only owing to the nature of the communication and its validity and reliability but also because attempting to simplify the medium of communication could lead to misinterpretation (Detheridge, 2000).

Communication is interactive, demanding an exchange between two or more communicating partners (Kraat,1985). The Oxford Dictionary (2016) defines communication as the successful conveying or sharing of ideas and feelings and the imparting or exchanging of information by speaking, writing, or using some other medium. Freely accessible participation in communication may not be available for everyone; this could be due to inclusion or exclusion, enforced engagement and disagreement, sometimes caused by physical or social constraints (Harcourt et al, 2011). The scope for children to feel empowered and have the freedom to communicate depends not only on appropriate methods of communication and sensitive interpretation but also on the power relationships; being a person is the ability to exercise personal power, which allows the children to be influential in the world and achieve outcomes (Detheridge, 2000). Communication is an integral part of daily life experiences and not

a separate and isolated activity for the majority of the population. For children with speech and language impairments, Light, Page, Curran and Pitkin (2008) found that children preferred and value technology that seamlessly integrated them into a wide range of functions, such as social interactions, communication, play, entertainment, telecommunication, art and companionship.

Exploring what children say cannot be possible without taking into account what children hear. The communicator's receptive and expressive communication and cognitive capabilities may affect this exchange, e.g., how well the child understands and processes what is being communicated and their ability to express their own ideas and have them understood. Every child will be at varying points along the progression of their understanding and processing of information and their expressive communication capability. The developmental gap between comprehension and speaking will vary between children, and that gap may be exacerbated by communication difficulties or severe physical disability (Bloom & Lahey, 1978). However, for people communicating with children with complex and SEND, and especially for researchers, the important concern is the reliability of the child's understanding of the referent and the ability to express ideas (Detheridge, 2000). Children may understand utterances before being able to produce them (Dockrell & McShane, 1993), and their expressive communication may not match their cognitive and comprehension abilities (Detheridge, 2000).

Ethnographic research techniques allowed Schnoor (2012) to capture the 'voices' of the pre-school children in their entirety without any abstract notions of the conveyed meanings, taking 'listening' in the literal sense. The Mosaic Approach devised by Clark and Moss (2001, 2005) uses multiple methods to research children's views and require the researcher to use all their senses to capture the many ways in which children communicate. The Mosaic Approach promotes children's agency and equality in their own lives by allowing them to use different mediums to communicate and find a range of communication method that are accessible and appropriate. This work requires time and patience from the researcher to listen to and hear what the child is communicating through picture elicitation, drawings, interviews, audio recording, conversations and touring of the setting.

1.6.4 Technology and Eye-Tracking Approaches

This section discusses the potential importance of technology and augmentative and alternative communication that P-V children with complex and SEND could use to aid interaction and communication.

Sullivan (2009) mentions Disability Theory and challenges a perceived medical perspective, explaining that the disabled community should be able to walk side by side with non-disabled researchers, using the transformative paradigm in the search for social justice. The transformative paradigm can be associated with addressing inequality and injustice in society using culturally competent, mixed methods strategies. Pre-verbal children have the need to express themselves, and researchers and professionals should not assume that even young disabled children with little or no speech have nothing to say (Beresford, 1997). Children with no natural verbal form of expression may have the opportunity to use artificial systems of communication constructed by the adult society commonly referred to as AAC (Augmentative and Alternative Communication) (Falkman, 2002). Opening multiple communication channels between children with little or no speech and their carers seeks to give children choices, allowing them to exert some control over their lives (Komulainen, 2007). There is an increased number of people with significant communication difficulties who require AAC, and there is growing evidence of the potential benefits of AAC for a population of individuals from diverse backgrounds (Light & McNaughton, 2012).

It is reported in the UK that there are 1 in 100 people with ASD (National Autistic Society (NAS), 2016), and in the USA 1 in 68 children are identified to have an ASD diagnosis (Centres for the Disease Control and Prevention, 2016), 30 to 50 per cent of whom are reported to lack functional speech and may benefit from AAC (National Research Council, 2001). The incidence of Cerebral Palsy (CP) in the US is also reported to be increasing (Loyola University Health Systems, 2010), and the current UK incidence rate is around 1 in 400 births (Cerebral Palsy, 2016). CP is now recognised as one of the most common chronic childhood disabilities, with language and speech limitations present in approximately 95 per cent of this population, who may benefit from AAC intervention to communicate (Hustad & Miles, 2010).

AAC is a term used to describe various methods of communication that can enhance or help individuals who have difficulties with speech or communication. Technology can make it possible for children to control a communication aid and provide solutions for those who have difficulty verbalising or have lack of co-ordinated motor function to communicate (e.g., eye tracking, movement of their foot, an eye blink or a movement of their head) Eye-tracking technology has been used frequently with children and adults to measure eye movements and is becoming more prevalent in infant research (Aslin, 2011). When measuring the child's eye tracking, interpretations about psychological processes are made, such as preference for one stimuli over others. Krajbich et al. (2010) propose the theory of Drift–Diffusions which is used in modern psychology and behavioural neuro-science to help explain perceptual decision making, the choice-making process and the relationship between eye tracking, fixation and duration. Whereas, Busmeyer and Townsend (1993), suggest Decision Field Theory to explain the process of decision making. Both theories agree that a child would spend more time looking at the option he/she likes; however, their gaze will move between the options over time, placing value until a decision threshold is reached and a choice is made (Krajbich et al., 2010). There are possible biases that can affect the findings (e.g., Last-fixation bias, Choice bias, Cultural Choice bias, Left Choice bias), which are explained later.

Despite growing research in the area of hearing children's voices there is still a need to develop methods and inform professionals ways of improving communication with young P-V children with complex and SEND. Although there is no current research showing how practitioners can improve methods to listen to children's views and opinions from this population, the various research papers included above and later in the literature review show how using a multi-method approach and including technology can be adaptable and be used to triangulate what is being communicated. This research therefore will add to the growing body of literature discussing the topic of hearing voices of children, inform practitioners and assist in the further development of methods to effectively hear the voice of P-V, pre-school children with complex and SEND.

1.7 Conclusion of Chapter

Throughout the previous pages the importance of the current research has been introduced. This chapter outlined the background to the research including the author's professional and personal interest in the topic, the professional and political context for the research and its theoretical underpinnings. The next chapter provides a critical systematic review of the current literature that is relevant to the current research question.

Chapter 2

Literature Review

This chapter provides details of the literature search. It addresses the research questions, before providing a critical review and an overview of literature related to this area of research.

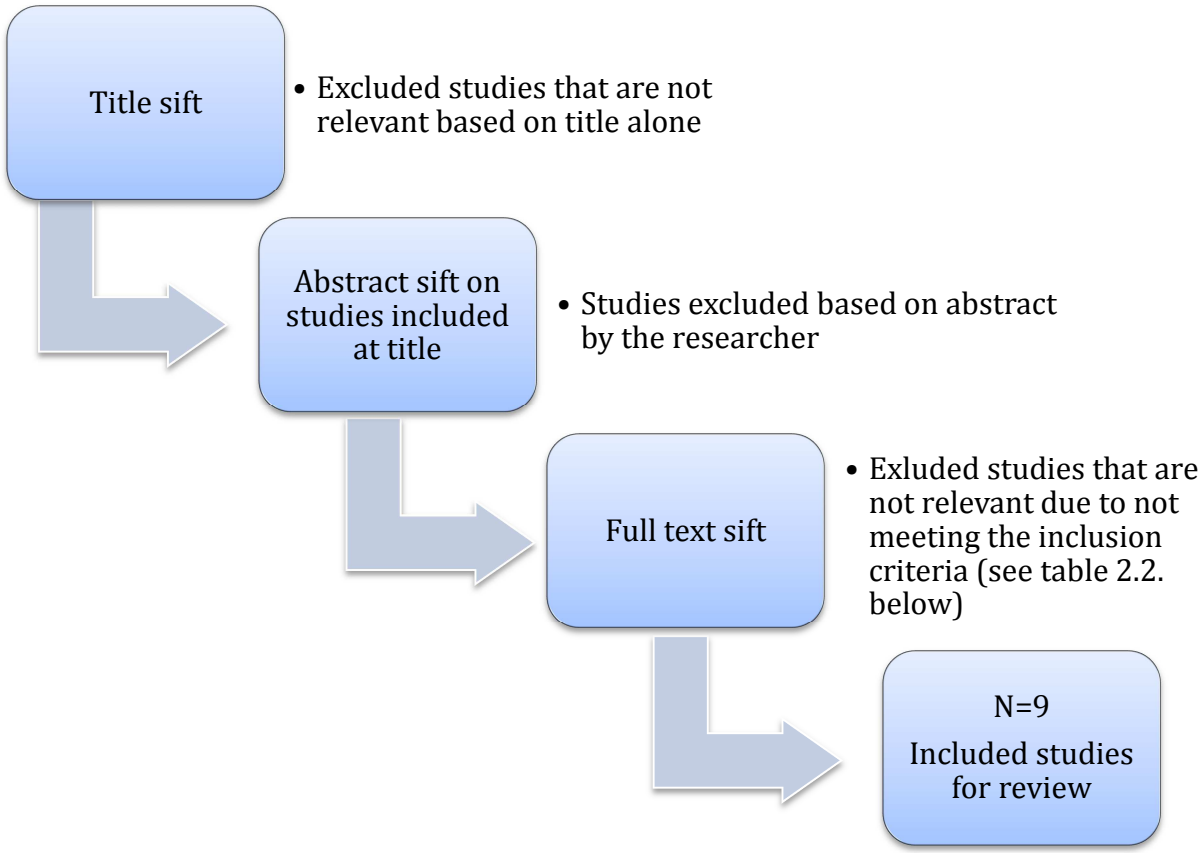
2.1 Literature Search

This systematic review required several sources to be searched and the search terms to be adapted and added to as the search progressed. Additional search strategies, other than electronic database searches, were used. These included checking reference lists of results from the electronic search and searching using additional search engines. Searches were limited to the years 2000 to 2016. The date range was chosen to identify the most current literature and to focus on academic journals after the SEN CoP (2001) had been published, which placed emphasis on children with SEN having a voice in decisions made about them. The search was not limited to the UK, as this research wanted to avoid a western-centric perspective on approaches and methods to capture the voice of the child. In 2017 demographics of countries and cities reflect a greater diversity due to the increased globalisation of the world, which was reflected in the city where the research will be conducted. These changes call for culturally responsive AAC approaches in order to meet the needs of, and be accessible to, the varied populations. A flow chart diagram of the search is shown in Figure 2.1.

An electronic search of the literature between March and July 2016 included the following.

- Electronic databases (Psych info, Child development and Adolescent Studies, Education Research Complete via the host database, EBSCO)
- Reference and citations lists
- Google search

Figure 2.1 - Flow Chart of Systematic Review Search



Studies were excluded based on title, and then abstract, through applying the inclusion criteria. After a review of the full text, nine studies were identified to be relevant to the research question and included in the literature review. None of the studies conducted research or produced findings that were directly related to the current research question. This lack of literature exploring methods and approaches in hearing the voices of P-V pre-school children with complex and SEND indicates a gap in the research and adds weight to the need for this current study.

2.2 Search Criteria

Once a research question had been decided '*How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?'* a brainstorm and thesaurus search was done to produce an exhaustive list of terms for Exposure (Voice), Population (Young children) and Outcome (Understanding). During

the search, more terms were identified and added to the list. The list of terms is shown below (Table 2.1).

Boolean logic was then applied to the electronic database using the Boolean operators AND, OR and NOT depending on how the search needed to be subtracted or multiplied. The search first used Population AND Intervention/Exposure terms, and if the search result was unmanageable to the number of studies, AND Outcome would then be added.

Table 2. 1 – List of systematic literature review search terms

Intervention/Exposure	**Population**	**Outcome**
Voice	P-V	Understanding
Communication	Infant	Interpretation
Interaction	Early years	Confirmation
Dialogue	Non-verbal	Comprehension
Language	Early childhood	Theory formulation
Speech	Pre-school	
Child voice	Infant development	
Verbal communication	Early child development	
Verbal ability	Young children	
Communication skills	Pre-linguistic	
Social interaction	Non-speaking	
Expression	Learning difficulties	
Vocalisation	PMLD	
Oral communication	SEND	
Conversation	Special needs	
Eye tracking		
Eye-tracking		
Technology		
Mosaic approach		
Observations		
Triangulation		
Voice of the child		

2.3 Inclusion and Exclusion Criteria

Papers were excluded or included for review depending on the criteria shown below.

Table 2.2 - Systematic literature review exclusion and inclusion criteria

	Inclusion	Exclusion
Population	• Early-years children • Pre-Schoolers • Infants • Non-verbal • P-V • Special Educational Needs and Disabilities (SEND) • Complex needs	• Adults • Parents/caregivers/teachers experience of having a child with SEND
Exposure	• Communication methods of P-V children • Multi-method approach used to communicate and understand young children	• Speech patterns of children with complex and SEND
Outcome	• Adult's understanding and interpretation of the child's communication • Methods/concerns about confirming the information communicated • Child's comprehension of verbal or visual instruction/stimuli	• Identifying a child's risk of disorders or language delay • Evaluations of interventions • Interactions between P-V children • Evaluating technologies' impact on teaching literacy and English in schools
Context	• Clinical and natural settings • Case studies, case-control and cohort studies • Studies published between 2000-2016	• Reviews • Studies published before the year 2000

2.4 Framework for Critical Analysis of Studies

A guide to analyse the selected studies was used 'Critical Appraisal Skills Programme (CASP): Qualitative Research (2010). This is a checklist which provides significant criteria applicable to qualitative research.

2.5 Analysis and Review of Relevant Studies

Out of the nine research papers, three focused on how children with varied complex needs and limited or no spoken language communicate with others (Balan & Manjula, 2009; Pinto & Gardner, 2014; Sigurd Pilesjö & Rasmussen, 2011). Two studies looked at pre-linguistic communication and explored the use of gestures and pointing during

interaction as well as highlighting the issues regarding accurately interpreting the child's intended meaning (Dimitrova, Moro & Mohr, 2015; Liszkowski, Brown, Callaghan, Takada, & de Vos, 2012). Geytenbeek, Heim, Vermeulen & Oostrom, (2010) explored verbal comprehension in P-V children and evaluating assessment tools, while the final three studies discussed how children's voices are being represented and recorded by professionals (Harding, 2009; Hill et al., 2016; O'Connor et al., 2011).

A table displaying the summary of the chosen studies can be found in Appendix A.

The selected papers in this literature review showed four identified themes, as follows.

1) How children with varied complex needs and limited or no spoken language communicate with others (Balan & Manjula, 2009; Pinto & Gardner, 2014; Sigurd Pilesjö & Rasmussen, 2011).
2) Pre-linguistic communication, exploring the use of gestures and pointing during interaction and issues regarding accurately interpreting their intended meaning (Dimitrova et al., 2015; Liszkowski et al., 2012).
3) Exploring verbal comprehension in P-V children and evaluating assessment tools (Geytenbeek et al., 2010).
4) How children's voices are being accurately represented and recorded by professionals (Harding, 2009; O'Connor et al., 2011).

These four themes will be explored in detail below, and the studies summarised. Firstly, their aims will be briefly presented, and then how each study relates to the current research will be discussed. The studies will be compared, their methodologies will be critiqued, similar and different findings will be reported and finally the findings of the literature will be summarised.

2.5.1 How Children with Varied Complex Needs and Limited or No Spoken Language Communicate with Others (Balan & Manjula, 2009; Pinto & Gardner, 2014; Sigurd Pilesjö & Rasmussen, 2011).

Three studies in the review, conducted in India (Balan & Manjula, 2009), Sweden (Sigurd Pilesjö & Rasmussen, 2011) and in the UK (Pinto & Gardner, 2014) over a six-

year span (aimed to) presented findings relating to the communication functions of children with no verbal language ability.

2.5.1.1 Summary of Aims, Participants and Sample Size

Balan and Manjula (2009) conducted research in India to explore the communication functions in children aged between two and three years (three males and one female) who had been diagnosed with Cerebral Palsy, were quadriplegic and had severe speech and physical impairments (SSPI). The study focused on five identified communicative functions: request, information, instructions, confirmation and denial. This research was to provide further literature in the area of how communication attempts by children in this population can be understood by caregivers. This study is relevant to the current research because it highlights the ways in which P-V children communicate without technology and the frequency of certain communicative functions.

In contrast to Balan and Manjula's research (2008), Sigurd Pilesjö and Rasmussen's (2011) research was centred on how technology could aid interaction and communication of non-speaking children.

Sigurd Pilesjö and Rasmussen's (2011) study was a case study design which aimed to explore interactions between a non-speaking eight-year-old boy and his everyday communicative partners using augmentative and alternative communication (AAC); there was a focus on how the conversations are organised and how turn-taking in conversations develop. The research was conducted in Sweden. The three research questions were as follows.

- Are the participants able to organize their interactions in turns or turn-like units as they are defined in Conversational Analysis?
- Are there different practices for designing contributions to an on-going interaction?
- What are the features of participants' contributions?

This study explained that there has not been much research into how interactions are built up, organized and managed by the participants communicating with AAC. This included the speaking partner as well as the non-speaking partner. This study is relevant to the current research as it is important to highlight issues about patterns of

communication, for all communicating partners, when using AAC technologies. This information can also be helpful when training new staff, as research could help inform them about the communication patterns of children with similar needs.

Similar to Sigurd Pilesjö and Rasmussen (2011), Pinto and Gardner (2014) conducted a case study in the UK to explore how an eight-year-old girl who has a severe physical disability and complex communication needs participates in AAC with her mother. The study placed emphasis on how technology aids turn taking. The aims of this study were clearly explained and were reduced to two research questions as follows.

- How are communicative turns constructed around the use of AAC systems, specifically the iPad, between a child with Athetoid Cerebral Palsy and her mother in the home environment?
- How does the child with complex communication needs participate in iPad aided conversation?

Pinto and Gardner (2014) defined the importance of this research by highlighting the challenge in communicating with children with Athetoid Cerebral Palsy. Pinto and Gardner (2014) explain the need for future research to rise to the challenge and explore communication, interpreting and adaptation methods, not only for the child, but the speaking partner too. This paper underlies the methodological approach of the current research, as the findings explain the importance of considering the context of the interaction and environment in which the child is functioning, as well as considering all forms of communication, e.g., non-verbal as well as the interaction with AAG. The aim of the current research is to include a rich description of the child's environment, communication methods and needs, as well as using multiple forms of communication, whilst also considering the context of that communication.

All three of these papers included participants with a diagnosis of Cerebral Palsy. Pinto and Gardner's (2014) and Sigurd Pilesjö and Rasmussen's (2011) case studies included participants of the same age, eight years old, while Balan and Manjula (2009) worked with four cohorts who were aged between two and three years. The details of the recruitment process, the reporting of the details and demographics varied among the papers. Pinto and Gardner (2014) did not explain the recruitment strategy or reasoning for choosing a case study or the thoughts behind recruiting this particular dyad (child–

mother). Balan and Manjula's (2008) selected participants who attended a children's centre that provided services for children with complex and SEND. Balan and Manjula (2009) present a table with limited information, i.e., age, gender and diagnosis of the four participants. The children's communication partners were their mothers in this case, and details of age and educational background were presented. Similar details of participants were explained in Sigurd Pilesjö and Rasmussen's (2011) and Pinto and Gardner's (2014) studies. Both Balan and Manjula (2009) and Sigurd Pilesjö and Rasmussen (2011) tested or looked at previous reports on their participants to check for any auditory and vision impairments, as well as their language ability. Balan and Manjula (2009) tested for participant receptive language ability using the Receptive Emergent Language Scale. However, this scale was normalised on a sample of children in the USA with disabilities and possible language difficulties, not on non-verbal children, and concerns regarding the validation of the assessment were not mentioned. Sigurd Pilesjö and Rasmussen (2011) tested for the comprehension abilities of the children using a Språkligt Impressivt Test, a Swedish normed test of language comprehension

All three studies use mothers as the communication partners and this could be due to their status as primary caregiver hence, they hold more of the previously identified important factors in communicating with non-speaking children: shared knowledge and common ground. These papers highlight the importance of the communication partner when interpreting the child's voice and facilitating structured conversational patterns. As Pinto and Gardner (2014) suggest, research could challenge and explore communication, interpreting and adaptation methods, not only for the child, but the speaking partner too (Pinto & Gardner, 2014) and not only the mother but other key family members, educators and friends.

2.5.1.2 Design, Data Collection and Data Analysis

Two out of the three studies used a qualitative design (Pinto & Gardner, 2014; Sigurd Pilesjö & Rasmussen, 2011), whilst Balan and Manjula (2009) used a qualitative methodology. All three studies used video to record their data, and both case studies (Pinto & Gardner, 2014; Sigurd Pilesjö & Rasmussen, 2011) used Conversational Analysis to produce their findings, while Pinto and Gardner (2014) used an independent coding method. These were appropriate designs to answer the different research

questions. Balan and Manjula's (2008) qualitative study took place in a clinical setting, and a semi-structured model was used, in which the researcher would instruct the mother how she should interact with her child to increase the occurrence of communicative function. The researcher videoed the dyads playing on three separate occasions over one month. Each video recording was fifteen minutes long, and each interaction was coded and counted. The author does not explain the possible effects that the semi-structured model and the presence of the researcher may have had on the interactions, although they do attempt to explain that a few sessions of feeding, physiotherapy/infant stimulation and play were videoed to familiarise the dyad with the recording procedure and to desensitise them to the physical presence of the investigator and help overcome shyness/fear. Due to the clinical setting and the instructed play, the reliability of the findings may be called into question, and it may not be possible to replicate them in a naturalistic setting.

Sigurd Pilesjö and Rasmussen (2011) used a qualitative methodology to illuminate the communicative actions and shows how turn taking and the organization of communication develops. Video recordings were used to capture the data, both vocalizations and non-spoken internationally relevant action. These were transcribed and analysed using Conversational Analysis. The recordings were from three different settings and with three different communicative partners: 1) Home with mum, 2) Home with personal assistant and 3) At his mainstream school with his classmate. The settings were naturalistic and the participants were not instructed in their conversational topic. The case study design lends itself to providing a richer data set and in-depth analysis of the data, therefore providing more reliable findings but less generalisability.

Similarly, Pinto and Gardner's (2014) qualitative research design used videos that were recorded at home by the mother in a naturalistic environment, without time restrictions or instructions. The mother video recorded moments that she believed were complete conversations/interactions with her daughter at home, so researcher bias was reduced. However, the author did not discuss the possible bias and influences or their own relationship or role in formulating the research questions and analysing the data. There were four transcripts that were analysed separately; all four in total equalled two minutes and thirty-five seconds. This suggests limited generalisability of the findings,

and the validity of the findings are questionable due to the lack of description about multiple researchers and member-checking the transcripts.

The level of depth and detail given to the data analysis the researchers used to arrive at their findings varied. Both Pinto and Gardner (2014) and Sigurd Pilesjö and Rasmussen (2011) used examples of their transcripts in their respective papers to support their (methodology and) findings. However, Balan and Manjula (2009) explain in some detail the level of analysis and inter-rater reliability.

2.5.1.3 Findings and Limitations

The main findings from these three studies indicate that a large number of communication functions can be naturally elicited through non-verbal communication, rather than technology-aided communication (Balan & Manjula, 2009). They suggest that so far, technology systems do not seem to be able to do all the jobs that the human communication partner can do (Sigurd Pilesjö & Rasmussen, 2011). The communication partner is highlighted to play a major role in forming the structure of interactions and the turn taking during communications (Sigurd Pilesjö & Rasmussen, 2011). These findings are echoed in Pinto and Gardner's (2014) study, which emphasises the importance of considering the context in which the child is functioning and all forms of non-verbal communication, as well as the interaction with AAC. The findings also highlight the importance of supporting the other communicator (the adult).

The findings of all the studies were not described in relation to current policies or practices. However, they did all offer areas for future research. Pinto and Gardner (2014) concluded that the findings of their study could be used for deciding the rehabilitation strategies for further communication development. Sigurd Pilesjö and Rasmussen (2011) described how their findings could have clinical implications in terms of training new staff who may be working with AAC. They argue that awareness of how conversations are organised can help develop confidence and turn taking; and the speaking co-participant can add to the efficiency of the interaction. In Sweden, there is an interpreter between the speaking and the non-speaking participants, and the findings may clarify that role further. For clinicians, the findings indicate that the interventions should focus on both the non-speaking participants and the speaking.

Pinto and Gardner's (2014) findings were also not placed in the current context or in relation to current policy (i.e., CoP) or discussed in terms of how they could be transferred to other populations. The authors did, however, propose new areas of research. Pinto and Gardner (2014) suggest future research could focus on clearly defining communicative competence of non-speaking children with differing AAC systems and the development of reliable and valid clinical assessment procedures to identify specific interaction strategies and interventions. There is also a focus on supporting the speaking communicator. Pinto and Gardner (2014) highlight that, if the goal for the aided speaker is to develop communicative competence and independence then, to be effective, early intervention must target the interaction strategies of not only the child but also family members. This research is in line with other research that suggests shared experiences and joint-attentional frames aid communication and positive interactions, as well as improving accurate interpretations of the message (Knight & Oliver, 2007).

2.5.1.4 Researcher Reflexivity and Future Research

A criticism of these three studies is that there was little critical examination on the researchers' part regarding their own role, motivations, influences and potential biases that could have impacted upon their studies, in terms of research questions, methodology, data collection and analysis. Balan and Manjula (2009) are the only ones to mention allowing the mother–child dyads to visit the clinical setting several times in order for them to become used to the researchers' presence and the environment. The researchers could have described their prior experiences in using Conversational Analysis, as this method is grounded in the competence of the researcher, which could make conducting research using Conversational Analysis in different cultural settings more difficult. This could also be true for analysing AAC conversational data, if the researcher is not familiar with the methods. The researcher will shape and change the 'true' findings by merely having a presence and by imposing their motivation for conducting the research in the first place. This could impact upon what is identified as significant or noteworthy in the author's analysis and findings. Therefore, transparent reflective thinking could have been beneficial and shown awareness of the researchers' impact.

2.5.2 Pre-Linguistic Communication - Exploring the Use of Gestures and Pointing During Interaction as well as Highlighting the Issues Regarding Accurately Interpreting the Child's Intended Meaning (Dimitrova et al., 2015; Liszkowski et al., 2012)

The studies included below were conducted in the Netherlands (Liszkowski et al., 2012) and in Switzerland (Dimitrova et al., 2015). Both explore pre-linguistic communication: gestures, pointing and interpretation of these actions across different cultures.

2.5.2.1 Summary of Aims, Participants and Sample Size

Both studies used quantitative designs (with) videos to record the interactions.

Liszkowski et al. (2012) conducted a study in the Netherlands which aimed to show evidence for pre-linguistic gestural communication with emphasis on index finger pointing, and investigate whether this gesture is universal or culturally influenced. Although there is a range of papers on pre-linguistic pointing, most of the research uses participants from a Euro-American cultural background and questions the universality of pre-linguistic communication skills. This paper is relevant to the current research as it explores the possible cultural differences to be considered when working with young children who are P-V, and it also highlights the importance of accurate interpretation of the message, as this may differ depending on cultural backgrounds. Ninety-six dyads (mother – child) were included from seven different cultures, and the children's ages ranged from nine to fifteen months old. Liszkowski et al. presented a table detailing each participant's gender, age, ethnicity, family size, language spoken, socialisation goal, geographical area of their home and their family's occupation. The participants and the cultural backgrounds were chosen based on those the various researchers knew from their field sites.

Dimitrova et al.'s (2015) longitudinal study was conducted in Switzerland and explains that, although there is research on the role of caregivers in early communication development, little is known about how caregivers attribute a specific communicative function to infants' gestures. The aim of this study was to examine if the caregivers rely on the knowledge about the referent that is shared with infants, to interpret what

(communicative function) the infants wish to convey with their gestures. The participants were six eight-month-old girl and mother dyads who were recruited from day care centres in a Swiss city. The primary language in all families was French. The children's families constituted a heterogeneous mix in terms of income, ethnic composition and education. This study is relevant to the current research, as it highlights the importance of observing P-V gestures and movements when communicating and interacting with pre-linguistic children. It also demonstrates the importance of shared experiences in terms of increasing accurate interpretation of gestures and the importance of the caregiver and child relationship.

Both studies included similar participants in terms of age and their maternal caregivers as well as their absence of SEND diagnoses. However, Liszkowski et al. (2012) used a far larger sample size. Neither study provides details about the recruitment process. Liszkowski et al. mention that their participants were recruited because they showed interest in becoming involved in the research. Due to the aim of the research, Liszkowski et al. (2012) states the cultural variety in their sample population, and Dimitrova et al.'s (2015) study mentions that the participants are a heterogeneous mix in terms of ethnic composition, although they were all French speaking. Both these papers not only highlight the issues involved when interpreting children's messages and intentions through pointing and gestures, they also emphasise the importance of cultural differences and the possible impact cultural behaviours may have on pre-linguistic communication.

2.5.2.2. Design, Data Collection and Data Analysis

The preferred design for both studies was a quantitative, semi-naturalistic design. The studies used video recordings to capture the data, and the data in each study were analysed using ELAN software to code the non-verbal gestures.

Liszkowski et al. (2012) used semi-naturalistic elicitation using video recordings in a relaxed environment, where the participants were familiar with the researchers. Each dyad was asked to stay in a room, where there was a wall filled with pictures, colours and textures. The video recordings were used to capture the number of pointing actions and other non-verbal gestures between mother and child, rather than seeking to interpret the meaning behind certain actions. The author explained that this method was used as it

had previously been successful in eliciting uninstructed, spontaneous pointing (Liszkowski & Tomasello, 2011). Data analysis was comprehensive and rigorous. The video recordings were digitised, synchronised and analysed by one trained assistant using ELAN: video annotation software developed by the Max Planck Institute for Psycholinguistics (Sloetjes & Wittenburg, 2008) that allows frame-by-frame video analysis. The assistant researcher codes all points, eye tracking and other non-verbal gestures of the child and mother.

Dimitrova et al. (2015) explored infant gestures in terms of the number of gestures produced and whether caregivers interpreted those gestures as conveying a clear communicative function. The quantitative methodology in the study allowed for interactions between child and parent to be videotaped and coded. The researcher recorded five-minute interactions in the participant's home. The author describes the interactions as occurring in a naturalistic setting. However, the awareness of the participants that they were being video recorded may have affected how naturally they interacted and thus the validity and reliability of the data; this was not discussed. Caregiver and infant interactions were observed over five occasions in two-month intervals, when infants were eight, ten, twelve, fourteen and sixteen months. This age span was described as ideal because independent studies have found this period to include the onset (age) of both functional play with objects and of gesture production (Capirci, Iverson, Pizzuto & Volterra, 1996). The videotapes were analysed and coded using the ELAN software. Infant gestures, which consisted of hand movements that conveyed a specific communicative function, were coded during a first watch of the videos. During a second inspection, the researcher determined whether mothers interpreted each gesture produced by infants as conveying a clear communicative function or not.

To increase the reliability of the findings, Dimitrova et al. (2015) checked inter-coder reliability for 20 per cent of the data, and reliability was coded on 30 per cent of Liszkowski's (2012) data recordings by a second trained assistant.

Both the data collection and data analysis of these two studies are similar in terms of the video recording, ELAN software, detailed description of the analysis and calculation of inter-coder reliability. Both studies used strong designs to increase the credibility of their findings. Dimitrova et al.'s (2015) within-subjects longitudinal study suggests that

the researcher can assess over time the stability and continuity of gestures produced and the caregiver's interpretations, as well as points where changes occur. However, the possible limitation of practice effects was not reported by Dimitrova et al. (2015). The practice effect was not discussed, but over time the dyads could be improving their communication while interacting in the same setting and may become familiar with each other's interactional patterns. This could impact upon the validity of the findings as the mother and child.

Liszkowski et al. used a large sample size, which may mean the findings are more generalisable to the population; however, as the research questions were concerned with cultural differences, it would be wise to be cautious if generalizing these results to other cultures. Liszkowski et al. (2012) used only toys found in western cultures, and it remains unknown whether the association between shared knowledge about object use and maternal interpretation of infants' gestures extends to cultures other than the seven included in the study.

2.5.2.3 Findings and Limitations

Both studies explored pre-linguistic gestures and pointing. Liszkowski et al. (2012) aimed to explore pointing and whether there were any cultural differences in how this gesture was used between child and caregiver. Dimitrova et al.'s (2015) focus was on whether the caregivers could accurately interpret the meaning of the child's pointing.

Liszkowski et al. (2012) stated that their study provides the first coherent and systematic evidence of a universal form and usage of human gestural communication before language. The main findings were that all children and caregivers used pointing in one and the same situation, and index-finger pointing emerged in all cultures within the same age range. Even the frequency of infants' pointing did not differ across cultures.

Dimitrova et al. (2015) showed that, at age fourteen months infants, gestures were interpreted by mothers as clearly conveying a communicative function. It was also highlighted that, to provide a meaningful interpretation of young children's early gestures, caregivers likely rely on the information available within the context of their interaction. The possibility that shared knowledge about the conventional use of objects

helps parents interpreting their infants' gestures as communicatively functional is anchored in the theoretical importance of the interactive context.

Liszkowski et al. (2012) provide adequate discussion of evidence both for and against the conclusion of their study by showing findings from other relevant research literature, such as the universality of pre-linguistic communication skills and means, alluding to vast cultural differences in socialization practices and the role of social interaction in development (e.g., Gaskins, 2006; Göncü, Mistry & Mosier, 2000; Masataka, 2003). The authors argued that the methodology used in this paper was more robust than in previous research and therefore so were the findings. The credibility of the findings was discussed in relation to generalisability across cultures and the authors argued that, although only seven cultures were included they were varied and distinct in their geographic spread and in other social, demographic, and economic aspects, thus making it unlikely that they constituted a biased sample. However, the authors did not make it clear how long these families have been living in the Netherlands, away from their countries of origin. This may affect each participant's level of cultural immersion, which could impact upon their parent's practice of culture-specific behaviours and gestures.

Dimitrova et al.'s (2015) study also presents several limitations regarding generalizability, as, despite the longitudinal design, only six infants were studied, five of whom were girls. This is not a representative sample and raises questions about gender differences regarding pointing and accurate interpretation of the meaning.

Both studies used a quantitative methodology in their approach, and as a result they (could) produce numerical data for each of the samples to provide an argument to support their conclusions. A limitation of quantitative research in social sciences is that it can lack a rich or in-depth description of the experiences of the participant and researcher and of their interactions and context. By focusing solely on measuring and counting interactions and behaviours deemed important, the researchers could be missing out on capturing human perceptions and beliefs, which could provide another level of understanding to contribute to the findings.

2.5.2.4 Researcher Reflexivity and Future Research

To increase the reliability of their findings, both papers used inter- rater coding. However, neither paper explored any reflexive thinking during the research or explained their position or role the researchers took when formulating the research questions, collecting the data or analysing the data. Biases were discussed in terms of participants' cultural diversity and the generalisability of the findings, however, the possible biases concerned with the location of where the research was gathered and the participant recruitment were not mentioned. Ethical considerations were not mentioned, which makes assessing if ethical standards were maintained during the study difficult, e.g., issues of informed consent and confidentiality. Dimitrova et al. (2015) suggested an area for future research. They found that the relation between infants' knowledge of objects' conventional use and parents' ability to interpret infants' early gestures was valid for all members of the same culture and not only for parents. The suggested future work would investigate whether this effect is indeed generalizable to communicative dynamics between infants and adults other than caregivers.

2.5.3 Exploring Verbal Comprehension in Pre-Verbal Children and Evaluating Assessment Tools (Geytenbeek et al., 2010).

Geytenbeek et al.'s (2010) study describes the development of an assessment tool to assess verbal comprehension in children with CP who do not have dominance in spoken language and who cannot access standard language assessments due to motor impairments.

2.5.3.1 Summary of Aims, Participants and Sample Size

Geytenbeek et al. (2010) conducted a case-control mixed-methods study in the Netherlands which was prompted by the scarcity of test instruments used to assess verbal comprehension abilities in children with complex communication needs and Cerebral Palsy (CP). It had been identified that new assessment tools that can reliably assess receptive language abilities are needed (Binger & Light, 2008). The researchers' aims were to develop and test the validity, feasibility, and reliability of a computer-based diagnostic instrument, Computer-Based Instrument for Low Motor Language Testing (C-BiLLT), for assessing verbal comprehension abilities in children with

complex communication needs and CP. Assessment of comprehension of spoken language can have an impact on how caregivers and others interact with children both naturally and using technology or AAC systems.

The participants included eighteen children with severe CP, nine girls and nine boys, all aged between 19 and 75 months. The children were recruited from rehabilitation centres and special day-care centres throughout the Netherlands. Geytenbeek et al. (2010) presented the inclusion criteria for the case group, which included:

a) A medical diagnosis of CP;
b) A severe motor impairment;
c) A productive spoken vocabulary of less than five words;
d) no diagnosed or documented history of auditory or visual perception problems; and
e) The ability to choose between two (familiar) real objects.

The control group consisted of 42 children without disabilities, 20 girls and 22 boys, all aged between 14 and 60 months. This group was recruited from mainstream nursery schools and day-care centres. Exclusion criteria were

a) A documented history of speech/language delay;
b) A auditory or visual problems;
c) A learning disability; and
d) Any neurological or otherwise chronic diseases as reported by parents or nursery school teacher.

Geytenbeek et al. (2010) included a table detailing each child's age, gender CP diagnosis type and communication modes as part of the results table of the C-BiLLT testing. Screen shots and photographs of data gathering with the children were also included, which allowed a clear understanding of the methods used.

2.5.3.2 Design, Data Collection and Data Analysis

The researchers used both the C-BiLLT (Geytenbeek et al., 2010) and the RDLS (Reynell Developmental Language Scales) (Edwards, Fletcher, Garman, Hughes, Letts, & Sinka, 1997). RDLS is a standardized measure (Eldik, Van, Schlichting, Lutje

Spelberg, Meulen Van Der, Meulen, Van Der, 1995, 2004) and is one of the most widely used tools for the assessment of sentence-level comprehension of spoken language. The authors investigated the preliminary psychometric qualities and compared differences in performance on the C-BiLLT and on the RDLS in a group of children with complex communication needs and CP and a group of children without disabilities.

Participants could use eye tracking, pointing, input switches and linear scanning to make selections and choices on a large television with clear photographs of objects. Administration of the C-BiLLT was carried out by a trained speech and language therapist and used both direct observation and video recordings to record responses. For the children with CP, a pre-test was administered to establish that these children possessed sufficient cognitive and attentional abilities to perform the tasks included in the C-BiLLT. Children who did not discriminate at least five objects were excluded from the study and the investigator stopped the test after eight successive incorrect or excluded responses, when the child was no longer co-operative, no longer made any visual contact with the flat screen or had been clearly inattentive. The methodology and participant selection were comprehensive and clearly explained.

2.5.3.3 Findings and Limitations

The findings suggest that children with complex communication needs can develop verbal comprehension abilities when productive spoken language is limited. However, considerable variability in verbal comprehension abilities was observed and the internal reliability of the instrument (C-BiLLT) has not been properly investigated. This study could have benefited from a larger sample and more information explaining how the selection procedure minimised selection bias. It was thought that more in-depth psychometric analyses of larger samples that include children without disabilities would be necessary to establish test reliability (more thoroughly). There was a high correlation between the C-BiLLT and the RDLS total scores in children without disabilities. The C-BiLLT was always administered first, which may explain the higher scores than those of the RDLS. The author reported that these findings suggest that the C- BiLLT has the potential to become a useful instrument to assess the comprehension of spoken language in children with complex communication needs and Cerebral Palsy.

2.5.3.4 Researcher Reflexivity and Future Research

Future research suggested by Geytenbeek et al. (2010) would be to conduct a study that could also include children with mild to moderate visual impairments, as these populations were excluded from the present study. The study found considerable variability in verbal comprehension abilities and the internal reliability of the instrument had not been properly investigated. This was another area identified for future research.

The Sage handbook of mixed-methods research (Tashakkori & Teddlie, 2003) proposes four questions for researchers to ask before embarking on their research as follows.

1. How does your position in society affect the way you observe and perceive others in your daily life?
2. What particular values and biases do you bring?
3. What particular ideas on the nature of knowledge do you bring?
4. What specific research questions guide your choice of research methods?

Although this paper was thorough in the descriptive methodology, analysis and discussion, the reflective questions mentioned above were not addressed.

2.5.4 How Children's Voices are Being Accurately Represented and Recorded by Professionals (Harding, 2009; Hill et al., 2016; (O'Connor et al., 2011)

All three studies were conducted in the UK and explore how professionals gain and record the voices of children with varying levels of need. Harding and Atkinson (2009) and O'Connor et al. (2011) used qualitative methodology, while Hill et al. (2016) used a mixed-methods approach.

2.5.4.1 Summary of Aims, Participants and Sample Size

Harding and Atkinson (2009) conducted research in a UK local authority, as it was thought that, although the importance of children's views being ascertained and accurately represented is advocated in both legislation and research, there has not been a focus on how EPs record the voice of children. The researcher developed four research questions:

1. What are the key themes that EPs record in the child's view section of a report?

2. What evidence is there that the child's views about decisions and arrangements are recorded by EPs?
3. What techniques and strategies do EPs use to ascertain the child's views?
4. How do EPs select and represent the child's views?

This study is relevant to the current research as it is important to understand the current practices in EP and to build on relevant research in the field. This paper also highlights the importance of how professionals make decisions regarding recording the voice of children and YP and how to present their views. Children's views were originally collected from transition review reports of 30 randomly selected year nine students, in both mainstream and special schools, with a range of SEND. Harding's (2009) sample was a mix of 30 students aged between thirteen and fourteen who attended a mainstream or special school.

O'Connor et al. (2011) conducted a PhD pilot study in the UK: they aimed to develop innovative and exploratory research strategies for harnessing the voices of children and YP with behavioural, emotional and social difficulties (BESD). It has been found that students are rarely asked what methods would work for them to convey their views and opinions. Research also shows that YP at risk of exclusion are rarely their opinion or get the opportunity to be heard (Sellman, 2009) and students have a lot to offer research in terms of providing insight into their own experiences. The participants in O'Connor et al.'s study were chosen using purpose sampling methods. Participants were aged between fourteen and sixteen years old and had been excluded from school due to behavioural issues. Parents and teachers of these YP were also included in semi-structured interviews. O'Connor et al. (2011) included three YP who had been excluded from school and were attending an alternative training provider; one participant has then identified to take part in the individual semi-structured interview as well as parents and teachers of the YP. Due to the nature of the pilot PhD study, the sample size is smaller than Harding's (2009). However, the reporting of the research process is rich and descriptive.

Hill et al. (2016) used a participatory research approach to explore the experiences of children and YP educated in a residential school, with an emphasis on how their rights and wellbeing were being promoted. This study is relevant to the current research, as the aim of this study was also to develop techniques and approaches for hearing the

voice of children and YP. The participants included 83 children and YP aged eight years and three months to nineteen years and eight months, with a wide range of SEND. It is unclear what method the researcher used to select the participants. However, each participant had an EHCP or a Statement of Special Educational Need which declared the primary need and thus the profile of the sample population was defined. Data was also gathered from other professionals working in the school, parents or carers of participants, and school staff.

2.5.4.2 Design, Data Collection and Data Analysis

Both Harding and Atkinson (2009) and O'Connor et al. (2011) captured data through transcribing audio-recordings of focus groups or interviews. Harding and Atkinson (2009) identified themes using Content Analysis whereas O'Connor et al. chose a Grounded-Theory approach. Hill et al. (2016) used mixed methods. However, they recorded only the qualitative data in the paper. The qualitative data collection methods were varied, and techniques were selected if they were relevant for the diverse range of needs in the sample population. Procedures were guided by experienced professionals conducting the research.

Harding and Atkinson (2009) used focus groups to ascertain techniques and strategies used by EPs to gain the voice of the children and YP they work with and to establish how the information was selected and reported. During the focus groups, a scribe recorded main themes, as well as the sessions being video recorded and transcribed. Objectivity was promoted in the analysis, as a second researcher, who did not participate in the research, coded data from the session reports as part of a two-tier analysis. Content Analysis was used to establish the main themes of the focus groups.

During the review of the children's reports, sections of the report that contained identifying information were separated from the other data about the child, to protect confidentiality. The anonymity of the children was protected, as no demographic data was collected. The data analysis was rigorous, and the researcher used open and axial coding; which yielded eight common themes reported in the child's views section of the report, and five main approaches as of how EPs ascertain children's views were reported in the focus groups.

O'Connor et al. (2011) conducted consultation sessions with participants, their parents and their teachers to decide on data collection methods. The study developed novel data collection methods which were supported by the qualitative methodology. Group activity sessions of YP were observed and semi-structured interviews including life grids were used, to allow the YP to report key or important moments during their school experiences. To reflect the diversity of the YP's views, the researcher used triangulation and multi-method techniques. The research was conducted within a constructivist paradigm, and a grounded theory approach was used to analyse the data and capture emerging themes. The researcher completed the initial analysis, and then the students were given an opportunity to discuss the identified themes and confirm that their perspectives had been captured accurately.

Hill et al. (2016) created a young researchers' group that included a group of YP aged thirteen to nineteen years old with various SEND. This group met several times to identify key issues for investigation, advising on piloting appropriate methodologies and helped to verify emerging themes. The varied methodology to capture the voice of the child included adaptations to known approaches e.g., the graffiti wall (used to obtain children's views and perspectives - suitable to use with children of all ages and abilities who are able to write, or to do so with assistance,) the diamond ranking activity (a way of ranking activities and objects in order of preference) and school preference cards (consists of photographic cards, each illustrating a type of experience, labelled with simple phrases - users are asked to sort the cards into positive, negative and neutral categories) as well as an adapted structured observation tool. Throughout the write-up of the research, photographs of the tools used help create a clear picture of the adaptations made as well as the researcher's observational notes which provided a description of the adaptations and limitations. The aim of this participatory research was to empower the participants and encourage them to guide and steer the topic of research and the collection of data.

2.5.4.3 Findings and Limitations

Harding's (2009) findings clearly answered the four research questions. They showed a wide range of strategies that EPs use to harness and record children views. The methods selected depended on the child's needs. Direct questioning of children was found to be the most common method of gaining children's views. However, Hobbs,

Todd, & Taylor (2000) argue that direct questioning may not be the best method, as children do not know what to say sometimes when asked for their views. Solution-Focused Brief Therapy techniques were was found to be an effective method to use. Firstly, colleagues within the local authority EPS were participants of the focus group, and secondly, the audio recordings and transcriptions did not allow for important contextual and non-verbal information to be recorded. However, the notes taken during the focus group allowed the participants to clarify their meaning and for them to be interpreted correctly, as the notes could be viewed by all participants.

O'Connor et al. (2011) showed an awareness of the main issues involved when using exploratory research strategies. This paper discussed solutions in how to overcome barriers regarding accessing and collecting data. These results will inform future research, and they were to be fed back to the schools, in order to help them develop best practice guidelines for professionals working with YP with behavioural, emotional and social difficulties (BESD).

Hill et al. (2016) reported that the findings of their research provided evidence to support professionals in fulfilling their statutory obligations to hear the voice of the child. The methods used in this study proved effective in helping to facilitate children to share their preferences and insight. This paper emphasised that collecting and analysing the information was time consuming, and this reflects the time and flexibility needed to have meaningful interactions with complex populations such as children with complex and SEND. Time constraints were also mentioned when discussing the ability to build relationships with the participants and to consult adequately with them while analysing the data. The aim of the research was to gather information but the researchers subsequently failed to share strategies with the educational setting. Hill et al. (2016) mention that future studies could include a greater involvement of the children's families, especially when analysing the data collected.

2.5.4.4 Researcher Reflexivity and Future Research

O'Connor et al. (2011) explained that the constructivist approach of grounded theory allowed the researchers to go beyond simply examining how individuals view their situation and move on to explore critically the impact the researchers themselves will be having on developing the theory. The paper highlights how theories develop depending

on the researcher's interpretation of the data. O'Connor et al. (2011) mention barriers and issues that needed to be overcome such as ethical issues, the impact of the researcher, gaining access to the 'field of research', the gatekeepers, parental and student consent to participate and power differentials between the researcher and YP.

Harding and Atkinson (2009) do not consider the role of the researcher, but do explain the impact of the research's findings. The findings had an impact on the local authority where the research was conducted and since then there have been changes in how EPs collect, select and report children's views. Future research is also suggested which could include replicating the Content Analysis using reports written for children of different ages. This may allow exploration of whether themes recorded and methods used differ depending on the age of the child**.**

Hill et al. (2016) took a participatory approach, which accentuated the role of participants in the research process. The researchers wanted to facilitate a feeling of empowerment in their participants and encourage them to become actively involved in the decisions made about them, steering the focus of the research and the interpretation of the data collected. Hill et al. (2016) mentioned the Harts Ladder of Participation, but used an adaptation of the Six Degrees of Participation (Cornwall, 1996). This emphasised consultation, co-operation and co-learning. Throughout this study, the researchers were aware of their position and were actively repositioning themselves, perhaps through reflexive thinking; however, this was not explicitly mentioned. A description of adaptations made and the limitations of each approach were provided throughout.

2.6 Summary of Literature

The variety of methodologies used by researchers include 'Tap to Talk' (Pinto & Gardner, 2014), the Mosaic Approach (Clark, A. & Moss, P., 2001, 2005), Solution Focused Brief Therapy (Harding, 2009), Augmentative and Alternative Communication (Geytenbeek et al., 2010; Pinto & Gardner, 2014; Sigurd Pilesjö & Rasmussen, 2011), eye tracking and other non-verbal gestures (Liszkowski et al., 2012; Pinto & Gardner, 2014), eye tracking, pointing, input switches or a combination (Geytenbeek et al., 2010), Life Grids and visual tools, interviews, activity sessions (Harding, 2009;

O'Connor et al., 2011), the Graffiti Wall, Diamond Ranking Activity, School Preference cards and observation tools (Hill et al., 2016).

Most of the research highlighted the importance of including caregivers, teachers and other communication partners to help triangulate the findings and facilitate communication with children and YP. The methods listed above were used to explore the combined areas of pre-verbal communication, SEND, interaction, gestural communication, comprehension, interpretation, methods of recording children's voices and the role of the speaking communicator. However, the current research question has not been explored in its entirety. The literature highlights the need for further investigation into how professionals can work with P-V pre-school children with complex and SEND and gain an understanding of their views, preferences, likes and dislikes.

Reviewing the current literature suggests that the key findings from the literature could be summarised into four themes.

2.6.1 Theme 1: The Importance of the Speaking Communicator in Facilitating Children's Communication and Understanding the Child's Message

This is in line with the DECP Professional Practice Guidelines (Division of Educational and Child Psychology, 2002), which state clearly that professional EPs are expected to support and promote the positive development of children and YP. In doing so, they work not just directly with YP but also with their parents/carers and families and with the adults who teach and care for them. The literature review indicates that the communication partner plays an important role in constructing the turns of the non-speaking co-participant (Sigurd Pilesjö & Rasmussen, 2011) and highlights the importance of supporting that person, considering learning opportunities that occur and exploring different communication aids (Pinto & Gardner, 2014). Caregivers may be more likely to interpret accurately their children's messages (Dimitrova et al., 2015; Liszkowski et al., 2012).

2.6.2 Theme 2: Consideration of the Context in which the Child is Communicating and the Shared Knowledge Held by the Communicating Partners

Dimitrova et al. (2014) strengthened the idea that the possibility that shared knowledge helps caregivers interpret their infants' gestures; this echoes research presented earlier in the background information section. For the recipient to have the best chance of accurately interpreting the message of the infant pointing there needs to be recently shared experiences/common ground and joint attention between them (Moll & Tomasello, 2007; Tomasello & Haberl, 2003). Shared experiences are also crucial when infants are interpreting messages through adult pointing (Tomasello, Carpenter & Liszkowski, 2007).

2.6.3 Theme 3: The Importance of Cultural Differences when Interpreting Intentional Non-Verbal Gestures

Non-verbal gestures such as index pointing are common across cultures. However, more research is needed to show the extent of cross cultural pre-linguistic gestures before certain communication methods are thought of as universal (Liszkowski et al., 2012).

2.6.4 Theme 4: Heterogeneity in the Group of Children with Complex and Special Educational Needs and Disabilities in Terms of their Abilities

Considerable variability in verbal comprehension abilities in children with complex communication needs was observed by Geytenbeek et al. (2010) and children vary in their level of communicative function (Balan & Manjula, 2009). These findings show how diverse this population can be, and tools and methods should be flexible enough to meet the needs of each child. Hill et al. (2016) found that schools are developing creative techniques to promote children's voices and, for professionals working with this population, it may be beneficial to embrace a more holistic conceptualisation of how children express their views.

This review of the literature has shown a lack of clarity among researchers and professionals regarding the most effective methods to engage, include and listen to the wants, needs, opinions and preferences of children and YP, because of the heterogenetic nature of this population.

The literature review has highlighted a need for further research in this area and has informed the main research question and three sub-questions for this research, shown below.

2.7 Research Questions

The main research question for the current study is:

How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?

To answer this complex question, the themes identified in the Literature Review have informed the sub-questions below.

1. What techniques and strategies are used to ascertain the child's views?
2. What adaptations to the communication methods were needed to meet the needs of the children participating?
3. What are the researcher's experiences in using the available methods of communication?

This research hopes to report and convey the adaptations made and the flexibility in the methods used in order to meet the needs of these children. The third sub-question allows the researcher to share experiences of using the methods and approaches, challenges, limitations as well as what worked well with regards to listening to the children voices. Although this will provide a single and subjective account it is hoped that this may provide transferable information for adults and professionals to refer to if they find themselves in a similar situation. The conclusion of the literature review and the rationale for the current research are presented below.

2.8 Conclusion and Rationale for Current Research

This literature review has outlined previous methods utilised for listening to the voices of pre-verbal children in the early years with complex needs. However, there seems to be little research that explores effective and flexible methods that can be adapted for pre-school children with a variety of SEND, especially in EP practice. There is also little detail in the research that explores the reflexive thinking and the experiences of the

researchers when working with children, to capture their voice. Part of being a reflective practitioner requires a kind of artistry that also involves intuition, flexibility and critical evaluation of one's own experience. Recording methodological approaches allows for transparency. Accounts of the researchers' reflective thinking process can communicate to the reader the researcher's understanding, empathy, efforts to safeguard against bias, sensitivity, flexibility and awareness of the researcher's own assumptions, which can be valuable information for other professionals who wish to capture the voice of this homogenous population.

Person Centred Planning and the SEN CoP (Department for Education and Department of Health, 2014) refer to One-Page Profiles and Person-Centred Planning as part of the personalisation agenda already established in Health and Social Care (The Local Offer, 2016). Applied child psychologists and professionals working with children make efforts to listen and learn about what the children want from their lives, and work with family and friends and other services to help children to achieve aspirations and goals and review these over time. In EP practice the various tools used in a person-centred way of working, such as videos, drawings, music, visuals and discussions, can help create the child's One-Page Profile. Person-centred thinking tools are essentially systemic ways of ensuring that the adults working with children are meeting their needs, recognising that each child and young person has a unique style of learning, communicating, building relationships and making decisions (National Association for Special Educational Needs, 2016). The person-centred approach is unlikely to prosper without fundamental cultural change as services and professionals develop new ways of conceptualising disability, potential, self-determination, forms of support and new ways of working with disabled individuals and their families (National Association for Special Educational Needs, 2016). Although arguing their evidence-based practice increasingly dominates psychology, Fox (2011) used the term "practice-based evidence" as an alternate approach to establishing effectiveness. Practice-based evidence can be understood as the psychologist learning how to act by experiencing unique situations and reflecting on them.

EPs are well placed to ensure that children's views are elicited in a natural way and that they are included in the decisions being made about them (Department for Education and Employment, 2000). EPs are seen by themselves and by local authorities as agents

of change, EPs are found to want a greater emphasis on problem solving and preventative work at a range of levels and recognition that they have a role in supporting the raising achievements of all children (Department for Education and Employment, 2000). This research hopes to share the experience of using multi-methods to hear the voices of children and contribute to the evidence base in this area.

The next chapter explains the methodology and research design as well as exploring the chosen epistemological and ontological positioning of this research. Data analysis methods and ethical issues, as well as reliability and validity matters, are also considered.

Chapter 3

Methodology and Data Collection

3.1 Chapter Overview

In this chapter, the research design and methodology are outlined and justified. Following this, the ontological and epistemological positions are outlined, and the researcher's position adopted for the purpose of this research will be stated. An overview of the research design and barriers to the research are identified, a description of the participants and recruitment, the research process for the mixed-methods study and possible biases, as well as the reliability and validity concerns. This chapter includes a list of the variables that were controlled, after which the data analysis processes are defined, before finally the role of the researcher and issues relating to ethics are considered.

3.2 The Research Rationale

The previous sections have established a clear rationale for the current study, having explored the author's interest in the research issues, professional experiences, professional and political context, as well as identified gaps in the current literature. The aim of this research will be to inform professionals and assist in the development and improvement of communication methods available to a heterogenic population. I hope to do this by making a connection with the process, being transparent in my experiences as a researcher and through the triangulation of the data.

3.3 Ontology and Epistemology

The literature review did not identify effective and flexible methods or practice guidelines that can be adapted specifically for pre-verbal children in early years with complex and SEND, thus highlighting a need for this explorative piece of research that addresses the issue of hearing the voice of this complex, heterogenic population.

This research could be considered as social constructivist, due to the ways in which approaches were used and adapted to listen to the children's subjective multiple truths.

Even though the complexity of hearing multiple constructions is acknowledged, this research takes a post-positivist ontological approach to inform the methodology and to best answer the research question. The aim of the findings is to detail limitations, adaptations and effectiveness of certain methods, making a strong case for improving and developing methods to elicit children's views and preferences; however, this will be within the realm of probability rather than certainty. Maxwell (2012) claims that post-positivists believe one reality exists, but argues that it can be known only imperfectly because of the researcher's limitations.

Epistemology in this instance refers to the manner in which the voices of the children are heard, and is understood from a pragmatic position as well as including elements from a transformative paradigm. There needs to be flexibility in the way the reality is captured, hence a pragmatic approach, considering what is possible within time, budgetary and ethical constraints. The population of children with complex and SEND and issues concerning what they have to say should be considered within a social and historical context. "The transformative paradigm is characterized as placing central importance on the lives and experiences of marginalized groups, such as women, ethnic/racial minorities, people with disabilities, and those who are poor" (Mertens, 1999, p. 45). The aim of the research is to explore current methods being used, in order to develop approaches and to advance the practice and thinking of practitioners working with children and YP.

3.4 Research Design

I chose this topic of research because I have a personal desire to help children with complex and SEND without verbal communication to communicate and to interact with other people more effectively. The research design and ontological and epistemological positioning were informed by theoretical approaches such as; Children's Rights theory, Participation Theory and Developmental Theory.

Although this research does not take an action research approach, the findings of this research could be adopted at a social level and create systemic change. It is hoped that the practice of applied psychologists and professionals working with children will be moved forward by the findings and recommendations. An action research agenda was deliberately not chosen, as I believed it was more beneficial to explore how

communicative approaches can be developed for this population of vulnerable children and to address the complexity and difficulty surrounding the issue of eliciting children's voices, rather than focus solely on the development of my professional practice.

The purpose of this research was exploratory: the aim is to inform professionals and to assist in the development of improving methods of gaining the voice of P-V, early years children with complex and special educational needs and disabilities (SEND). In order to explore this issue efficiently, a mixed-methods multiple case study design will be used.

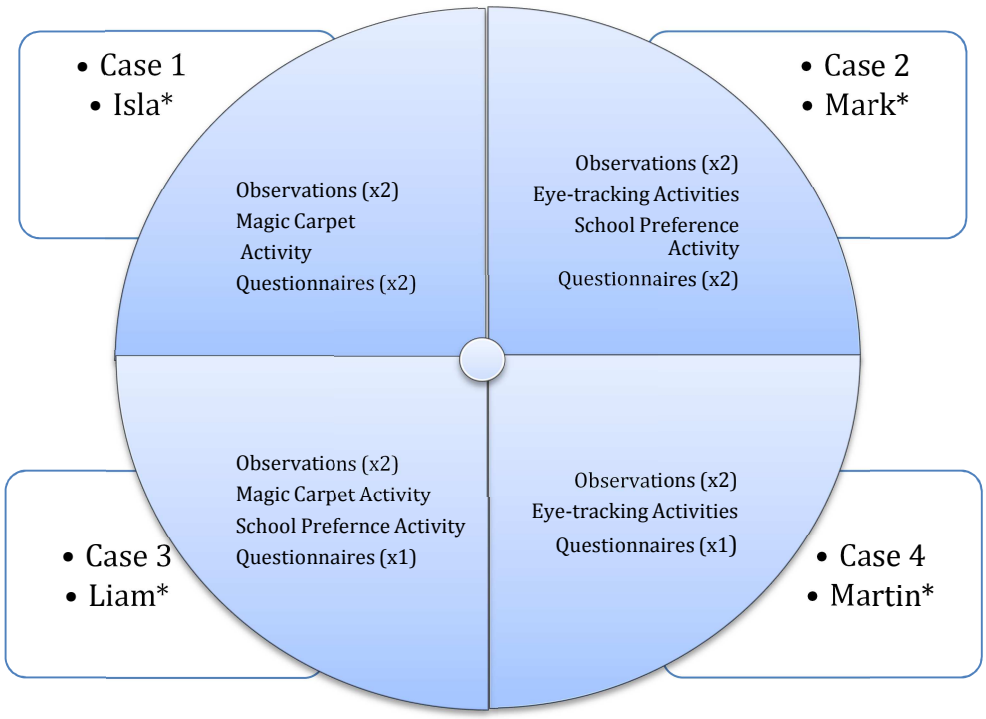
This mixed-methods research design is viewed through a pragmatic and a transformative lens. Pragmatism is essentially a problem-solving approach and is used commonly in psychology. Researchers are generally concerned with an issue at a significant scale, which is dealt with through quantitative methods, as well as conditions that give rise to it and the experience of those affected by it, gained through qualitative means (Newby, 2014). The research question dictates the methods that will be used in this research, and by using a mixed-method design I hope to capture the complexity of issue. A mixed-methods approach is helpful in that one is able to conduct in-depth research and, when using complementary mixed methods, provide for a more meaningful interpretation of the data and phenomenon being examined (Teddlie & Tashakkori, 2003).

This multiple-case study research design includes four participants and was chosen as the preferred strategy due to the exploratory "when?", "how?" or "why?" questions that are posed (Yin, 2003). Case studies can provide insight into unique features that may otherwise be lost in larger-scale data (e.g., surveys), there is a strong sense of reality in the results and write up, they can embrace and build in unanticipated events and uncontrolled variables and case studies are more manageable for a single researcher rather a whole research team. Case studies can be used when the investigator has little control over events and when the focus is on a contemporary phenomenon within some real-life context (Yin, 1981). According to Yin (2003, p. 4), "the distinctive need for case studies arises out of the desire to understand complex social phenomena" because "the case study method allows investigators to retain the holistic and meaningful characteristics of real-life events". It is important that, although case studies provide an opportunity to provide in-depth, intensive and sharply focused exploration of

occurrences (Willig, 2013), the findings may not be generalizable and, despite attempts at reflexivity, there may observer bias issues.

Each case study analysis consists of three separate data sets: parent and teacher questionnaires (Appendix B), naturalistic observational data and observational and quantifiable data from the mixed activities and/or eye-tracking activities, which are described in detail later. The findings from each data set are triangulated and amalgamated for each case study and a conclusion based on findings drawn, before, finally, an overall conclusion and discussion of how the data collected answers the research question are presented. The matrix below shows the four case studies and the data sets.

Figure 3.1 - Case Studies and the Data Sets



(pseudonym used)*

The following section discusses the qualitative and quantitative elements, as well as the recruitment of the participants for this mixed method, case study research, in further detail.

3.4.1 Qualitative and Quantitative Approaches

I selected eye tracking as the quantitative element, as research suggests that, when measuring the child's eye-tracking, interpretations about psychological processes are made, such as indicating preference between two or more stimuli (Krajbich et al., 2010). Using eye gaze as a method of interaction only requires the movement of the eye itself, unlike alternative methods such as the use of switches or buttons, head-mounted equipment or other obtrusive devices which may require movement of other muscles and may cause discomfort. Thus, making eye-tracking an accessible solution for individuals with physical and motor disabilities (e.g., paralysis, spinal cord injury & cerebral palsy) and ideal for the study of young children and infants.

The qualitative methods used included structured questionnaires, observations and various activities in which adaptations were guided by the experienced school staff as well as informed by observations. These methods will be described later in detail.

A concurrent embedded approach was used, as both quantitative and qualitative data were collected simultaneously. There is more weight on the qualitative data; the quantitative data plays a supportive role. The two sets of data reside side-by-side, both presenting different views of the same area being explored. A concurrent embedded approach allows different methods to be used to study different approaches for eliciting the views of the children, school staff and parents, as well as exploring the process and experience of using the various methods; this can also be known as a multi-level approach (Tashakkori & Teddlie, 2003).

The limitations to consider with this design relate to the ways in which the data needed to be integrated within the analysis phase. As each method has its own weight, there is a risk of the results providing biased evidence, which could pose a problem when interpreting the results.

3.4.2 Research Participants

The sampling strategy for this research was a collective case study sampling from experimentally accessible populations, also known at Theoretical Sampling; I purposely selected participants who were considered to be relevant to the research project (Jeon,

2004). Theoretical Sampling relates to when researchers select a group to study based on the relevance to its research questions. Therefore, the generalisability of findings should be understood in terms of the generalisability of cases to theoretical propositions rather than the wider population (Silverman, 2005). Yin (2003) explains that case studies are generally used to investigate a contemporary phenomenon (voice of the child) within a real-life context (school), especially when the limitations between phenomenon and context are not clearly evident. Due to the limited number of participants, case studies rely on multiple sources of evidence, with data needing to come together in a triangulated fashion (Yin, 2003).

The children were identified by key staff members and selected on the basis that they were aged between two and five years, had complex or SEND and were P-V. The parents and key school staff members of these children were also invited to participate. The participants in the qualitative and quantitative samples are different but from the same school; otherwise known as parallel sampling. Due to the heterogeneity of children with complex and SEND, this research considers and describes the contextual variables of each participant and provides a rich description to pass the burden of generalisability to the reader (Mertens, 2015).

This is a multiple-case study design, and the sample includes four children under the age of five years who have complex or special educational needs and disabilities (SEND) and who are P-V. Due to the nature of the admission process to the special needs school where the research was administered, all the children have EP involvement and may have, or be in the process of receiving, an EHCP.

3.4.3 Contextual Information

In the section below I have described relevant biological information relating to the four participants, as well as the relevant contextual and demographic information relating to the school. It is recognised that the contextual factors of the participants and the school are relevant in the analysis and the conclusions drawn from the data. The contextual data from each participant was drawn from the 'Pupil Passport' information that was shared by the school staff. These documents are child-centred in their presentation and approach. The documents include the child's age, nationality, language spoken at home, likes and dislikes, and they also describe the needs of each child, their emotional

and behavioural presentations, what the children enjoy and what they find difficult, as well as how they communicate with caregivers, school staff and peers. The contextual information about the school was gained through publically available data via the website. The contextual data reported is limited and general, to protect the anonymity of the participants and the school.

Table 3.1- Demographic Information for each Child as well as Primary and Additional Needs of Each Child.

	Case 1 – Isla	Case 2 – Mark	Case 3 – Liam	Case 4 – Michael
Gender	Female	Male	Male	Male
Age	4	5	5	5
Ethnicity	Turkish	Irish	Black African	British Asian
Primary SEND	MTHFR deficiency and hydrocephalus Vision impairment	Autistic spectrum disorder (ASD) Speech and language delay Global developmental delay	Autistic spectrum disorder (ASD) Speech and language delay	Pelizaeus–Merzbacher disease, which is a central myelination condition Nystagmus (rapid, involuntary, rhythmic motion of the eyes) and has difficulty with head movements P-V
Additional needs	Wears glasses and has started to use a cane when walking Prone to infections EAL	Dislikes loud noises and groups of people	Processing difficulties	Small in size and difficulty putting on weight Gastrostomy feeding Uses a wheel chair
Level of verbal communication	Able to repeat familiar sounds and tunes of familiar songs P-V utterances	Sounds and P-V utterances	P-V utterances and giggles	P-V utterances

The school caters for children and YP aged two to sixteen. The boys to girls ratio is 3:1 and the school population comprises 42 per cent Black African and 25 per cent White British heritage, the remainder being from a range of other ethnic minority groups, reflecting the makeup of the UK city. Approximately 20 per cent use English as an additional language, and there are 25 community languages spoken by parents and carers. The proportion of pupils known to be eligible for free school meals is 34 per cent (Demographic data, June 2015).

3.4.4 Potential Barriers to Real World Research

One of the barriers to overcome in conducting research with YP is gaining access to the 'field of research' (Sime, 2008). Therefore, an objective of this research was work collaboratively with the school staff and parents to ensure they were aware of what was happening at every stage of the research process. Accessing this population of children in a real world setting such as in a nursery or a special school can be (thought of as a) challenging (concept), especially when thinking about recruitment of the children, parents and staff, as well as allocating a period of time in which to gather data that is convenient for those involved. This may include being mindful of school holidays and OFSTED inspections. Arrangements to collect data were made in advance with the Head Teacher. The use of eye-tracking technology and the possibility of technical malfunctions were also considered.

3.4.5 Inclusion Criteria

The chosen participants have varied complex or SEND, and the various approaches and techniques used were adapted to meet the needs of the children participating. However, to be able to access the eye-tracking activities, there was a list of criteria that the children needed to meet as follows.

- Sufficient vision, but vision impairment is not an exclusion criterion
- Shows ways of responding to a widening range and variety of stimuli
- Follows a stimulus in a range of directions
- Shows response of 'liking' stimuli
- Shows a response of 'rejecting' stimuli
- Shows any form of voluntary exploration in their immediate environment

- Shows awareness of two objects when prompted
- Able to select from two or more items
- Able to indicate preferred item (adult can interpret child's choice)
- Shows attention to one item when a choice is offered

3.5 Data Collection Procedures

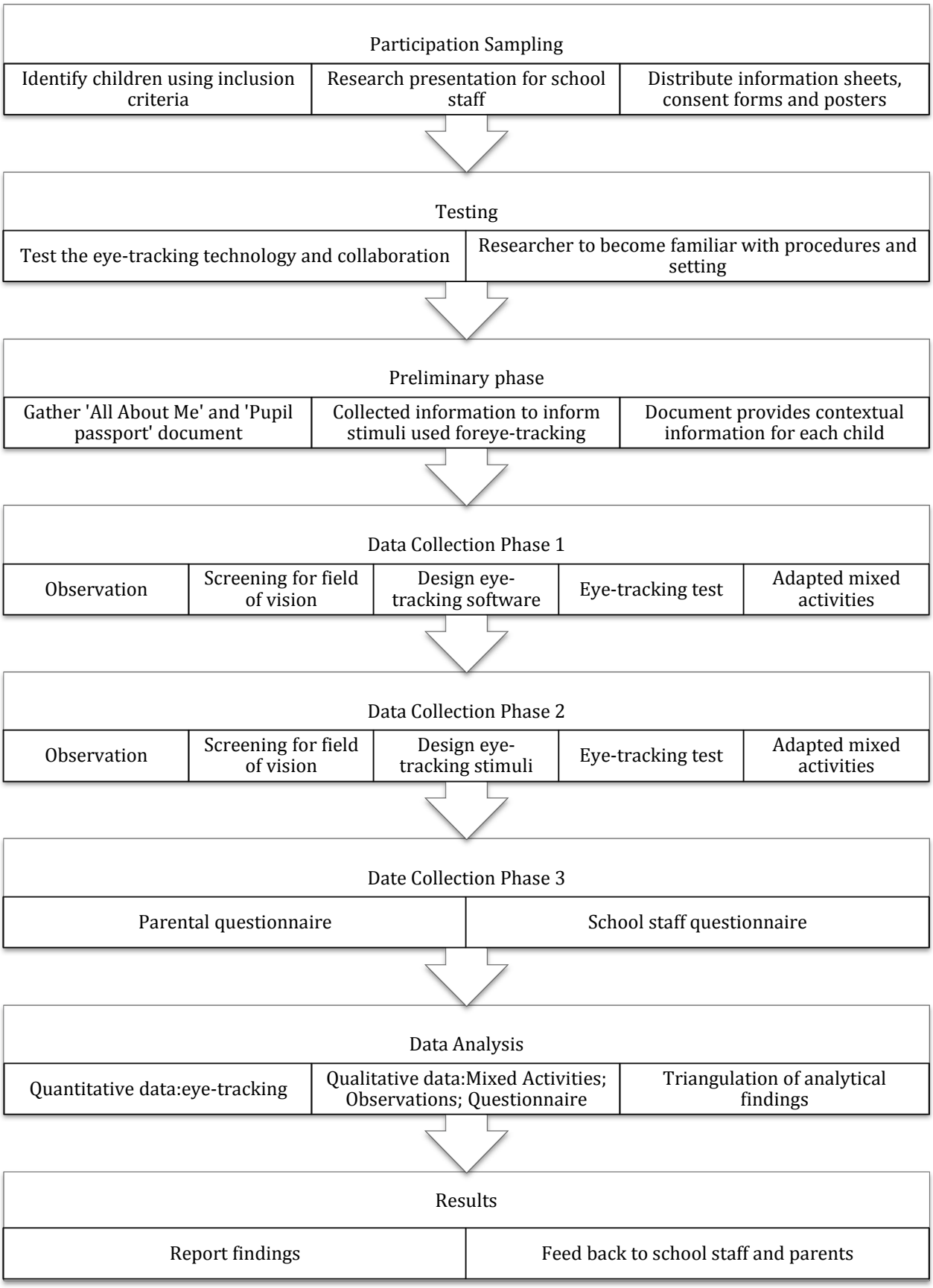
A flow chart of the data collection procedure is presented below (Figure 3.2). This also shows the timeline of the pre-data collection procedure which included the distribution of information sheets (Appendix C) and consent forms (Appendix D) as well as the presentation of posters (Appendix E) displayed around the school and given to parents to let them know about the research.

A presentation to the teachers and support staff was conducted (Appendix F). This was an opportunity to introduce myself to the staff and explain the research rationale, data collection procedures and aims. A parents' information session was scheduled, but this was not feasible, due to delays in parental consent and recruitment as well as various transportation and timing issues. Instead, phone calls were arranged for each parent, so I was able to explain verbally the information sheet received, thank participants for their participation and answer any queries. These initial school visits were arranged via the school's Head Teacher, the Family Liaison Officer and the Social Networking and Voice of the Child Lead at the school.

Due to the schools' use of AAC and eye-tracking technology, two meetings were arranged with the head of technology before I conducted any eye-tracking activities. This was to allow me become familiar with the customisable procedures and timings and to eliminate any possible foreseeable issues.

For each participant, the two observations and visits to conduct the eye tracking/mixed activities required contacting the class teachers via email to arrange times which fitted with each child's timetable. The regular contact with the class teachers also allowed for them to communicate any child absences, illnesses or whole-school activities (e.g., Christmas concerts). This required flexibility in my approach and the ability to build and maintain positive relationships with the school staff.

Figure 3.2 Flow chart of Data Collection Procedure



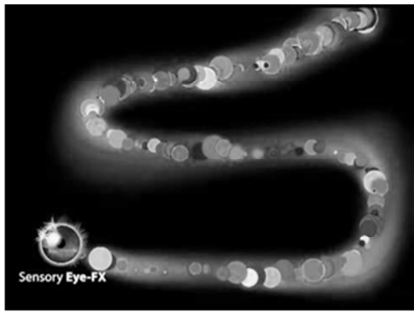
3.5.1 Quantitative

The quantitative data was collected using hardware (Tobii T Series eye) and software (Look-2-Learn). This gathered data about each child's eye tracking and eye dwell ability when the children were presented with choices of stimuli displayed on the screen. There are variables and elements to consider when using the eye-tracking technology, to ensure the reliability and validity of the results as well as ethical practice. Considerations about the following were taken into account for each child: testing situation and stimuli, calibration procedure and processing of eye movement data. These are discussed below.

The school has a dedicated eye-tracking studio, allowing for a distraction- free environment for children. The eye-tracking equipment attaches to an adjustable monitor and is practically unnoticeable, since no sensors or other hardware elements are visible. This allows for an unobtrusive experience. A chair was placed in front of the monitor for the child to sit on.

Calibration testing was done prior to the eye-tracking activities. This was a fundamental step, which is made simple and quick, to ensure the eye-tracking device is calibrated to each child by encouraging them to track a moving object to several points on the screen. The greater the number of points the child tracks the object to, the higher will be the accuracy of the calibration. However, on the basis of the age and SEND of the participants, two-point collaboration was thought to be sufficient.

Figure 3.3 - Look2Learn – Farmyard Activity and Eye Fx – Sensory Activity



The calibration test also doubled as a short screening test for the children's field of vision. The eye trackers tolerate both large and rapid head movement. Tobii eye trackers use binocular tracking (recognising both eyes simultaneously) and

automatically determine which eye is left and which is right, regardless of head pose and blinking. Binocular tracking allows more robust tolerance to head motion, since tracking continues even if one eye is hidden from the field of view of the tracker.

For the child to become familiar with the eye-tracking technique, equipment and the setting, he/she was asked to play two eye-tracking games using Look2Learn and Eye Fx software. These initial games were to introduce the child to cause and effect of eye-tracking technology, by giving them a chance to experience sensory stimuli (e.g., musical and colourful displays) that appeared on the screen wherever the child looked, and disappeared if they looked away. Another game included was a farmyard activity that encouraged the child to look at the barn door for three seconds before a different animal appeared which would then make noises and move (see pictures above).

Look2Learn software was used for the eye-tracking choice-making activity as it allows for customisation. Customisable choice-making activities allowed the researcher to design an activity in which the child was able to make a choice between two stimuli on the screen. The stimuli chosen were determined through the findings from observations, discussions with the school staff and parental and school staff questionnaires, and therefore they differed for each child. On the screen there was one 'liked' object/activity/person and an object/activity/person where preference was not known e.g., Bourbon biscuits and cake; dolls and teddies; sensory inflatable physio rolls (used in Physical Education (PE) lessons and a bench; class teacher and Teresa May; kite and bike; bumble bee and horse; banana and grapes (Appendix G). The eye-tracking activity was repeated to reduce validity concerns, e.g., novelty factors and chance. During tracking, the Tobii eye tracker uses infrared diodes to generate reflection patterns on the corneas of the user's eyes. These reflection patterns, together with other visual information about the person, are collected by image sensors (Tobii T/X series Eye Trackers, 2010). The eye-tracking software is able to track the object/activity/person that the child's gaze focuses on and the duration of eye dwell to determine the child's choice. The duration of eye dwell can be adjusted and for this research the eye dwell was reduced to 1.5 seconds.

The school and the students had access to touch screen tablets. The school also used switches and clickers, eye-tracking technologies, movement sensors, software and a range of apps that are intended to support the students with their communication.

3.5.2 Qualitative

The qualitative data gathering procedures included parental and school staff questionnaires as well as observations and findings from mixed activities. These procedures are explained below.

3.5.3 Questionnaires

The questionnaires contained twenty questions and I developed these independently to explore the topics of the verbal and non-verbal communication methods of the children and of the social interaction between the child participants and their communicative partners. The results are triangulated with the other data to further inform how these young P-V children with complex and SEND communicate, as well as to provide information regarding the child's preferences, which in turn informed the eye-tracking stimuli.

Although a previously validated and published questionnaire may have saved time and resources I chose to construct my own short questionnaire for parents and school staff. This approach ensured the questionnaire included a short list of questions relevant to my research question, accessible wording as well as varied and flexible response options. However, to ensure an appropriate design and effective questions, I drew on influences from the SCERTS questionnaire designed to be completed by an adult who interact with the child on a daily or regular basis, named the Language Partner Stage Questionnaire (Prizant, Wetherby, Rubin, & Laurent, 2003; Prizant, Wetherby, Rubin, Laurent, & Rydell, 2006) (Appendix H). The questions used in the SCERTS questionnaire guided the design of my own questions and the areas to explore, such as social communication (understanding and use of nonverbal and verbal communication in social interaction), emotional regulation (capacity to regulate attention, arousal, and emotional state), and transactional support (ways that partners and learning activities support development). The SCERTS framework is an approach used to enhance communication and social abilities for individuals on the autistic spectrum. It can be used as an assessment tool and an observation framework which focuses on the dynamics of the child in a naturalistic setting and the methods adults use to support the children. I found the questions used had the potential to capture and describe the nature of child/adult interactions in both home and school settings. A small selection of questions were

adapted and added to pre-determined questions. Please note that the questionnaire for this study was designed to gain further information regarding communication and interaction methods and was not a standardised assessment or screening tool.

The questionnaire was pre-tested by an EP who is a specialist in early years work, as well as by a set of parents and a young person. This pre-testing allowed for the identification of questions that lacked clarity, helped to identify repetitive questions and highlighted any issues with the questionnaire that might lead to bias. This pre-testing led to a revision of the order of questions.

The questionnaires were sent to the teachers of participants via email. Two of the parental questionnaires were administered over the phone, one via post and one parental questionnaire was not completed. It has been shown that participants may be less guarded in a questionnaire than in an interview (Dobbins & Abbott, 2010). Timing constraints and timetabling were also considered with the school staff; by receiving the questions via email the staff were able to complete them when they had sufficient time.

I chose to administer the questionnaire over the phone due to research that shows that using the telephone is more likely to improve response rates (Dillman et al., 2009). Dillman also counsels that telephone questionnaires can yield more positive results than postal questionnaires. To ensure positive results from the telephone questionnaires the parents were encouraged to be as honest as possible throughout and a professional relationship was built over two phone calls with each parent. Due to the demographic of the cases, it was felt that a telephone questionnaire might allow parents with English as an additional language, and perhaps a lesser command of written English, to answer questions verbally. I would also have the opportunity to re-word the questions in order to be understood. One of the parental questionnaires was completed and returned via the post. However, it has been found that there are no significant differences in the prevalence of missing data between questionnaire response methods (Johnson, Seaton, Manktelow, Smith, Field & Draper, 2014).

The data was analysed using qualitative content analysis, which will be described in depth later, and the findings triangulated with the other qualitative and quantitative data.

3.5.4 Observations

To access the views of children with complex and SEND, it is often more appropriate to examine their expression of preference, as determined by their communicative behaviour and their experience with others within their natural environments (Hill et al., 2016).

To capture the nature of each child's spontaneous communicative behaviours and the methods of communication used by children and their communicative partners, in a variety of settings, I chose data collection methods which utilised both unstructured ethnographic and structured observations methods. This allowed the openness and flexibility required to observe and create a 'thick description' of the context, whilst also providing a structure to help make sense of the data and understand the complexity of issues.

The observations took place on two separate occasions, and each occasion was an opportunity to see the child in different situations (classroom, playing outside, during PE lessons, during soft play and lunch times) and at different times of day. As mentioned, these dates and times were arranged with the Head Teacher and school Family Liaison Officer and were checked with the class teachers, to ensure the children's timetable and routine were not disrupted. Verbatim observational notes were taken and later typed with all the identifying information removed. The observational data was guided by the SCERTS model (Prizant et al., 2003), and this is a model that the school staff were familiar with. The SCERTS model was intended to focus on children with significant challenges in social communication and emotional regulation, needs that are shared by most children with ASD. However, this model can also be used with children with similar challenges, e.g., children with developmental disabilities, communication difficulties, sensory processing disorders and difficulties in social communication and emotional regulation. SCERTS has been designed and organised to provide an individualised approach and highlights the child's profile of strengths and needs. Therefore, SCERTS is appropriate for pre-verbal children as well as verbal children. The SCERTS communication framework offers a range of questions to guide observations in six areas, these are:

1) **Joint Attention:** Why did the child communicate? For which purposes or functions (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share experiences, to express emotions)?

2) **Symbol Use:** Did you observe the child initiating communication or communicating in response to others? If so, how did the child communicate (e.g., imitated actions/words, gestures, gaze, vocal, verbal, symbols)?

3) **Mutual Regulation:** How did the child respond to assistance offered by partners? Did he/she seek assistance from others?

4) **Self-Regulation:** What did the child do to attempt to regulate his/her emotions and arousal (e.g., sensory motor behaviours, talking to himself/herself, planning and self-reflecting)?

5) **Interpersonal Support:** Which interactive style modifications helped the child regulate, engage, and participate? Which style factors appeared to hinder participation?

6) **Learning Support:** Which aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or which visual supports were most effective for supporting the child's active engagement? Which variables appeared to hinder participation?

When reporting the observational data, I used descriptive reporting and vignettes to reduce the data to manageable and meaningful chunks. I aimed to draw a picture in words of something tangible (Bassey, 1999). Descriptive reporting can also be called portrayal reporting (Stenhouse, 1988) and Stenhouse suggests that vignettes should be used for short descriptive pieces to illustrate particular points. In the case of this research, the vignettes are used to "encapsulate rich observation and crystallise important aspects" (Stenhouse, 1988, p.52) by describing an example of interaction and communication between the child and adults or peers.

3.5.5 Mixed Activities

I worked with the children and a key member of the teaching staff who helped to facilitate the child's ability to communicate preference. I recorded observational notes regarding the ways in which the child communicated and interacted throughout the session.

The decision about which activities to use with each child was steered by the experienced school teaching staff, school resources, researcher observations and reviewing of relevant literature. As each child had different needs, each activity needed to be adapted accordingly; the procedural information, adaptions made for each case and noted limitations will be explained later in the results section. The activities are as follows.

3.5.5.1 School Preference Activity

This activity is based on a profiling tool to help identify the sensory preferences of adults with autism. This activity included 75 cards entitled What Do You Like? Each card shows a different sensory experience and the individual sorts the cards into three categories 'Like' (indicated with a thumb up image), 'Dislike' (indicated with a thumb down image) and 'Neutral' (with no accompanying image).

The adaptations, procedure and limitations of using the variations of the School Preference Activity are described below for Isla, Mark and Liam.

Adaptations:

Isla is Turkish and is aged 4. She has MTHFR deficiency, hydrocephalus and vision impairment

Adaptations – As Isla is visually impaired, the School Preference Activity was adapted by using toys and sensory objects instead of photographs/pictures.

Procedure – These objects were chosen by her class teacher and TA and included a selection that the child enjoys and some with an unknown preference, too. Parallel

observations by myself and a key member of the teaching staff of her behaviour and facial expressions were noted whilst she was introduced to each object.

Limitations – This was an artificial situation set up by adults, with activities and methods designed by adults, to facilitate interaction and a sharing of opinions and preferences within a particular time frame. Although this gave an indication of Isla's preference for the objects that were available, it required informed individuals who had a good understanding of what Isla was communicating in order to have a more accurate picture of her likes and dislikes.

Mark is Irish and aged 5. He has a diagnosis of Autistic spectrum disorder (ASD), speech and language delay and global developmental delay.

Adaptations – The activity used photographs frequently in the classroom and photographs of familiar objects or activities to the child, e.g., Circle Time, snack time, pirate game, food and photos of known adults. The images chosen were informed by observing what Mark appeared to like to do/eat/play with as well as through the questionnaires, plus photographs of objects with an unknown preference. Familiar photographs were used, to make it easier for the child to understand what was being asked of them and to remove reliability and ambiguity issues found with novel 2D images.

Procedure – The responses available were simplified, as Mark was encouraged to make a binary decision by placing the photograph that was handed to him and verbally described into one of the two boxes. One box was labelled with a smiley face, the other with a sad face, indicating 'like' and 'dislike', respectively. Mark placed all the pictures and objects near him in one of the boxes (labelled with a smiley face), as though he was tiding up. The boxes were removed, the photographs were then laid out on the table and Mark was encouraged to choose his favourite. This, however, also resulted in Mark picking up most of the photographs and putting them into a pile.

Limitations – The concept of the 'like' and 'dislike' boxes was a new one, although Mark was familiar with smiley and sad faces to mean like and dislike. Using the boxes was a concept which required being introduced and then reinforced over time. The limited time allocated during this research was not sufficient to introduce, teach and

reinforce the use of the boxes as a choice-making activity. The photographs used were also used by the class teacher to allow Mark to make choices, and usually the choice was received immediately, e.g., the pirate game. For this activity, care was taken not to use those photographs, so as not to create a feeling on anticipation or expectation. Similarly to Isla's adaptations, the photographs provided were a limited selection and were an adult's construction of Mark's preferred objects.

Liam is black African and is 5 years old. He has a diagnosis of Autistic spectrum disorder (ASD), speech and language delay and global developmental delay.

Adaptations – A reduction in the number of photographs. Two photographs of familiar objects (Bourbon biscuit and banana) were used.

Procedure – These were placed on a chair, and Liam chose one and brought it me. The teacher provided some bourbon biscuits for me to exchange with Liam if he brought the relevant photo to me, similar to a picture exchange communication system (PECS) approach. It was originally thought by the class teacher that Liam might not be able to distinguish the photograph and use it as a requesting tool, as PECS symbols are more familiar to Liam. However, Liam was able to choose and differentiate between the two photographs every time, despite placing the photographs in different areas around the room. Liam was not asked to choose by an adult, he was encouraged to explore the surroundings and choose and request a biscuit in his own time.

Limitations – The choice was made out of only two items; it might have been helpful to explore Liam's choice-making abilities using a greater number of objects.

3.5.5.2 Magic Carpet

The Magic Carpet is a software program which projects interactive games and images onto the floor that children can play with and control simply by moving on or over the projected image. It can easily be customised to individual needs and requirements, and there is a wide range of games and activities available. The Magic Carpet was situated in the eye-tracking studio in the school, which allowed for a distraction free environment for the child to play in and explore. I interacted with and observed each

child using various programmes, either independently or alongside the key teaching staff member.

Isla –We (class teacher and researcher) used the flower bed app and the fish pond app. The fishpond app is reported to be Isla's favourite and she uses this on an iPad in the classroom. She sat on the floor, in the centre of the 'pond', while the adults (mother, class teacher, TA and researcher) interacted with the water and moved the fish.

Liam – We (class teacher and researcher) used the fish pond, flower bed and other interactive sensory apps which make noises and musical sounds when you move on the carpet.

3.5.5.3 Eye Tracking

The eye-tracking software 'Look2Learn' was customised so that once the choice had been made by the child (i.e., by the duration of the eye dwell [1.5 seconds] on the image), an audio recording would state which image had been chosen, e.g., "banana". I was able to note the responses from time one and time two.

Mark – On the screen there was one 'liked' object/activity/person and one objects/activity/person with an unknown preference, e.g., Bourbon biscuits and cake; dolls and teddies; sensory inflatable physio rolls (used in PE) and a bench; class teacher and Teresa May; kite and bike; bumble bee and horse; banana and grapes. These selections were informed through observations and analysis of questionnaires. I observed and made notes at time one and time two of which choices were made, through eye tracking.

Table 3.2 – Results from Mark's Eye-Tracking Activity

Mark – Eye-Tracking activity	
Time 1	**Time 2**
Sad face	Sad Face
Banana	Grapes
Doll	Doll
Teacher	Teacher
Sensory roll	Sensory roll
Bee	Horse
Flying a kite	Flying a kite
Biscuits	Biscuits

Michael is 5 years old and British Asian. He has Pelizaeus–Merzbacher disease (a central myelination condition) and Nystagmus.

Michael – Eye-tracking software failed to work for Michael. However, he could respond and complete the 9-point collaboration process twice. The Collaboration process requires the child to follow a moving shape on the screen to ensure that the sensors capture images of the user's eyes so the eye tracking device knows where the user's focus is at any given point in time to be able to use the software most effectively.

3.5.6 Variables

Research in this area is complex, due to the compounding variables and different features that occur in children with complex and SEND and the understanding of the term 'voice'. However, it is important that the research should address these variables, as it is the variety in children's SEND and in children's communicative ability that drives the need for this research, as well as the limited literature that addresses this issue. Below is a comprehensive list of variables that warrant consideration and attempts were made to control these.

Independent variables (categorical variables)

- Demographic status (age, gender)
- Social circumstances (country of birth, home language)
- Lifestyle and behaviour (diet, activities)

- Health status (SEND, motor skills, physical heath, developmental age)
- Visual saliency (where the individual views part of an image/object that is sufficiently different from its surroundings and is worthy of their attention)
- Location of images on the screen (during eye-tracking)
- Calibration of the eye-tracking system used

Dependent variables (ordinal variable)

- Eye-tracking parameters, i.e., gazing and duration of gaze

Mediating variables to consider

- SEND
- Chronological age/developmental age
- Ethnicity/cultural background
- English as an additional language (EAL)
- Novelty
- Fatigue
- Fluency in alternative methods of communication

To control for demographic, health and social circumstances of participants, theoretical sampling was used. Children who fitted the inclusion criteria were selected by school staff.

I could control for a selection of environmental settings e.g. minimising distractions

I attempted to control the observations by conducting observations of the participants in their classrooms and playgrounds without their awareness, to maintain a naturalistic environment.

I usually observed and worked with the participants in the mornings to reduce tiredness and maintain the child's routine.

3.5.7 Possible Biases

Table 3.3 – Possible biases in research

Last-fixation bias	Participants will be more likely to choose the stimulus they last looked at, compared to the other option.
Choice bias	The longer the participant fixes their gaze on one stimulus the more likely they are to choose it. Order and duration of fixation.
Cultural choice bias	Cultural norms (reading left to right).
Left choice bias	The more likely a subject was to look left first, the more likely she/he was to choose items on the left.
Systematic biases	An inherent tendency of a process to support outcomes.
Experimenter bias	The researcher's own expectations of the research may subtly influence data collection and analysis.
Information bias	Misclassification of observations or incorrect or different methods of collecting data.
Selection bias	If the sample is not randomly selected it is important to consider the repercussions on the generalisability and validity of the data collected.

3.5.8 Ethical Considerations

Ethical approval was granted for the study by the Ethics Committee at the University of East London. Ethical practice was guided by the British Psychological Society (BPS) – "Code of Human Research Ethics" (2014) and the BPS Code of Ethics and Conduct (2009). Issues relating to informed consent, working with vulnerable children, confidentiality and anonymity were the three ethical considerations particularly relevant to this topic of research and are outlined below.

3.5.8.1 Informed Consent

Ethics guided the whole process of planning and conducting this research. Before starting the research, I had an introductory meeting with the Deputy Head Teacher in which I presented the research design. I arranged information sessions for staff and the recruitment of participants. I hosted an information evening at the school and invited relevant school staff. This was an opportunity to explain the aim, and purpose of the research and how the data would be used.

Participant information sheets, posters and consent forms were sent to the school's Family Liaison Officer and the Child's Voice and Social Media Lead who could distribute these to the relevant parents. Informed consent was sought from parents on

behalf of their children, due to the age of the children (under 16 years) and the capacity of the children to provide informed consent, in accordance with Mental Capacity Act, (Department of Health, 2005). The consent also granted permission for the school to share contact details of parents with the researcher, so an introductory phone call could be arranged between myself and parents, as well as permission to share information regarding relevant demographic information and the level of needs of the children. Consent was also sought from the Head Teacher of the school to allow the research to take place within the school.

3.5.8.2 Working with Vulnerable Children

One of the main aims of this research was to explore the children's views and preferences. Due to the level of need, and variations in the children's cognitive and language abilities, a number of ethical considerations were relevant.

Children participating in this research were identified by the teaching staff and arrangements for parental consent made through the Family Liaison Officer. Parents were asked for consent on behalf of their child, as they are legally responsible; however, it was also important to ask the children themselves if they wished to participate. This was done using smiley and unhappy faces on the screen before the eye-tracking. A key member of the school staff who was familiar with the children was also present and could identify and inform me if the child did not want to participate. The results were triangulated with how the key person who had a greater understanding of the child's reactions and emotional state. One participant gazed at the unhappy face, over the happy face, rather than the screen however the key person believed this to be due to the novelty of the stimuli rather than an indication of unwillingness to participate.

The children were observed within their school setting, as it has been found that removing children with complex and SEND with a possibly limited understanding of the world outside their familiar environment can be very distressing and can potentially influence the reliability of the responses and therefore result in an inadequate basis for drawing conclusions (Detheridge, 2000). During data gathering (e.g., observations, eye-tracking tasks and other activities), the key member of school staff accompanying the child was instructed not to attempt to influence the child's behaviours.

Steps were taken to limit the effect of the power imbalance between myself, as the researcher and the child participant, such as creating a relaxed atmosphere, gathering data in the child's familiar environment with familiar adults present, introducing myself and allowing the child to be inquisitive, and allowing time for the child to become comfortable with the researcher being there. I visited the school and observed the children in their classrooms twice before completing any of the direct work with them, to help the children become more familiar with my presence.

Data collection sessions were kept brief, between 10-20 minutes, in order to maximise the child's concentration and focus levels, limit the child's feelings of tiredness, discomfort or distress; for some of the children it was important to limit the disruption to their daily timetable or routine. As the children were unable to communicate verbally, each one was observed throughout all activities by the researcher and a key school staff member who knew the child well, in order to identify any signs of discomfort or distress and the child's desire to withdraw from the activity.

3.5.8.3 Confidentiality and Anonymity

Adult participants were fully informed about confidentiality. They were made aware that the children's names and the names of the parents, staff and school would be removed in the write up of the research and replaced with pseudonyms. Under the Data Protection Act (1998), specific details of the participants' characteristics were not documented, to ensure they could not be identified. Information will be kept until after the write up of the findings and finalisation of the thesis, and then it will be destroyed.

Participants were informed that, in circumstances where the researcher believed that the participants or others were at risk of harm, confidentiality would have to be broken. Information obtained from and about a participant during an investigation is confidential unless otherwise agreed in advance.

3.5.9 Ethical Principles

Included below are ethical principles that were followed which are based on the ethical principles stated in the 'Ethics and Code of Conduct' (BPS, 2009) as well as my own

moral principles that helped guide the research. The research proposal was also passed through the UEL's Ethical Committee Panel (Appendix J).

The researcher's personal moral values underlying this research are:

1. **Autonomy,** the right of people to hold views, to make choices and to take actions based on their personal values and beliefs (Fox, 2014b)
2. **Transparency**, referring to research that shows an explicit connection between the process and the outcome
3. **Social justice** "the full and equal participation of all groups in society that is mutually shaped to meet their needs" (Speight & Vera, 2009, p 54)

3.6 Data Analysis Procedures

This section describes the analysis procedures for the quantitative and qualitative data collected, after describing the importance of transparency when recording psychological research. As previously mentioned both quantitative and qualitative data were collected simultaneously; the quantitative data is in a supportive role to the qualitative findings. Both methods were used to explore the same issue but answering different research questions (research questions are repeated below). Data was anonymous and a pseudonym's were assigned to each child and adult participant.

The main research question for the current study is:

How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?

Sub-questions:

- What techniques and strategies are used to ascertain the child's views?
- What adaptations to the communication methods were needed to meet the needs of the children participating?
- What are the researcher's experiences in using the available methods of communication?

3.6.1 Transparency in Research

This research is reported in a transparent way, so the reader can make informed judgments about the conclusions and claims taken from the findings. During research and data collection it is inevitable that some things do not go as planned. However, it can be the response to these unforeseen circumstances that matters. It is important that ethics are not compromised in pursuit of interesting research (Battersby, 2016). Transparency and complete reporting of psychological research can provide a clearer understanding of the strengths and weaknesses of a study. And finally, keeping to reporting standards can make it easier for other researchers to design and conduct replications and related studies, by providing more complete descriptions of what has been done before (American Psychological Association (APA), 2008). Without complete reporting of the critical aspects of design and results, the value of the next generation of research may be compromised (APA, 2008).

3.6.2 Quantitative Analysis

A mixed-methods research design was chosen, to explore and capture the complexity of issues relating to hearing the views of P-V, pre-school children with complex and SEND. A concurrent embedded approach was proposed, with both quantitative and qualitative data collected simultaneously and both presenting different views of the area being explored.

The quantitative element of the research design (eye-tracking/tracking data) was included to support the main qualitative elements (questionnaires, observations and mixed activities). In an earlier chapter, the potential importance of technology and augmentative and alternative communication for P-V children with complex and SEND were discussed. Eye-tracking/tracking data were chosen as the quantitative element of this mixed method design, as research suggests that, when measuring the child's eye-tracking, interpretations about psychological processes can be made, such as preference between two or more stimuli (Krajbich et al., 2010).

Eye-tracking activities were used with two of the participants. However, due to the differentiation required to meet the needs of the children, the researcher needed to use a simpler eye-tracking programme. The nature of this simplified software meant that the

results of the activities could not be quantified, measured or recorded as quantitative data. However, the eye tracking did provide further qualitative observational data, which added to the rich description of the context and will be discussed in the qualitative section.

During the Data Collection section I discussed the limitations of a mixed methods approach. This included concerns around how the data would be integrated within the analysis phase, as each method has unequal weight. This may have resulted in the two repeat approaches providing unequal evidence, which could pose a problem when interpreting the results. The fact that the research is unable to report a quantitative element eliminates this limitation and one of the potential challenges during the analysis phase.

3.6.3 Qualitative Analysis

The literature review showed that one study out of the selected nine used content analysis, while the others used various qualitative or mixed-methods approaches. Two of the papers from the literature review used case studies, while the remainder used focus groups, multiple dyads or larger sample groups. Below, the rationale for the chosen qualitative multiple case study methodology and qualitative content data analysis is discussed.

I identified the need for an exploratory piece of research that explored the issue of hearing the voices of P-V, pre-school children with complex and SEND. This issue was explored using a multi-method approach, including observations, questionnaires and direct work with the children. The focused use of research methods takes the everyday actions of listening to people's stories, observing, interacting, learning about their interests, irritations and culture a step further, to a systemic analysis that may lead to a better understanding, not just for the researcher but also for others (Tracy, 2013). A systematic interpretation of the data collected provides an analysis that sheds light on the possible steps to social transformation (Tracy, 2013).

Qualitative methodology was chosen as an element of this research due to the nature of the research questions and the need for 'field research' in order to provide insight into the social and cultural activities that might be missed through surveys (Tracy, 2013).

Qualitative researchers study people in their own territory, within naturally occurring settings (such as home and school) (Willig, 2013). In real-world settings, qualitative research methods can uncover significant issues that may inform future research, they can also facilitate the development of trusting and professional relationships with participants that may encourage a level of disclosures, and have the potential to give a voice to those populations who are marginalised or stereotyped. Qualitative methodology can provide an opportunity to tell a story that not many people know about (Tracy, 2013). This happens by not asking about what people say they do, but observing and listening to what people actually do (Tracy, 2013).

It was important not only to consider the important and fundamental by-proxy information provided by the adults around the children, but to also observe and make sense of the children's experiences. One aim for this research will be to inform professionals about how to improve the ways in which the voices of the children they work with are heard. Qualitative research can help people understand their organisations, community and society and can provide accessible knowledge which targets particular issues (Tracy, 2013). In recognising the relevance and value of qualitative research for this research project, it is also important to recognise that qualitative research can support quantitative research and vice versa. "Different methods have different strengths and weaknesses. If they converge (agree) then we can be reasonably confident that we are getting the true picture" (Gillham, 2000, p13).

When conducting qualitative research there are three core qualitative concepts which the researcher should consider: self-reflexivity, context and thick description (Tracy, 2013).

1. **Self-reflexivity** refers to the researcher's consideration of how their own values, beliefs, background, and experiences impact on interaction with all aspects of the research, including deciding on the research questions, sampling, data analysis and framing of the results and conclusion.
2. **Context** refers to how the researcher immerses themselves in the scene and makes sense and build on the knowledge of the culture. "Man is an animal suspended in webs of significance he himself has spun, I take culture to be those webs, and the analysis of it to be therefore not an experimental science in search of law but an interpretive one in search of meaning" (Geertz, 1973, p.5).

3. Related to the idea of context is that of a **thick description**, where researchers immerse themselves in a culture, investigate the circumstances present in that scene and, only then, move towards grander statements and theories (Tracy, 2013). Researchers can collect information and data from many different sources and over varying time periods; triangulation of different data sources can potentially generate what anthropologists call holistic work or thick description (Jick, 1979), and the aim is to draw conclusions from densely textured facts (Geertz, 1973).

Qualitative data analysis methods have been criticised over the years and have faced acceptance problems as well as academic and disciplinary resistance (Denzin & Lincoln, 2000). Qualitative researchers were labelled as unscientific, exploratory and subjective (Kohlbacher, 2006). However, in the last century, the development of qualitative methods showed impressive advances and results, thus helping them to gain more acceptance, not only in the field of social research (Mayring, 2002). This has led to the appearance of mixed-method approaches and the use of triangulation (Creswell, 2003).

3.6.4 Why Qualitative Content Analysis (QCA)?

Qualitative approaches share a parallel aim in that they make it possible to further understand a particular phenomenon from the various perspectives of those experiencing it. There are many methods of qualitative analysis and this section briefly explains the consideration given to other methods and the reason for qualitative content analysis (QCA) being chosen as an analytic tool for this research.

Thematic analysis and qualitative content analysis are two common forms of qualitative analysis and both can be used within a post-positivist epistemological framework. It has been suggested that thematic analysis can be used as a flexible and useful research tool that provides a rich and detailed, yet complex, account of the data (Braun & Clarke, 2006). It was due to the complex account of the data, paired with no clear agreement in the literature about the thematic process, that I chose content analysis for this multi-case study. For pragmatic reasons, qualitative content analysis was used, rather than thematic analysis, as it can be used for the simple reporting of common issues mentioned in data across multiple case studies (Green & Thorogood, 2004).

This research uses an inductive qualitative content analysis rather than Grounded Theory, as with Grounded Theory the researcher is supposed to have no theoretical lens. The data is collected and analysed without a theory, and themes are considered in isolation from literature. Due to the complex nature of the research question, I wanted to read around the area by conducting a literature review and learn about existing tools and approaches used, e.g., SCERTS.

Questionnaires and observations used in this case study were designed to research and explore the ways in which current methods are used to facilitate communication with pre-verbal, pre-school children with complex and special educational needs and disabilities. These approaches also explore what works and what doesn't work, to inform future practice. Although it was hoped that the findings would add to how this issue is understood, the fact that the phenomenon being explored was ways of communicating with this population, rather than the participants' experiences, meant that Interpretive Phenomenological Analysis (IPA) could not be used.

Classical content analysis, according to Titscher, Meyer, Wodak, and Vetter (2000, p.55), is "The longest established method of text analysis among the set of empirical methods of social investigation". Classic content analysis is categorised as a quantitative analysis method, due to the researcher being able to quantify aspects of texts. It is seen as a coding operation, processing raw data into a standardised form (Babbie, 2001), and the simplest form of evaluation subsequently consisted of counting the numbers of occurrences per category (supposing that there was a relationship between frequency of content and meaning) (Kohlbacher, 2006).

Many critics of quantitative content analysis argued that it can be reductive in nature to count and measure patterns in text. The true meaning of what was being communicated could be lost; Mayring (2000) speaks of a superficial analysis without respecting latent contents and contexts, working with simplifying and distorting quantification. It was these criticisms that led to the development of QCA. Bryman defines QCA in the following way.

> "An approach to documents that emphasises the role of the investigator in the construction of the meaning of and in texts. There is an emphasis on allowing categories to emerge out of data and on recognizing the significance for understanding the meaning of the context in which an item being analysed (and the categories derived from it) appeared" (Bryman, 2004, p.424).

QCA is the chosen method to analyse the questionnaires in this research. It has been described as a research technique for making replicable and valid inferences that can provide new insights, increase a researcher's understanding and meaning of a phenomenon or inform practical actions (Krippendorff, 2004). Recognising this meaning is why researchers engage in QCA rather than other investigative methods (Krippendorff, 2004). QCA can be used to develop an understanding of the meaning of communication (Cavanagh, 1997); it is concerned with meanings, intentions, consequences and context (Downe-Wamboldt, 1992).

QCA can be applied in an inductive or a deductive way; the purpose of the research dictates which way it is used. Inductive is a 'bottom-up' approach that is data driven. In this instance I will attempt to avoid any preconceptions and categorising the data into pre-existing coding frames. Deductive QCA is when the purpose of the study is based on prior knowledge and the main aim is theory testing (Kyngäs & Vanhanen, 1999).

For this research, as it is exploratory in nature and there is limited literature on the subject area, the inductive approach will be used.

3.6.5 Qualitative Content Analysis Procedure

Like other qualitative methods, gathering and analysing data are conducted concurrently in descriptive qualitative approaches, adding to the depth of the analysis (Elo & Kyngäs, 2008). This research will follow the process of qualitative content data analysis according to Elo and Kyngäs (2008), summarised below.

3.6.5.1 Preparation

> Being immersed in the data and obtaining the sense of whole, selecting the unit of analysis, deciding on the analysis of manifest content (developing categories) or latent content (developing themes).

This research analysed data from parental and teacher questionnaires per case study. Each questionnaire included twenty questions that provided condensed and manageable amounts of data without the need for summarising further.

3.6.5.2 Organisation

> Open coding and creating categories, grouping codes under higher-order headings, formulating a general description of the research topic through generating categories and subcategories abstracting.

Each questionnaire was annotated and certain phrases and vocabulary were highlighted and paraphrased. Due to the nature of the questionnaires, most responses were short (two sentences) or in list form, creating units of analysis. The annotated coded extracts were then grouped to form sub-categories and generic categories which relate to the main category/question of research.

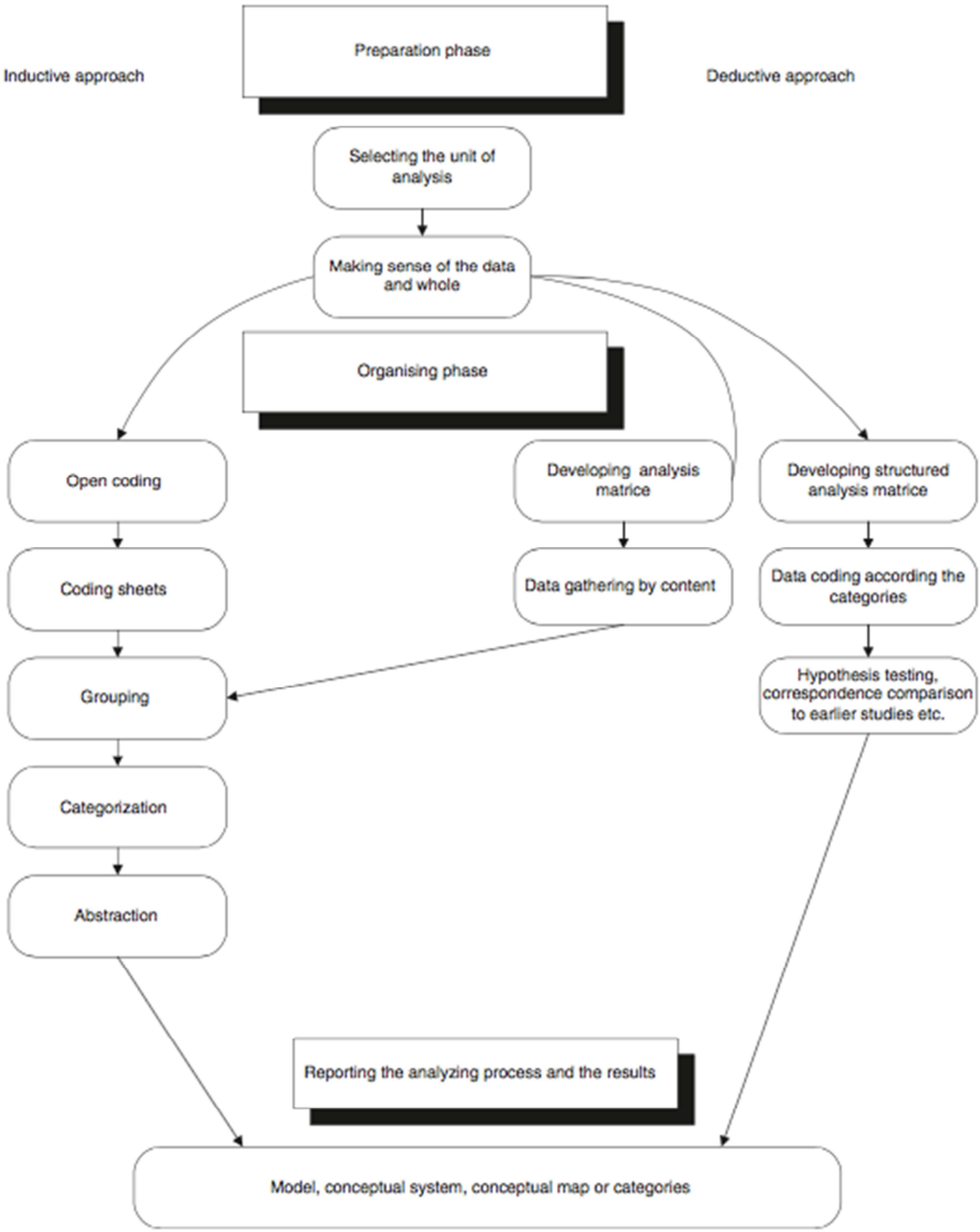
3.6.5.2 Reporting

> Reporting the analysis process and the results through models, conceptual systems, conceptual map or categories and a story line.

The findings were presented in a table for each case study, showing the main categories, generic categories and sub-categories as well as the paraphrased/extracts from the parent and teacher questionnaires. The table was then summarised into a visual representation, showing the abstraction process based on the example shown in Elo and Kyngäs (2008).

QCA can be an appropriate analysis methodology for case study research (Kohlbacher, 2006). Case studies can provide a multi-dimensional perspective that can be used to create a shared view of 'the situation', and case study research has a major function in generating hypotheses and building theory (Kohlbacher, 2006). Below, the relationship and appropriateness of content analysis and case study research are discussed further.

Figure 3.4 - Visual Representation Showing the Abstraction Process of Content Analysis Based on the Example Shown in Elo and Kyngäs (2008), p5



3.6.6 Using Content Analysis with Case Studies

As mentioned earlier, the context and richness of the data is crucial to qualitative analysis, and similarly the defining features of a case study include in-depth, intensive and sharply focused exploration of occurrences (Willig, 2013). Using QCA with case studies can be beneficial for the following reasons.

3.6.6.1 Openness and the Capacity to Deal with Complexity

QCA synthesises openness, as anticipated due to the qualitative research paradigm. It can take a comprehensive approach towards analysing data and strives to understand the complexity of the social situations examined. The capacity to cope with complex data and gradually reduce it is due to the methodologically careful, step-by-step analysis process. The procedure of summary, explication and structuring step-by-step reduces complexity and filters out the main points of analysis. Therefore, QCA perfectly fits the principle of case study research: helping to understand complex social phenomena (Kohlbacher, 2006).

3.6.6.2 Theory-Guided Analysis

The central idea is that researchers constantly compare theory and data, iterating toward a theory which closely fits the data (Eisenhardt, 1989). As well as theory building, it is important to compare emerging concepts or hypotheses with existing literature, because connecting the emergent theory to existing literature enhances internal validity (Eisenhardt, 1989).

3.6.6.3 Amalgamation of Context

Different to the classic content analysis mentioned earlier, QCA recognises that the context in which the data is gathered is also central to the interpretation and analysis of the data. It is not only the apparent content of the material that is important but also the underlying content that needs to be taken into consideration. This is to achieve a more holistic analysis of complex issues. “The key feature of the case study approach is not method or data but the emphasis on understanding processes as they occur in their

context" (Hartley, 1994). Therefore, research questions about 'how' and 'why' rather than 'what' or 'how much' are best suited to the case study strategy (Kohlbacher, 2006).

3.6.6.4 Amalgamation of Data

The object of QCA can be any kind of recorded communication, e.g., transcripts of interviews/discourses, protocols of observation, video tapes, written documents (Kohlbacher, 2006). In a comprehensive study that looks at analysing multiple data sets and case study research usually corresponds to such a design the same methods of analysis could be applied. According to Yin (2003), a strength of case study data collection is the opportunity it provides to use many different sources of evidence, which allows a researcher to address a broader range of historical, attitudinal and behavioural issues. Mayring (2000) states that QCA can be combined with other qualitative methods, which can be advantageous when dealing with various heterogeneous types of data.

3.6.6.5 Amalgamation of Quantitative Steps of Analysis

Researchers in the field of socio-scientific research suggest using and combining several methods of triangulation or cross-examination, in order to obtain more valid results (Kohlbacher, 2006). The combination of qualitative and quantitative methods can allow a deeper insight and a more general view of the object of research (Diekmann, 2005). Triangulation and amalgamating different data sets, as well as quantitative and qualitative steps of analysis, help researchers to be more confident of their results and can also lead to a synthesis or integration of theories (Jick, 1979).

3.6.7 Triangulation of Data

For each case study there are approximately five data sets. These data sets will be compared and contrasted, to show whether the data from one source correlates or concurs with data collected from another source (Basit, 2010). As the data sets are collected and analysed using different methodologies, the findings will be triangulated using methodological triangulation; this is when the same issue is investigated by using two or more methods of data collection, e.g., questionnaires and observations. This triangulation of data is a strategy which is used to establish concurrent validity, looking

at the same issue from different perspectives. Lin (1976) argues in favour of triangulation by stating that exclusive reliance on one method may bias or distort the researcher's view of the specific part of the social world being investigated. However, Fielding and Fielding, (1986) state that the depth and breadth of one method can paint a full picture of the phenomenon, and triangulation does not necessarily increase validity, reduce bias or bring objectivity to research. This research, however, is using the triangulation method, as it can be a helpful strategy to check validity and reliability of data, and, due to the complexity of the issue being explored and the case study design, different viewpoints and perspectives are required to gain a thorough understanding of communication methods of P-V children with complex and SEND.

Triangulation procedure for this research:

4 Data gathered through questionnaires will be analysed through QCA and will produce main and sub-categories, describing current key principles of interaction and communication methods.

5 The observational data will be recorded and the vignettes analysed by applying the SCERTS framework:

5.6 The level of interaction and communication over settings and situations and with various communicative partners

5.7 The extent to which the setting and approaches hindered or facilitated the child's communication

5.8 How the relationship with the adult/communicative partner helps or hinders communication (Hill et al., 2016)

6 Eye-tracking and mixed-activity information will be recorded as observational findings.

7 A summary and conclusion of the findings for each case study.

8 The main categories from all four case studies will be compared, contrasted and discussed with regards to informing principles for practice.

3.7 Validity, Reliability, Relevance and Impact

This section begins with a discussion of the issues surrounding the analysis of the qualitative and quantitative data, before considering the measures taken to ensure the findings were as reliable as possible; in other words, would this research yield the same

results if replicated elsewhere by another person? Concerns are highlighted regarding the validity of the research, is the research exploring and measuring what it aims to, in order to answer the research question? Finally, the transferability of the research findings as well as feasibility, resources utilisation and the role of researcher will also be discussed.

Qualitative research understands that the researcher inevitably influences the research, as the researcher chose a research topic, decided on a research question and design of the study, and chose the methods of data collection, analysis and interpretation of findings. Qualitative research embraces subjectivity and focuses on a particular issue, such as the subjective and situational experiences of the participant, in an attempt to understand and create meaning. Ratner (2002) explains that objectivism is the highest form of respect for the participants being studied. It respects the participant's psychological reality as something meaningful and important which must be accurately comprehended. Subjectivism either denies a psychological reality to participants or else makes it unknowable. The psychology of other people is clouded by the subjectivity of the observer and is not recognised for what it (truly) is (Ratner, 2002).

The aim of this research will be to explore methods by which how professionals might hear the voice of P-V, pre-school children with complex and SEND, in order to develop better approaches. The voices of children are subjective, and influenced by personal feelings or opinions. However, the message communicated needs to be understood objectively and respected as truth by the researcher.

3.7.1 Reliability

During this research I have become an integral part of the data gathering, especially during the observations and the telephone questionnaires. As a result the question "Would this research yield the same results if replicated elsewhere by another person?" is difficult to answer. In order to tackle this issue, the researcher has been transparent regarding procedures and decisions made, as well as providing rich descriptions of the context surrounding each case experiment, such as demographics of the child and details of their SEND, adjustments that needed to be made to the approaches and techniques used and the emotional state of the participant and researcher.

3.7.2 Reliability of Content Analysis

Here, several issues are mentioned that need to be considered with regards to the reliability of content analysis.

9 Although this research includes written evidence from teachers and parents through the questionnaires, the responses may not have been written with the research in mind, and the researcher would need to infer intentions from the text (Robson, 1993).

10 Some of the questionnaires could have included limited or selective information, for various reasons, which also poses the question of validity as well as reliability.

11 The classification and coding of the text could be inconsistent, due to human error or ambiguity in the coding rules (Weber, 1990).

12 Words are characteristically ambiguous, and the original constructed meaning could be lost to the reader, who may apply their own meaning of the word.

13 Categories identified in the analysis may reflect the researcher's agenda despite efforts to ensure objectivity and reflexiveness.

Qualitative analysis cannot be evaluated using the same criteria as quantitative research, which aims to eliminate researcher bias, and strives for unbiased, objective observation of reality (Robson, 1993). Qualitative research, by nature, attempts to make meaning and to understand a particular context, including individual experiences, feelings and views. A valid piece of qualitative research attempts to report methods and practice with transparency, thus passing the burden of generalisability to the reader (Mertens, 2015), rather than seeking to eliminate researcher bias or generalisability. Stiles (1999) suggested that qualitative research can be evaluated according to criteria relating to a) good practice in conducting the research, i.e., how well the research was carried out; and b) validity of the interpretations, i.e., the trustworthiness and utility of the interpretations made.

3.7.3 Validity

The table below highlights concerns regarding internal and external validity.

Table 3.4 - Internal and External Validity

Threats to internal validity	**Actions to take**
• Participant drop out	• Use a larger sample or recruit more participants than required
• Maturation / development of the children in sample may change results over time, e.g., repeatability measure.	• Select participants of similar developmental age
• Selection may not have characteristics that are equally distributed	• The sample will be heterogenic case-study samples from experimentally accessible populations.
• Participants may become familiar with materials when repeated	• Have an appropriate time interval between both tests
• Measuring 'one off' preferences	• Use different images of the same object, and display them at different places on the screen
• Infants can sometimes engage in a blank stare. Can infants look without seeing?	• To reduce blank stares at the screen, I could use moving objects so the child will have to track the image across the screen
• Creating themes on limited evidence	• Triangulate different data sources, which allows for more data to justify themes
• Incorrect interpretation of what the participants said	• Use participant checking to determine how accurate the interpretations were, possibly in a follow up interview.
• Not providing enough contextual information	• Use rich, thick descriptions and perspectives. The themes and conclusions that are drawn then become more realistic
• Researcher bias	• The researcher to be reflective and create an open narrative on how the researcher has engaged with the research
• Limited time spent in the setting or with participants	• The researcher will spend enough time in the field to understand the phenomenon further

Threats to external validity	Actions to take
• Limited characteristics of the sample and generalisability	• The researcher restricts generalisability claims and is explicit about the rationale for case-study examples
• Characteristics of the setting and measures may limit generalisability of findings	• The researcher uses many methods within different areas of the setting to see if the same results occur
• Results at a particular time cannot be generalised	• Repeating the tests at an appropriate later time to see if the same results occur

3.7.4 Transferability of Findings

The aim of this research will be to inform professionals and assist in the development of improving methods of gaining the voice of P-V children under the age of five with special educational needs and disabilities (SEND). As this research uses a case study sample, the results cannot be generalised to the wider population, however, to allow for transferability of the findings, this research provides sufficient detail of the context and situations, cases and approaches, with the aim that the reader can decide whether the environment is similar to another situation in which they are working, or cases that they are working with, and if the similar approaches could be applied.

3.7.5 Feasibility and Resources Utilisation

It is important to consider the usefulness and appropriateness of the research and the extent to which the research can be implemented within the specific setting. To increase the feasibility of the evaluation, this research included the key school staff within the procedures, and details of the findings will be shared, so that the school staff can feel competent and confident in using the various methodologies and adjusting them appropriately to meet the needs of the child.

The evaluation will be fed back appropriately to each stakeholder (children, staff, parents, whole school, local authority and university), which will help link the process to outcomes, as well as demonstrating how the findings can create a positive change in practice and serve the needs of the stakeholders. Feeding back the findings also allows an opportunity for stakeholders to re-frame and reinterpret personal judgements and

concerns about practice they may hold. I will be able to interpret the findings appropriately and answer questions or concerns, so as to reduce any misinterpretations.

I needed to consider the difficulties of conducting a piece of research in a real-world setting, such as a special school nursery. The main issues to consider were to plan contingencies for the length of time it takes to recruit and gain consent for children, parents and staff participating, allocating a period of time in which to gather data that is convenient for those involved, which may include being mindful of school holidays and OFSTED inspections, as well as considering the likelihood of the children being unwell and having to attend external appointments. An arrangement to collect data was made in advance with the Head Teacher, class teachers and parents. As the research used technology (eye trackers), there was a need to be linked to technology support, both through the university and through the school. This ensured there was support if the researcher encountered any mechanical breakdown or other difficulties and also helped with the customisation of the software.

The Family Liaison Officer at the school supported the researcher in gaining parental consent and collecting the signed consent forms, to reduce the potential for lost or unreturned postal forms. This research was managed by the sole researcher (EP in training) and supervised by a senior EP. The research design was an extensive guide for the research. However, there was a need to have the ability to react and adapt to any unforeseeable circumstances.

3.7.6 Role of the Researcher

In adopting a mixed-methods methodology, it was important to consider the context in which the research was carried out, as well as my current values and beliefs that could potentially bias the research. In order to avoid these personal contributions greatly impacting on the research, it was important to be mindful and aware of personal value systems, moral principles and biases.

The context in which the research was conducted was that of a Trainee EP at UEL whilst concurrently working for a local authority EPS. Being a student and working for a local authority required working as a researcher and a practitioner at the same time, which prompted careful planning and implementation of the research. This research,

therefore, was conducted whilst also responding to the requirements of different stakeholders.

The aim of this research was to inform the practice of professionals who work with children and have a positive impact on the EP profession. I hope this research will inform guidelines, reporting techniques and approaches for professionals to gain the voice of P-V pre-school children with complex and SEND. This will be available for all schools, practitioners and local authorities to inform their work with children. As this research is part of a doctorate, the researcher will have the opportunity to present the research to the first, second and third cohorts in summer 2017 and to submit it for publication in the Educational Psychology Research and Practice open access journal.

3.8 Chapter Summary

This chapter outlined the research rationale and research questions, as well as the ontological and epistemological orientation. This piece of transformative research takes a post-positivist stance based on the belief that one reality does exist (the child's voice), but arguing that it can be known only imperfectly because of the researcher's limitations. This research positions itself within the transformative paradigm and also has elements of pragmatism, as the methods of hearing the voice of the child need to be considered within socially and historically contexts; however, there needs to be a flexibility in the way the children's reality is captured. This research explored approaches and techniques to hear the voice of children from a heterogeneous population, in order to further develop these methods and inform professional practice.

The mixed-methods research design and recruitment of multiple case studies were outlined. Relevant contextual and demographical information re: the participants and school was shared, and data collection methods were explained (questionnaires, observations, mixed activities and eye-tracking activities). I explained the importance of the transparency in psychological research, before explaining the reason for the lack of a quantitative element to the mixed-methods design. The quantitative component could not be captured, due to the need for differentiation of the chosen eye-tracking software, which subsequently brought issues with quantifying the data. Qualitative data analysis methods were discussed in detail; QCA was chosen, as this approach was developed to explore the underlying meaning behind data. It allows openness and

flexibility, encourages triangulation and also utilises a structured analysis process, in which themes can develop through inferences drawn from the data sets, to help the researcher make sense of the complex issues. This research outlined the complementary relationship between case study design and the chosen inductive QCA approach. Details regarding the SCERTS communication framework and the ways in which this informed the researcher's questionnaires observation approach and analysis were outlined.

Consideration was also given to the variables and possible biases in data collection and analysis. Ethical guidelines and main ethical principles followed throughout the research were defined, and finally the validity, reliability, relevance and impact of the research were also discussed. This research seeks to provide findings to develop approaches used to explore the voice of P-V children with varying levels of SEND and influence the practice of how professionals involve children and YP in decisions made about them.

The following chapter provides the analytical findings for each case study.

Chapter 4

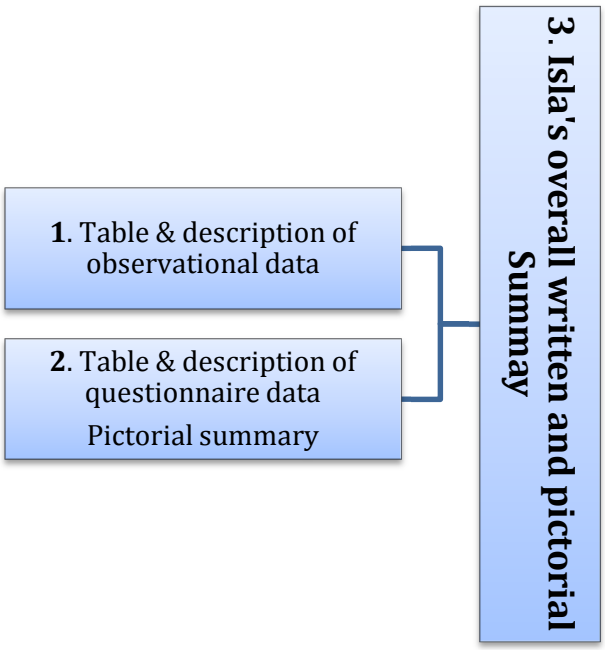
Presentation of Analytic Findings

This chapter presents the analytic findings from the observational and questionnaire data from each participant. The analysis of each data set is reported in chronological order of working with the children, starting with Isla then Mark, Liam and finally Michael. Each analytic data set is displayed in table form, pictorially and in text, before the overall findings are amalgamated and key themes, differences and broad principles for practice are summarised.

The observational data is displayed in table format and the categories are derived from the SCERTS observational framework. The findings from the questionnaires are written in prose and categorised in generic and sub-categories that derived from the content analysis of the data. The analysis of the data will seek to address the main research question "How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?

4.1 Participant 1– Isla

Figure 4.1 Isla – Analytic Data Map



4.1.1 Observational Data - Analytic Findings

Table 4.1 - Isla Observational Data

Case study 1– Isla*, Female, Aged 4, Turkish		
Summary of child's SEND: MTHFR deficiency and hydrocephalus, vision impairment, wears glasses and has started to use a cane when walking, prone to infections, able to make noises and repeat familiar tunes		
Observational data (Vignette 1): I worked with Isla using the 'Magic Carpet' room (an interactive projector) and used the flowerbed app and the fishpond app. The fishpond app is reported to be her favourite, and I observed her using this on the iPad in the classroom. She sat on the floor, in the centre of the 'pond', while the adults interacted with the water and moved the fish. Isla spend short periods of time throughout the session rocking. After a while, Isla began to rub and bang the floor, smiling as the fish moved around her. She crawled over the pond and off the Magic Carpet and then back onto it. She began to imitate hand washing, this was thought to be because of the water sound effects used, and at home her mother shows her how to wash her hands by rubbing them together. This was an action she would repeat over the session. When the session had ended, the TA said "finished!" supported with Makaton. Isla held the hand of the TA and walked the TA to the door. In attendance: Isla, Isla's mother, teaching assistant, researcher		
SCERTS questions	SCERTS observation	Observation notes
Joint Attention: Why did the child communicate? For which purposes or functions (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share experiences, to express emotions)?	Engages in brief reciprocal interaction (1.2)	• When it was time to leave, she held the hand of the TA and walked the TA to the door
Symbol Use: Did you observe the child initiating communication or communicating in response to others? If so, how did the child communicate (e.g., imitated actions/words, gestures, gaze, vocal, verbal, symbols)?	Spontaneously imitates familiar action (1.1) Follows instructions with visual cues (2.3)	• Imitating hand washing behaviours modelled by her mother at home • She responded appropriately to the word 'finished', which was supported with Makaton sign
Mutual Regulation: How did the child respond to assistance offered by partners? Did he/she seek assistance from others?	Engages when alerted by partners (2.2)	• Encouraged to interact with the fishpond and engaged with the sounds and lights through verbal encouragement from the adults
Self-Regulation: What did the child do to attempt to	Uses behavioural strategies to regulate arousal level	• Isla rocked as she sat

regulate his/her emotions and arousal (e.g., sensory motor behaviours, talking to himself/herself, planning and self-reflecting)?	during solitary and social activities (2.1)	on her knees on the floor. This was a self-stimulating behaviour
Interpersonal Support: Which interactive style modifications helped the child regulate, engage and participate? Which style factors appeared to hinder participation?	Follows child's focus of attention (1.1) Imitates child (1.6) Allows child to initiate and terminate activities (2.4) Gets down on child's level when communicating (4.1) Adjust complexity of language input to child's developmental level (6.2)	• The adults observed where Isla was focusing on, e.g., the colours and shapes as they moved or the noise, and watched her move freely across the floor • The researcher imitated Isla when she banged the floor and wiped the floor with her hands • Isla crawled off the interactive mat for a time, and re-engaged later in her own time • The adults were sat or crouched on the floor at Isla's level • The language used was familiar to Isla and consisted of simple, clear instructions, using one or two words
Learning Support: Which aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or which visual supports were most effective for supporting the child's active engagement? Which variables appeared to hinder participation?	Defines clear beginning and end to activity (1.1) Offers varied learning opportunities (1.5)	• The ending was made clear with simple verbal instruction, supported by Makaton, and the machine was turned off. Isla took the hand of the TA and walked her to the door understanding that the activity had finished • The learning opportunities were varied, as the two Apps were different in the way individuals were expected to interact with them and the cause and effect. Isla was able to experience the difference

		in colours, lights and noises from both applications
Research questions		
What techniques and strategies were used to ascertain the child's views?	• Observation of her facial expressions and movements during her time interacting with the Magic Carpet • Observing Isla's physical movements, termination and re-engagement with the activity • Observing her imitations and using her mother's understanding and shared experiences to make sense of her behaviours • Observing her intensity and variety of interaction with the Magic Carpet	
What adaptations to the communication methods were needed to meet the needs of the children participating?	• Isla required a multi-sensory approach, and the sensory information received supported her to make decisions about how to interact with the Magic Carpet, e.g., listening and watching the shapes and lights, feeling the mat and the floor • Imitating Isla's behaviours was a method of communicating shared attention • Time allowances were made to allow her to choose when to participate, to process the sensory information and to regulate the sensory input through rocking movements	
What are the researcher's experiences of using the available methods of communication?	• Isla imitating behaviours modelled by her mother at another time, prompted by the water sound effect indicated their shared knowledge • I observed that Isla responded positively to the multi-sensory approach, and the free flow element of the activity indicated her ability to choose independently her position, movements and level of interaction • Although the direct interaction between Isla and the adults was limited, I felt the presence of known adults encouraged and reassured her that she could independently explore her environment • The importance of routine, familiar settings, preparation and communication were highlighted as important factors in Isla maintaining a positive and calm emotional state and readiness for school. Prior to the session, Isla had seen the physiotherapist. The usual routine was disrupted, due to her school bus being late, the physiotherapist meeting her in a different place and taking a different route into the school. It was thought by her teacher that, because she didn't leave from the usual door, she wasn't sure which room or environment she was in, which made	

	her become quite unsettled and distressed. She was able to calm herself, with help from the adults and her mother, before the session

Observational data (Vignette 2): Choosing from a selection of mixed objects chosen by the teacher. The selection included objects that the teacher believed she liked and some she did not. Isla began by having a choice of two items, before having a choice of more items to play with. The objects included were plastic rattles, rain makers, toys with ball bearings inside, books and a hairy cuddly toy

In attendance: Isla, Isla's mother, teaching assistant, researcher

SCERTS questions	**SCERTS observation**	**Observation notes**
Joint Attention: Why did the child communicate? For which purposes or functions (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share experiences, to express emotions)?	Shifts gaze/attention between objects (2.1) Protests/refuses undesired object (4.2)	• Choice making by picking up and mouthing objects • Showed dislike or disinterest by turning away from the toy • Making low pitched noises when certain objects were presented and investigated by Isla
Symbol Use: Did you observe the child initiating communication or communicating in response to others? If so, how did the child communicate (e.g., imitated actions/words, gestures, gaze, vocal, verbal, symbols)?	Responds to a variety of familiar words and phrases (6.2)	• Her mother started humming and singing a Turkish rhyme, and Isla started to repeat the tune • Isla responded to Turkish instructions, e.g., "Put it down"
Mutual Regulation: How did the child respond to assistance offered by partners? Did he/she seek assistance from others?	Shared negative and positive emotions (1.1) Soothed when comforted by partners (2.2) Makes choices when offered by partners (2.6)	• Crying communicated distress, and the particular toy was removed and hidden and replaced with one of her preferred objects • Striking out at the adults and hitting her mother indicated unhappiness and reluctance to continue. This prompted a distraction or change in activity from the adults • Isla's mother sat her on her knee to calm her down

		• Mouthing objects in turn for particular lengths of time while she made a decision. The choice was made, and Isla either moved the toy away or moved herself and the chosen toy somewhere else in the room
Self-Regulation: What did the child do to attempt to regulate his/her emotions and arousal (e.g., sensory motor behaviours, talking to himself/herself, planning and self-reflecting)?	Responds to sensory and social experiences with differentiated emotions (1.4) Demonstrates emotional expression appropriate to context (1.8) Using behavioural strategies to regulate arousal level during solitary and social activities (2.1)	• Moving the toy away from her if she did not choose it • Smiling and playing with (shaking and rattling) the toy she chose • Rocking herself • Looking closely at and listening to the toy as she put the toy in her mouth • Needed time to consider the options in front of her • The options needed to be very close to her for her to see them
Interpersonal Support: Which interactive style modifications helped the child regulate, engage and participate? Which style factors appeared to hinder participation?	Follows child focus of attention (1.1) Responds appropriately to child's signals to foster a sense of communicative competence (1.3) Recognises signs of dysregulation and offers support (1.5) Offers choices verbally and non-verbally (2.1) Uses appropriate proximity and non-verbal behaviour to	• The TA and mother were aware of the objects Isla was focusing her attention on and allowed her the time to make a choice • Adults used verbal reinforcement and reassurance to Isla • Adults commented on her actions and what actions and choices she was making • Adults sat on the floor and on mats at Isla's level • The objects and toys were placed close to Isla, so she could see the shape, due to her vision impairment

	encourage interaction (4.3)	
Learning Support: Which aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or which visual supports were most effective for supporting the child's active engagement? Which variables appeared to hinder participation?	Adjusts task difficulty for child's success (4.2) Modified sensory properties of learning environment (4.3) Arranging learning environment to enhance attention (4.4)	• Due to her vision impairments, the options needed to be very close to her for Isla to see them • Isla was at first given two options before having a bigger choice of objects • Clear simple verbal language • Verbal commentary on her actions • Isla reacted to texture, smells, intonation of vocal commands, touch and sounds rather than visuals, due to her vision impairment • One particular toy caused Islas to become distressed (a furry and vibrating teddy), and she required comforting for a while before she wanted to continue • The adults encouraged interaction and movement between objects by creating space and using verbal encouragement
Research questions		
What techniques and strategies are used to ascertain the child's views?	• Choice making and indicating preference between objects, indicated by time spent exploring the objects (mouthing, listening and touching the object), rejection or disinterest of objects (turning away, moving herself away, moving the object away) • Observations of Isla's emotional responses, facial expression, body language, vocalisations and vocal expressions • Isla imitated her mother when she hummed a familiar tune,	

	possibly indicating Isla's enjoyment of the rhythm and music as well as an attunement and enjoyment of a shared activity • Shared knowledge of what Isla prefers to play or engage with, from the TA and parent, supported interpretation of Isla's views and choices • Observations of Isla's behaviour
What adaptations to the communication methods were needed to meet the needs of the children participating?	• Situations were actively produced by adults due to her vision impairment; for example, objects/toys were placed close to her and her hand was initially physically scaffolded towards the objects • Isla reached out to touch her mother in the room. This could be reassurance for Isla, that her mother was attending to her • Isla created a triangle between the object, herself and the adult, possibly to confirm or encourage shared attention • Attunement to Isla's emotions and behaviours, sharing and responding to her emotions • Clear, simple and accessible child-centred language • Time allowances were made for her to make a choice and to process the sensory information
What are the researcher's experiences of using the available methods of communication?	• I observed that the intersubjectivity between Isla and her mother increased, due to their shared emotional responses, attunement and shared attention • Shared intention was encouraged by the researcher by using a calm and naturalistic play environment. However, at times, the shared intention may not have been in sync. The adults in the room intended to display joint communication and choice-making abilities, whereas Isla intended to play with her favourite toys • Shared experiences between Isla and the adults unavoidably contributed to predicting Isla's behaviour and preferences. This could confirm and strengthen known information but also possibly reduce further exploration or development, due to adults foreseeing her preferences and therefore limiting the choices • I feel it was important to note that the choices being made by Isla were between toys and objects that the adults around her had chosen. There was a limited number of options for her to choose from because of this • As an adult unknown to Isla, I observed her facial expressions and was able to identify her emotional responses towards particular objects. As I was relatively new to Isla, my observations were mainly based on the human innate

	ability to recognise facial expressions rather than shared knowledge
Overall summary of reflections and learning points (e.g., limitations, adaptations, future research opportunities, impact on EP practice):	• Isla showed her feelings using facial expressions, which suggests that blind individuals produce facial expressions of emotion as an evolved, rather than socially learnt emotional response • Relationships and how these impact on Isla's ability to make choices and have her choice or communication accurately interpreted • Adults attending to Isla and the object impacts on her choice

Using the SCERTS model as a framework, key elements and approaches to facilitate the communication and interaction of a four-year-old girl with MTHFR deficiency, hydrocephalus, vision impairment and severe speech and language delay were identified. These included, learning support, mutual regulation and interpersonal support explored below with extracts from the observation data.

4.1.1.2 Interpersonal Support

There were many examples of interpersonal support given by the adults, including the interactive style modifications that helped the child regulate, engage and participate as well as the factors that appeared to hinder participation. Interpersonal support was one of the main areas identified that may help Isla with her communication and interaction.

Examples of interpersonal support (SCERTS):

- Adult followed child's focus of attention (1.1);
- Imitated child (1.6);
- Allowed child to initiate and terminate activities (2.4);
- Got down on child's level when communicating (4.1); and
- Adjusted complexity of language input to child's developmental level (6.2).

Example observations:

- The researcher imitated Isla when she banged the floor and wiped the floor with her hands.
- Isla crawled off the interactive mat for a time and re-engaged later in her own time.

- The adults sat or crouched on the floor at Isla's level.
- The language used was familiar to Isla and consisted of simple, clear instructions using one or two words.

4.1.1.2 Learning Support

There were examples of learning support, which is described by SCERTS and understood by this research as aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or visual supports that were most effective for supporting the child's active engagement, as well as those that appeared to hinder engagement.

Examples of observed learning support (SCERTS):

- Adjusted task difficulty for child's success (4.2);
- Modified sensory properties of learning environment (4.3); and
- Arranged learning environment to enhance attention (4.4).

Example observations:

- The options needed to be very close to her for Isla to see them.
- Isla was at first given two options before having a bigger choice of objects.
- The adults used clear simple verbal language.
- The adults observed Isla's actions and used verbal commentary throughout
- Isla reacted to texture, smells, intonation of vocal commands, touch and sounds rather than visuals, due to her vision impairment.
- One particular toy caused Isla to become distressed (a furry and vibrating teddy), and she required comforting for a while before she wanted to continue.
- The adults encouraged interaction and movement between objects by creating space and using verbal encouragement.

4.1.1.3 Mutual Regulation

There were also many examples of mutual regulation. SCERTS describes this as ways in which the child responds to assistance offered by partners as well as how much she requested assistance from others in an attempt to regulate her emotions and arousal (e.g., sensory motor behaviours, talking to herself, planning and self-reflecting).

Examples of observed mutual regulation (SCERTS):

- Shared negative and positive emotions (1.1);
- Soothed when comforted by partners (2.2); and
- Made choices when offered by partners (2.6).

Extracts of observational notes:

- Crying communicated distress and the particular toy was removed and hidden and replaced with one of her preferred objects.
- Striking out at the adults and hitting her mother indicated unhappiness and reluctance to continue. This prompted a distraction or change in activity from the adults.
- Isla's mother sat her on her knee to calm her down.
- Mouthing objects in turn for particular lengths of time while she made a decision. The choice was made and Isla either moved the toy away or moved herself and the chosen toy somewhere else in the room.

4.1.2 Questionnaires - Analytic Findings

Generic category:

A relationship, for the purpose of this research, was defined as interactions that connect the relationship partners and influence each partner's behaviour. This category was composed of two sub-categories: attunement and closeness.

Sub-categories:

a) **Attunement** was defined by behaviours and descriptions that related to the adult's and child's levels of understanding and empathy toward each other regarding communication meaning and feelings.
E.g., *'Her mother always understands what Isla is communicating; tired, hungry, thirsty, sleepy' and 'Sometimes she communicated that she is unhappy and we are unsure of the cause'.*

b) **Closeness** referred to descriptions around Isla's familiar relationships with known adults and children.

E.g., 'Normally independent, although she is generally happy for a familiar adult to join her in her play'.

Generic category:

Communication methods was defined, for the purpose of this research, as an interactive sharing of ideas and feelings and demanding an exchange between two or more communicating partners. This category was composed of two sub-categories: sensory and P-V communication methods.

Sub-categories:

a) **Sensory** referred to behaviours and interactions with objects and adults which were of a sensory nature.
E.g., she *is good at biting things; she is good at banging things, listens to range of sounds around her and repeats sound pattern.*

b) **P-V communication methods** is a sub-category referring to the manner and ways in which Isla interacted and communicated preferences, emotional state, choices, etc. through non-verbal method.
E.g., Child uses gestures, stilling, movements and sounds; doesn't open her mouth when she doesn't want to eat.

Generic category:

Understanding intent/message referred to the mutual understanding between both parties of what was being communicated, as well as ways in which further explanation or reframing took place to increase understanding. The sub-category identified was: shared knowledge.

Sub-category:

a) **Shared knowledge** is understood to be the shared experience/common ground between the child and adults that facilitate understanding of what is being communicated.
E.g., Isla understands more short Turkish words than English words.

Generic category:

Child's presentation is defined as how the child is perceived to feel and experience most situations and settings. The sub-category identified is: emotional state.

Sub-category:

a) **Emotional state** is understood in this research to be how the child's mood and emotional presentation are perceived by others.

E.g., normally a very happy child; enjoys a range of activities.

The content analysis map highlights the main, generic and sub-categories identified through the analysis of the parental and teachers questionnaires. The content analysis shows similar findings to the observations, reporting generic themes such as Communication methods (Sensory and P-V communication), Understanding Intent/meaning (Shared knowledge) and Child's Presentation (emotional state). Interestingly, however, the areas relating to Relationships (attunement and closeness) were more evident through the responses to the questionnaire than through observational data.

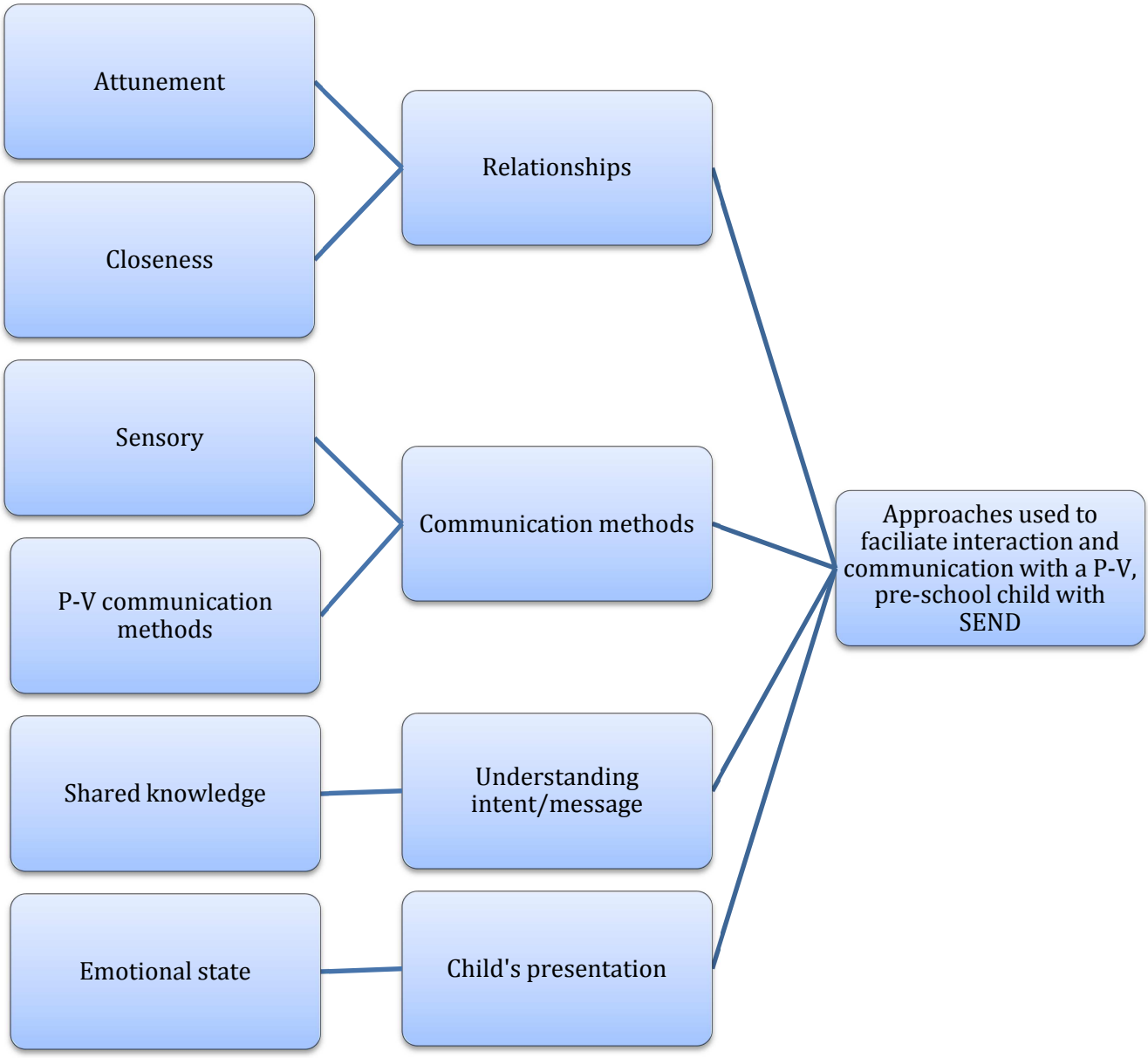
Table 4.2 – Isla - Observational Data QCA

Category	Sub-Category	Responses from parent questionnaire (Q)	Responses from teacher questionnaire (Q)
Category 1: Relationships			
Interactions that that connect the relationship partners and influences each partner's behaviour	Attunement	• Her mother always understands what Isla is communicating, e.g., tired, hungry, thirsty, sleepy (8) • Mother very confident in her understanding of Isla's feeling of being overwhelmed or frustrated and how she is feeling generally (18) • Mother is slightly less confident in her understanding of Isla's focus of attention, what she is trying to communicate and when she needs a break (18) • Mother is least confident in understanding when Isla is interested in something (18)	• Sometimes she communicated that she is unhappy and we are unsure of the cause (8) • Key staff are very confident in her focus of attention and what has taken her interest (18) • Key staff are less confident in understanding what is being communicated, how she is feeling, when she needs a break and when she is frustrated (18) • Key staff are least confident in when she feels overwhelmed (18)
	Closeness	• Likes to play with her brother (1) • Recognises family, e.g., auntie, and smiles (6) • Plays near her brother (11) • Usually plays alone (11) • Interact daily with – mother, father, brothers, teachers and peers (17) • Isla likes to touch the faces of adults she meets for the first time (19) • Isla wants to play with others, when they show they like her (20)	• Responds well to one-to-one time (2) • Will sometimes approach a familiar adult to interact with (4) • Will occasionally give brief eye contact to very familiar adults during play (5) • We have observed child approaching mum and holding her cheeks - pulling mother's face close to hers (6) • Normally plays independently, although is generally happy for a familiar adult to join her in her play (11) • Interacts with all class-based staff and class peers, with support (17)

			• Speaking with adults – child can become distressed if approached incorrectly (19)
Category 2: Communication methods			
Communication is interactive, sharing ideas and feeling and demanding an exchange between two or more communicating partners	Sensory	• Likes to play with musical toys (1) • She is good at biting things (2) • She is good at banging things (2) • No eye contact (5)	• Listens to range of sounds around her and repeats sound pattern (2) • (Favourite toy?) any that provides visual or audible reactions which can also be mouthed (1) • Child really enjoys activities and toys that provide an audible reaction and familiar songs she can join in with (20)
	Pre-verbal communication methods	• No words (3) • Will follow her mother if she is hungry (3) • Smiles when she is happy (4) • Doesn't touch the object or person if she doesn't want to play (6) • Doesn't open her mouth when she doesn't want to eat (6) • Puts her arms up when she wants a cuddle (6) • Imitates and repeats the tune of songs, e.g., 'twinkle twinkle' (12) • Will copy clapping hands and banging the floor (12) • Happiness –Smiling, singing, playing (16) • Sadness – Crying (16) • Contentment – Turning her head (16) • Anger/frustration – Kicking, pushing, aggressive, pulling her hair (16) • Excitement – Smiley, makes noises, if it's her birthday she will sing 'Happy birthday'	• Expresses her preferences clearly (2) • Child uses gestures, stilling, movements, sounds (3) • During motivating activities, will take turns and communicate she wants another turn to an adult (4) • Does not seek help when needed – moves onto something else instead (4) • Taps foot or hand for more (6) • Will protest using large arm movements, turn head away and produce unhappy vocal sounds. May bite or hit out if scared (6) • Illuminate possible causes such as new toys or sounds – if the child's reaction changes we know what the trigger was (9) • Body language, expressions and vocalisations helps to understand what is being communicated (10) • Sometimes she mimics the sounds people make, claps when she hears somebody else

		(16) • Fear – She fears birthday candles, crying, upset and pushes away (16)	clap (13) • Simple vocabulary, objects of reference, audible cues helps Isla understand what is being communicated (14) • Happiness - Smiles and laughs • Sadness - cries • Contentment - Plays quietly • Anger or frustration - Cries with loud vocalisations and body movements • Excitement - Flaps arms up and down, bounces and makes happy vocalisations • Fear -Turns head away, cries, hits arms out
	Communication support/aids	• No visual or technological supports are used at home (15)	• Uses touch rather than sight, as child is visually impaired (15)
Category 3: Understanding intent/message			
Explaining, reframing, or otherwise showing understanding of something	Shared knowledge	• Isla understands a greater number of short Turkish words than she does of short English words (14)	
Category 4: Child's presentation			
How the child is perceived to feel and experience most situations and settings	Emotional state	• Normally a very happy child (20)	• Enjoys a range of activities (2)

Figure 4.2 Isla - Analytical Findings from Questionnaires



4.1.3 Individual Summary - Isla

This analysis explores qualitative data collected, exploring the methods and approaches used to facilitate communication and interaction between Isla and her communication partners. Isla is a four-year-old girl with MTHFR deficiency, hydrocephalus, vision impairment and severe speech and language delay. The two methods of analysis used were Content Analysis, which highlighted key themes reported in the teacher and parental questionnaires, and applying SCERTS questions to vignette observational data. These data sets were analysed separately, before the key findings were amalgamated and presented pictorially. Below, the findings are outlined and the research questions are addressed.

What techniques and strategies are used to ascertain the child's views?
The results of the data analysed suggest that the adults were required to support Isla in active engagement and provide support in how Isla managed her sensory and emotional regulation. The methods adults used to facilitate interaction were mainly sensory, and Isla communicated through P-V methods consisting of facial expressions, gestures, noises and behaviours. The intent of what was being communicated was understood through observation of her facial expressions and movements, observing Isla's physical movements, termination and re-engagement with activities. Indicating a preference between objects was shown by the time spent exploring the objects (mouthing, listening and touching the object) or the rejection of or disinterest in objects (turning away, moving away, and moving the object away). The relationship between Isla and her communication partner was a key factor in understanding the message being communicated; this attunement allowed adults to understand how she was feeling, to know how much time was required for Isla to process the information and make a choice, to provide appropriate levels of stimulus and to know when to intervene to help her regulate her emotions.

What adaptations to the communication methods were needed to meet the needs of the children participating?
Due to Isla's visual impairment, as well as her additional needs, Isla required a multi-sensory approach. The sensory information she received supported her in making decisions about how to interact with activities and objects (e.g., listening and

watching the shapes and lights, feeling the mat and the floor). The modifications to Isla's communication and interaction methods included adults firstly manufacturing opportunities and providing a space for safe interaction. Situations were actively structured by adults, due to Isla's vision impairment; for example, objects/toys were placed close to her and her hand was initially physically scaffolded towards the objects. Adults created choice-making opportunities, by providing a selection of activities, toys and objects for Isla and they encouraged active participation, through various motivational tools; while, conversely, they also wished to create a sense of freedom for Isla to make choices independently.

Isla reached out to touch her mother in the room; this might have been to seek reassurance and ensure that her mother was attending to her. By doing this, Isla created a triangle between the object, herself and the adult, possibly to confirm or encourage shared attention; adults imitating Isla's behaviours was also a method of communicating shared attention. Adults used clear, simple and accessible child-centred language, and time allowances were made for Isla to make a choice and to process the sensory information. I felt that the adults were conscious of creating a balance between support and safety, as well as encouraging autonomy and providing occasions for independence.

What are the researcher's experiences of using the available methods of communication?

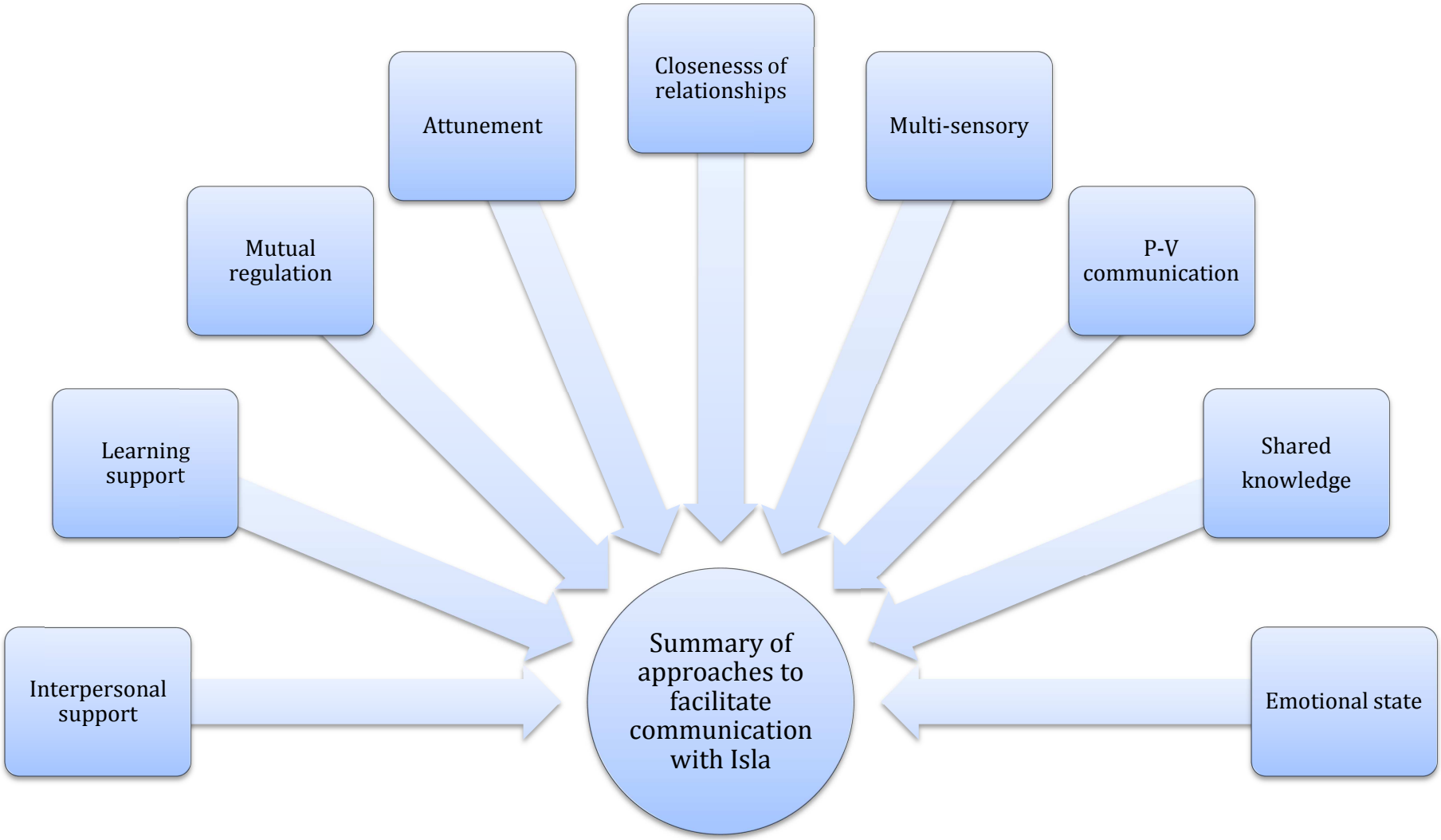
Shared intention was encouraged by the researcher by ensuring a calm and naturalistic play environment; however, at times the shared intention may have been not out of sync. The adults in the room intended to display joint communication and choice making abilities, where Isla intended to simply play with her favourite toys.

Shared experiences between Isla and the adults unavoidably contributed to predicting Isla's behaviour and preferences. This could confirm and strengthen known information and also possibly reduce further exploration or development, due to adults foreseeing her preferences and therefore limiting the choices. I feel it was important to note that the choices being made by Isla were between toys and objects that the adults around her had chosen; there were a limited number of options for her to choose from because of this. As an adult unknown to Isla, I observed her facial

expressions and was able to identify her emotional responses towards particular objects. As I was a relatively new to Isla, my observations were mainly based on the human innate ability to recognise facial expressions rather than shared knowledge.

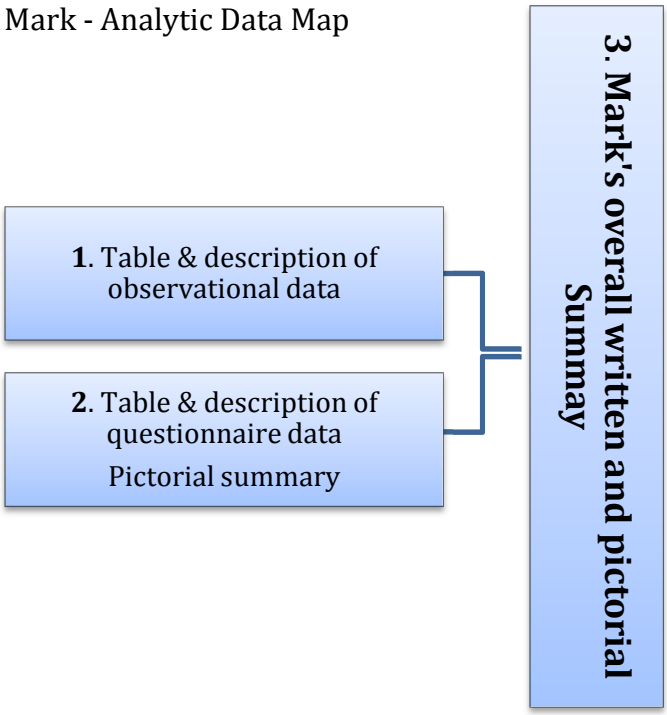
I observed that Isla responded positively to the multi-sensory approach and the free-flow element of the activity highlighted her ability to choose independently her position, movements and level of interaction. Although the direct interaction between Isla and the adults was limited, I felt the presence of known adults encouraged and reassured her that she could independently explore her environment. The intersubjectivity between Isla and her mother increased, due to their shared emotional responses, attunement and shared attention. She imitated behaviours modelled by her mother at a later time; the behaviour of washing her hands was prompted by the water sound effect, which indicated Isla's ability to follow cues (sound of water) and spontaneously imitate behaviours in a different context. I recognised the importance of routine, familiar settings and preparation in Isla's maintaining a positive and calm emotional state and readiness for learning and participation, prior to direct work with Isla.

Figure 4.3 – Isla – Overall Summary of Analytic findings



4.2 Participant 2 – Mark

Figure 4.4 Mark - Analytic Data Map



4.2.1 Observational Data - Analytic Findings

Table 4.3 - Mark -Observational Vignette Data

Case Study 2 – Mark*, Male, Aged 5, Irish		
Summary of child's SEND: Autistic spectrum disorder (ASD), speech and language delay and global developmental delay. Able to make sounds and pre-verbal utterances.		
Observational data (Vignette 1): Mark was participating in his PE lesson in the school hall. There was an activity circuit set up, which was made up of different activities. Mark ran around the hall independently and lay down with his head in his hands on the mat, observing others. He was encouraged to join in with the circuit activities by the TA, and he understood that he needed to balance and walk across the bench. After he completed this, Mark ran and lay on an inflatable sensory ball. The TA came over, started bouncing the ball gently while he was lying across it on his back. She stopped bouncing the ball, and he made eye contact with her and took her hand to encourage her to continue bouncing, which she did. In attendance: Mark, class teacher and four TAs, seven of his peers and the researcher		
SCERTS questions	**SCERTS observation**	**Observation notes**
Joint Attention: Why did the child communicate? For which purposes or functions (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share experiences, to express emotions)?	Engages in brief reciprocal interaction (1.2) Shifts gaze between people and objects (2.1)	• Mark made eye contact with the TA and took her hand to encourage her to continue bouncing the ball • Mark lay down for periods of time and watched his peers engaging with various activities

	Shares negative and positive emotions (3.1) Requests help or other actions (4.3)	• Mark spotted the inflatable bouncy ball and ran over to it • Mark displayed clear emotions on his face, e.g., frowning, wide surprised eyes • Took the TA's hand and makes eye contact to indicate he would like her to continue bouncing the ball
Symbol Use: Did you observe the child initiating communication or communicating in response to others? If so, how did the child communicate (e.g., imitated actions/words, gestures, gaze, vocal, verbal, symbols)?	Follows situational an gestural cues in familiar and unfamiliar activities (2.1)	• Mark was able to complete the activity circuit by following the cues given by the TAs and by observing the other children
Mutual Regulation: How did the child respond to assistance offered by partners? Did he/she seek assistance from others?	Engages when alerted by partners (2.2) Shares positive emotion to seek interaction (3.2)	• Mark responded to prompts from adults to engage in the circuit activities • Mark was calm and content while he lay on the inflatable ball
Self-Regulation: What did the child do to attempt to regulate his/her emotions and arousal (e.g., sensory motor behaviours, talking to himself/herself, planning and self-reflecting)?	Initiates bids for interaction (1.1) Responds to sensory and social experiences with differentiated emotions (1.4) Responds to a variety of familiar words and phrases (1.6) Removes self from overly stimulating or undesired activity (5.1)	• Holding the hand and making eye contact with his TA • Facial expressions and placing his hands on his ears • Able to understand and respond to the phrases " lie down!", 'Mark's turn' and 'more' • Lay down on a mat away from everyone else and observed
Interpersonal Support: Which interactive style modifications helped the child regulate, engage and participate? Which style factors appeared to hinder participation?	Follows child's focus of attention (1.1) Waits for and encourages initiations (2.2)	• The TA would observing and watching Mark explore and engage in certain activities • While Mark was

	Allows child to take breaks to move about as needed (3.1) Gets down on child's level when communicating (3.1) Adjusts complexity of language input to child's developmental level (6.2)	bouncing on the ball the TA would wait for him to make eye contact and/or take her hand to initiate the bouncing • The TA and class teacher sat crouched down and sit on the floor when interacting • The instructions and descriptions were simplified and familiar
Learning Support: Which aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or which visual supports were most effective for supporting the child's active engagement? Which variables appeared to hinder participation?	Defines clear beginning and ending to activity (1.1) Offers varied learning opportunities (1.5)	• Music was played on entry to the hall to signify the PE lesson had started • A selection of practical activities was available, and Mark was encouraged to explore a variety of them
Research questions		
What techniques and strategies were used to ascertain the child's views?	• Observing his facial expressions and movements • Observing what activities he wanted to engage with and when he wanted to observe • Mark initiating contact with the TA, taking her hand and making eye contact, which was understood by the TA through experience and shared understanding to mean that Mark wanted 'more'	
What adaptations to the communication methods were needed to meet the needs of the children participating?	• The adults to approach Mark on his level and use familiar and simplified language to encourage participation • Allowing Mark to initiate or terminate an activity, by providing space and allowing time for him to decide what he would like to do • Having adults on his level, available for to him to approach • Shared understanding, e.g., eye contact can communicate 'more'	
What are the researcher's experiences of using the available methods of communication?	• Mark was able to make choices in his own time. However, I felt he needed to be guided by the adults. • They needed to encourage him to interact for a time • Mark's facial expressions were clear indications regarding his thoughts about certain activities and social situations • Mark needed the option to take himself away from others when he wished too; I felt these breaks helped him to cope with re-engagement in activities.	

Observational data (Vignette 2): Mark was brought into the eye-tracking room and after he had explored it independently he was asked to sit in front of the computer. Mark completed two-point collaboration before participating and completing the two eye-tracking activities (Look2Learn – Farmyard activity and Eye Fx – sensory activity). The customised eye-tracking activity was then introduced and was completed twice with five minutes between time 1 and time 2.

The choices were made through Mark's eye-tracking and an eye dwell of 1.5 seconds, after which a voice recording would announce his choice.

Results below.

	Time 1	Time 2
1	**Sad face**	Sad Face
2	**Banana**	Grapes
3	**Doll**	Doll
4	**Teacher**	Teacher
5	**Sensory roll**	Sensory roll
6	**Bee**	Horse
7	**Flying a kite**	Flying a kite
8	**Biscuits**	Biscuits

In attendance: Mark, TA, Technology Lead and researcher

SCERTS questions	SCERTS observation	Observation notes
Joint Attention: Why did the child communicate? For which purposes or functions (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share experiences, to express emotions)?	Shifts gaze between people and objects (2.1)	• Mark was able to follow the collaboration procedures and eye-tracking activities by following points on the screen
Symbol Use: Did you observe the child initiating communication or communicating in response to others? If so, how did the child communicate (e.g., imitated actions/words, gestures, gaze, vocal, verbal, symbols)?	Follows instructions with visual cues (2.3)	• Mark was able to follow the instructions on the screen that were given visually and verbally, e.g., 3- 2-1 countdown
Mutual Regulation: How did the child respond to assistance offered by partners? Did he/she seek assistance from others?	Engages when alerted by partners (2.2) Makes choices when offered by partners (2.6) Responds to partners attempts	• Mark was encouraged by the adults to begin and continue the activities • Mark could make choices using eye-tracking/dwelling between images on the screen

	to re-engage in interaction or activity (4.4)	presented by the adults • After the five-minute break, Mark responded to encouragement and verbal prompts from the adults to re-engage with the activity
Self-Regulation: What did the child do to attempt to regulate his/her emotions and arousal (e.g., sensory motor behaviours, talking to himself/herself, planning and self-reflecting)?	Responds to a variety of familiar words and phrases (1.6) Participates in new and changing situations (4.1)	• Encouragement and praise was given to Mark, e.g., "well done", high fives, which he responded to • Common and familiar instructions were verbally given to Mark, e.g., "sit down", "finished" • This was a new activity for Mark and he hadn't used the eye-tracking software before but he was able to participate and complete the activity
Interpersonal Support: Which interactive style modifications helped the child regulate, engage and participate? Which style factors appeared to hinder participation?	Facilitates re-engagement in interactions and activities following breaks (1.8) Offers choices verbally and non-verbally (2.1) Providing guidance and feedback as needed for success in activities (5.4)	• The adults facilitated re-engagement of the activity after a break • Non-verbal choices were provided in a pictorially on screen • Positive feedback and praise was given to Mark verbally and through actions from the adults. Voice recordings on the software also provided feedback by reinforcing the choices he had made and congratulating Mark on completing each activity
Learning Support: Which aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or which visual supports were most effective for supporting the child's active engagement? Which variables appeared to hinder participation?	Uses augmentative communication support to enhance child's communication and expressive language (2.1) Adjusts task difficulties for child success (4.2) Arranges learning environment to enhance attention (4.4)	• The eye-tracking software was used as a tool to support Mark's expressive language and ability to make choices and show preference • The activity and collaboration processes were simplified and customised to meet the needs of Mark • The room and learning environment were distraction free, and the unit of time used was short, to encourage focus and attention on the activities
Research questions		

What techniques and strategies are used to ascertain the child's views?	• Eye-tracking software – choice making using eye dwell time • Shared knowledge and TA affirming choices with activities he enjoys during free time at school
What adaptations to the communication methods were needed to meet the needs of the children participating?	• The eye-tracking software was simplified so there was a binary choice • Eye dwell time was reduced to 1.5 seconds • Collaboration was reduced to a two-point collaboration • The time between time 1 and time 2 was reduced to five minutes to maximise the child's concentration and focus, limit the child's feelings of tiredness, discomfort or distress • The choices on screen were between two photographs, to remove reliability and ambiguity issues found with cartoon/abstract images • The voice recording and adults reinforced his choices and repeated the choices verbally to him to help encourage participation and feeling of being heard
What are the researcher's experiences of using the available methods of communication?	• This was a positive experience, as I felt that Mark engaged with the activities and produced reliable data • Mark appeared to enjoy the task • This was a time-consuming method, due to the level of preparation required prior to the short task
Overall summary of reflections and learning points (e.g., limitations, adaptations, future research opportunities, impact on EP practice):	• It would be helpful to see how this eye-tracking technology would be used in the classroom to help make choices in more 'everyday' situations • The choices were binary and were constructed by adults • Limited choices and the photographs used were informed through observations and questionnaires, limiting Mark's ability to express preferences for alternative or new objects/activities

Using the SCERTS model as a framework, key elements and approaches to facilitate Mark (a five-year-old boy with Autistic spectrum disorder (ASD), speech and language delay and global developmental delay) with his communication and interaction were identified. These included, joint attention, self-regulation and interpersonal support explored below with extracts from the observation data.

4.2.1.1 Joint Attention

There were many examples of Joint attention. This refers to the purposes or functions of the child's communication (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share experiences, to express emotions). Facilitating joint attention was one of the main areas identified.

Examples of observed Joint attention (SCERTS):

- Engages in brief reciprocal interaction (1.2);
- Shifts gaze between people and objects (2.1);
- Shares negative and positive emotions (3.1); and
- Requests help or other actions (4.3).

Example observations:

- Mark made eye contact with the TA and took her hand to encourage her to continue bouncing the ball.
- Mark lay down for periods of time and watched his peers engaging with various activities.
- Mark spotted the inflatable bouncy ball and ran over to it.
- Mark displayed clear emotions on his face, e.g., frowning, wide surprised eyes.
- Takes the TA's hand and makes eye contact to indicate he would like her to continue bouncing the ball.

4.2.1.2 Self-regulation

There were also many examples of self-regulation. SCERTS describes this self-regulation as ways in which the child attempted to regulate his emotions and arousal (e.g., sensory motor behaviours, talking to himself/herself, planning and self-reflecting).

Examples of self-regulation (SCERTS):

- Initiates bids for interaction (1.1);
- Responds to sensory and social experiences with differentiated emotions (1.4);
- Responds to a variety of familiar words and phrases (1.6); and
- Removes self from overly stimulating or undesired activity (5.1).

Example observations:

- Mark was holding hands and making eye contact with his TA.

- Mark used clear facial expressions and he placed his hands on his ears at times.
- Mark understood and responded to the phrases “lie down”, “Mark’s turn” and “more”.
- During the ses*sion* Mark lay down on a mat away from everyone else and observed the activities.

4.2.1.3 Interpersonal Support

There were also examples of mutual regulation understood by SCERTS and this research to be the communication style and modifications which help the child self-regulate, engage and participate, as well as factors that appear to hinder participation.

Examples of observed interpersonal support:

- Follows child’s focus of attention (1.1);
- Waits for and encourages initiations (2.2);
- Allows child to take breaks to move about as needed (3.1);
- Gets down on child’s level when communicating (3.1); and
- Adjusts complexity of language input to child’s developmental level (6.2).

Example observations:

- The TA was observing and watching Mark explore and engage in certain activities.
- While Mark was bouncing on the ball, the TA would wait for him to make eye contact and/or take her hand to initiate the bouncing.
- The TA and class teacher would crouch down and sit on the floor when interacting.
- The instructions and descriptions were simplified and familiar.

4.2.2 Questionnaires – Analytic Findings

Generic category:

Autonomy, for the purpose of this research, was defined as behaviours that are self-governed and decided upon by the child, without focused influence from others. This

category was composed of two sub-categories: independence and observant/imitative behaviours.

Sub-categories:

c) **Independence** was indicated by reported behaviours which indicated his need for, or enjoyment for being alone and away from the group for periods of time.
E.g., 'U*sually plays independently' 'Doesn't choose to interact with other children'.*

d) **Observant/ imitative behaviours** referred to descriptions around certain of Mark's behaviours which were observed and copied, as well as the manner in which Mark watched others.
E.g., 'Imitates actions, e.g., sneezing sound and action'.

Generic category:

Body Language as defined for the purpose of this research includes gestures, mannerism or behaviours that can communicate feelings and attitudes. This category was composed of three sub-categories: facial expressions, behaviour and eye contact.

Sub-categories:

a) **Facial expressions** referred to Mark's expressive facial features.
E.g., '*Facial expressions help understanding of what he is communicating'; 'Smiles and frowns'.*

b) **Eye-contact** denoted the manner in which Mark used eye contact and looked at others.
E.g., 'He will look at adults and hold eye contact when engaging, e.g., when he wants to be thrown into the ball pool'; 'Improved eye contact'.

c) **Behaviour** signified physical movements and general manner and performance of Mark.
E*.g., 'Smiling and giggling indicates happiness'; 'crying and stomping his feet indicates anger and frustration'.*

Generic category:

Multi-method approach indicates the child using a mix of various approaches, methods and tools to communicate.

Sub-categories:

a) **Sensory** referred to how Mark reacted to sensory objects/toys as well as potential over stimulation. *E.g., 'Sometimes places hands over his ears to show a dislike'; 'Favourite toys are those with buttons, lights and sounds, e.g., cash register'.*

b) **Verbal** indicated any verbal communication between or from Mark and other adults/peers.
E.g., 'Makes a certain noise to show a dislike or protect'; 'Simple, one word instructions helps Mark's understanding'; 'Repeats simple phrases, e.g., "yum yum"

c) **Visuals and objects** were discussed in relation to methods that were used to communicate as well as objects which Mark likes to spend time.
E.g., 'Providing a choice of two objects/toys'; 'Enjoys playing with dolls and figures'; 'Responds to symbols/PECS and communication boards'.

d) **Technology** was a sub-category referring to any technology Mark engages with to communicate or for pleasure.
E.g., 'Enjoys watching DVDs'.

Generic category:

Communication partner is defined as an individual whom the child attempts to, or successfully, interacts and communicates with. The four sub-categories identified are: encouragement, adult as a tool to request or retrieve, emotional regulation and attunement.

Sub-categories:

a) **Encouragement r**elated to how adults praised or reassured Mark's communication/behaviour.
   E.g., using 'high fives'.

b) **Adult as a tool to request or retrieve** was how Mark interacted with adults and the ways in which he was able to communicate his message.
   E.g., 'Pulls adults to desired location to request help'; 'Indicates "No" or refusal by taking adults hand away'; 'Leading an adult by the hand'.

c) **Emotional regulation** referred to how Mark used adults as a way to regulate how he was feeling.
   E.g., 'Goes to adults for a cuddle when upset'; 'Seeks comfort from adults'.

d) **Attunement** was defined by behaviours and descriptions that related to the adult's and child's levels of understanding and empathy toward each other regarding communication meaning and feelings.
   E.g., 'His mother is most confident in understanding Mark's feelings of being overwhelmed, frustration, interest, when he needs a break and how he is feeling'; 'Observing and speaking to adults in the class could help getting to know Mark the best'; 'School staff are more confident in identifying Mark's feeling of frustration and interest'.

Table 4.4 – Mark
Questionnaire QCA

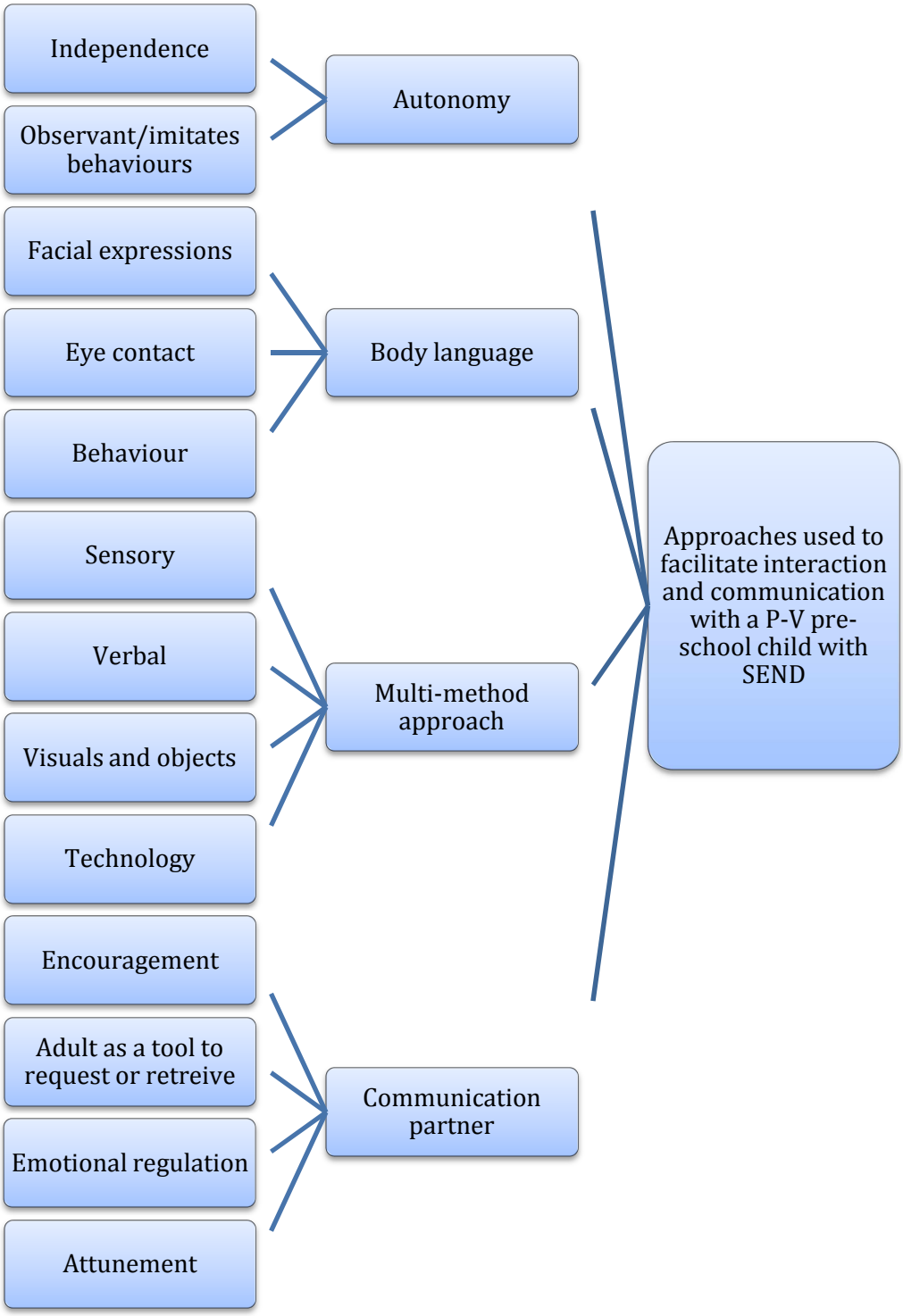
Category	Sub-Category	Responses from parent questionnaire (Q)	Responses from teacher questionnaire (Q)
Category 1: Autonomy			
Behaviours that are self-governed and decided upon by the child without focused influence from others	Independence	• He is getting better at being around other children (4) • Usually plays independently (11) • Doesn't choose to interact with other children (20)	• Little communication with other, just adults (5) • Plays independently (10) • Sometimes plays parallel alongside peers (10)
	Observant/imitates behaviours	• Puts his hand out to greet people (6) • Imitates actions, e.g., sneezing sound and action (12, 13)	• Doesn't show evidence of imitation (12)
Category 2: Body Language			
Gestures, mannerism or behaviours that can communicate feelings and attitudes.	Facial Expressions	• Smiley and happy (2) • Facial expressions help understanding of what he is communicating (10)	• Smiley (4) • Smiles and frowns (8)
	Eye Contact	• Improved eye contact (5)	• He will look at adults and hold eye contact when engaging, e.g., when he wants to be thrown into the ball pool (2)
	Behaviour	• Giggling and laughing indicates happiness (16)	• Holding fingers in his ears when anxious (8)

		• Crying indicates sadness (16) • Sitting, playing, not whining indicates contentment (16) • Crying and stomping his feet indicates anger and frustration (16) • Laughing, giggling jumping up and down indicates excitement (16) • Crying, grabbing the adults and covering his ears indicates fear (16)	• Smiling and giggling indicates happiness (15) • Crying and fingers in his ears indicates sadness (15) • Calm behaviour indicates contentment (15) • Crying, facial expressions and making noises indicates anger and frustration (15) • Happy facial expression and excited noises indicates his excitement (15) • Crying and facial expression indicates fear (15)
Category 3: Multi-method approach			
The mix of various approaches, methods and tools to communicate.	Sensory	• Favourite toys are those with buttons, lights and sounds, e.g., cash register (1)	• Sometimes places hands over his ears to show a dislike (4) • Enjoys 'clicky clacky' toys (9) • Enjoys being thrown into the ball pool (9) • Enjoys drama games (9)
	Verbal	• Repeats simple phrases, e.g., "Yum yum" (3) • Repeats names, e.g., Mum and Dad (6) • Understands "Ready, steady, go" (6)	• Occasionally says "go" (3) • Makes a certain noise to show a dislike or protect (4)

		• Simples questions "What do you want?" • Tone of voice helps Mark understand (14) • Simple, one-word instructions helps Mark's understanding (14)	
	Visuals and objects	• Responds to PECS symbols (3) • Providing a choice of two objects/toys (9) • Pointing helps Mark's understanding (14) • Enjoys books and being read to (15)	• Uses pictures displayed on the 'Now' timetable (3) • Responds to symbols/PECS and communication boards (7) • Enjoys playing with dolls and figures (9)
	Technology	• Enjoys watching DVDs (15)	
Category 4: Communication partner			
An individual whom the child attempts to, or successfully interacts and communicates with.	Encouragement	• Using 'high fives' (20)	
	Adult as a tool to request or retrieve	• Leading an adult by the hand (2) • Leading an adult by the hand to request help (6) • Indicates 'more' or 'again' by taking the adults hand (6) • Indicates 'no' or refusal by taking adults hand away (6)	• Takes adults hand (1) • Pulls adults to desired location to request help (4)
	Emotional	• Goes to adults for a cuddle when upset (3)	• Will climb on and cuddle adults (1)

	regulation	• Seeks comfort from adults (4)	
	Attunement	• Average four or five times per day parent doesn't understand what is being communicated (8) • His mother is most confident in understanding Mark's feelings of being overwhelmed, frustration, interest, when he needs a break and how he is feeling (18) • His mother is slightly less confident in understanding what his focus of attention is on (18) • His mother is least confident in knowing what Mark is trying to communicate (18) • To get to know Mark it was recommended that working/playing alongside him is the best method (19) • Getting to Mark's level when communicating with him (20)	• Quite often the staff understand what is communicated, only sometimes they do not (6) • School staff are more confident in identifying Mark's feeling of frustration and interest (17) • School staff are less confident when identifying how Mark feels and what he is communicating (17) • And school staff are least confident in identifying his focus of attention, when he needs and break and when he is feeling overwhelmed (17) • Observing and speaking to adults in the class could help getting to know Mark the best (18)

Figure 4.5 – Mark – Analytic Findings from Questionnaires



4.2.3 Individual Summary - Mark

This analysis explores qualitative data collected, the methods and approaches used to facilitate communication and interaction between Mark and his communication partners. Mark is a five-year-old boy with a diagnosis of Autistic Spectrum Disorder (ASD), speech and language delay and global developmental delay. The two methods of analysis included Content Analysis, which highlighted key themes reported in the teacher and parental questionnaire, and applying SCERTS questions, to vignette observational data. These data sets were analysed separately, before the key findings were amalgamated and presented pictorially. Below, the findings are outlined and the research questions are addressed.

What techniques and strategies are used to ascertain the child's views?

Mark responded to a multi-method approach of communicating and interacting, this consisted of using facial expressions, body language and gestures, P-V and verbal vocalisations, eye contact, touch, visuals and technology. Observing Mark's levels of interaction and approaches to situations also helped inform the adults of Mark's preferences and his reactions to certain situations. I observed that Mark would initiate contact with the adult by taking the adults hand and making eye contact, which was understood by the adult, through experience and shared understanding, to indicate that Mark wanted 'more'. Adults supported Mark in his emotional regulation and sensory processing, encouraged him to initiate interaction (e.g., eye contact) through motivational activities and positive reinforcement, and created opportunities for him to actively participate in activities. Mark was allowed the opportunity to explore his environment and engage, to varying degrees, with activities of his choosing, which helped him regulate his own sensory input and emotional responses.

Eye-tracking technology was used as a method for Mark to make a choice from two images on the screen. The eye-tracking software used eye dwell time to decipher a preference. Repeating the activity and using shared knowledge between adults and Mark were used to affirm the choices he made of which activities/objects/food he enjoyed.

Mark appeared to have a trusting and strong relationship with the adults in his classroom, and this helped to facilitate an accurate understanding of the message

Mark was communicating, as well as the relationship providing a safe and familiar setting for Mark to feel comfortable interacting and requesting support.

What adaptations to the communication methods were needed to meet the needs of the children participating?

Mark's actions were generally not governed by others, and he was allowed to initiate or terminate activities, within reason. Adults provided space and allowed time for him to decide what he would like to do; Mark was observed exploring his environment independently or observing others. Adults were present and available for Mark to approach when he required support in emotional or sensory regulation and also as retrievers of objects or providers of comfort. Adults observed Mark's movements, P-V vocalisations, facial expressions, eye contact and gestures to further their accurate understanding of what Mark was communicating. Adults approached Mark on his level and used familiar and simplified language; to encourage participation they used shared understanding (e.g., demonstrated through eye contact) to interpret his message (e.g., 'more').

During the eye-tracking activity, the eye-tracking software was simplified so there was a binary choice; eye dwell time, which was used to log Mark's choice, was reduced to 1.5 seconds; and the collaboration was reduced to two-point collaboration. The time between repeated measures (time 1 and time 2) was reduced to five minutes in order to maximise Mark's concentration and focus levels and limit his feelings of tiredness, discomfort or distress. The choices on screen were between two photographs, to remove reliability and ambiguity issues found with cartoon/abstract images. The voice recording and adults reinforced his choices and repeated the choices verbally, once Mark had made them, to him to help encourage active participation and his feeling of being heard.

What are the researcher's experiences of using the available methods of communication?

Although I observed Mark being able to make choices independently and in his own time, I felt he needed to be guided by the adults and encouraged in order to interact with a variety of activities or as part of a group, for a time. The adults modelled clear communication and encouraged social interaction in a sensitive and calm manner, and

their verbal language was age, and need appropriate and was supported with visuals or objects of reference.

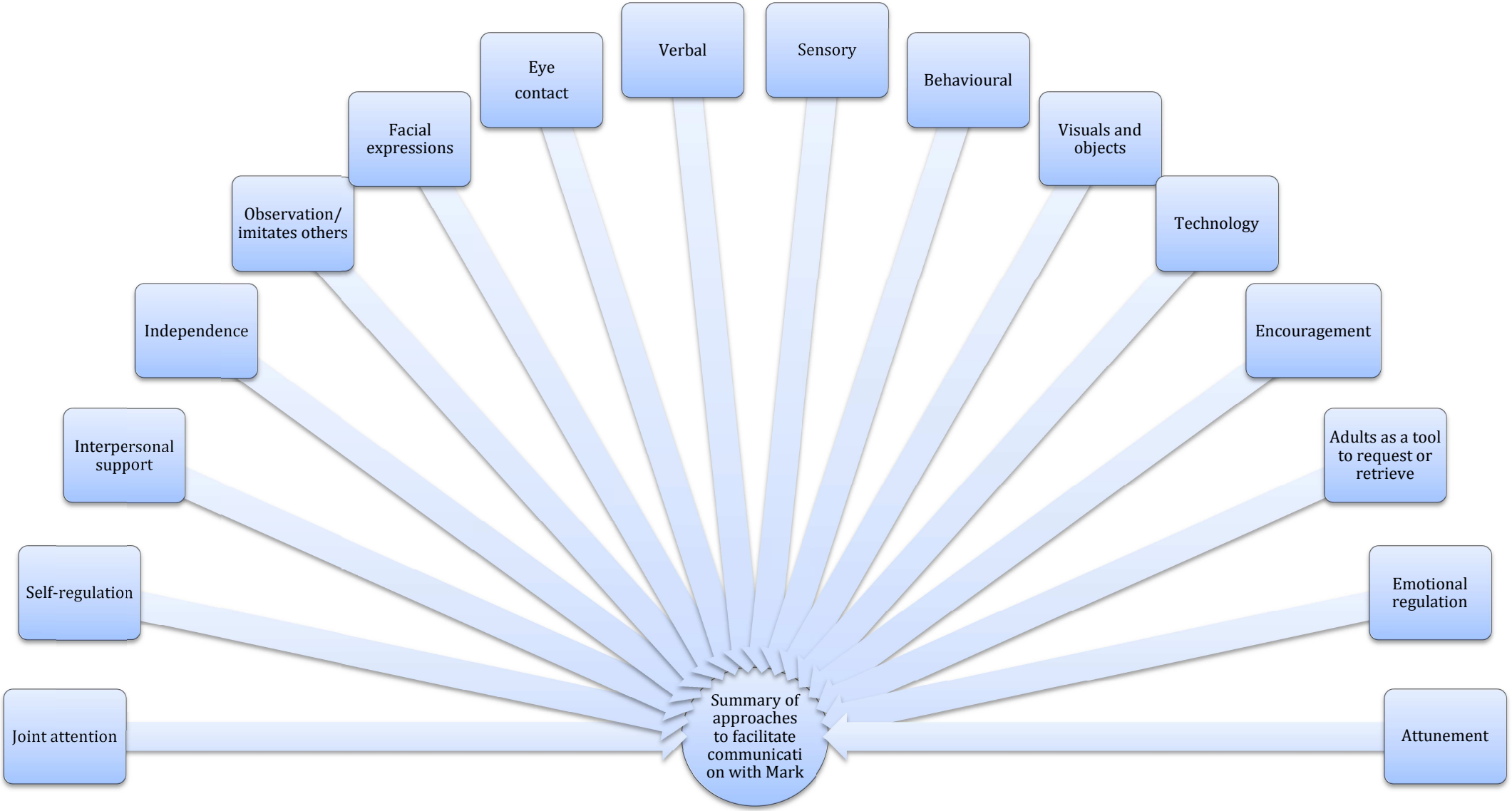
I felt the use of the eye-tracking activities was a positive experience for Mark, his TA and me, due to his engagement with the task and the production of reliable data. The TA felt the results confirmed some of her thoughts about Mark's favourite activities and what he enjoys doing, which fuelled a sense of confidence in her level of her attunement and shared understanding with Mark. At times, Mark could appear disengaged from activities in the classroom, sometimes preferring to play independently. Using the eye-tracking technology and looking at the screen, Mark appeared motivated, and this could be used to provide further learning opportunities in the classroom and assessment of his strengths and areas identified areas for development. By possibly moving to the more advanced eye-tracking activities and software, which allows tracking and recording of data, this could also inform adults working with Mark of how he learns, e.g., Can he track moving objects? What are his eye movement patterns like? Does Mark scan the choices before making a choice? What colour, size and type of image can he distinguish? Eye-tracking technology can empower students to feel a level of control and develop skills to eventually be able to surf the internet and use social media to communicate.

The use of the eye-tracking software in this research proved to be rather time consuming due to the level of preparation required. However, in a classroom situation with mobile technology, this could be used to support students help make choices in 'everyday' situations. It is important to note that the binary choices provided on the screen were constructed by adults. Mark was therefore provided a limited choice of photographs to choose from, reducing his ability to express preferences for alternative or new objects/activities.

It is also important to consider Mark's diagnosis of ASD, as children with ASD can react in individual ways in social situations; for example, some children avoid eye contact and/or fixate on smaller details rather than on the main activity or subject being presented. When providing a situation for choice making which involved photographs and images on the screen, it may be beneficial to have a reading on the child's eye tracking and where on the screen the child is focusing. This could help

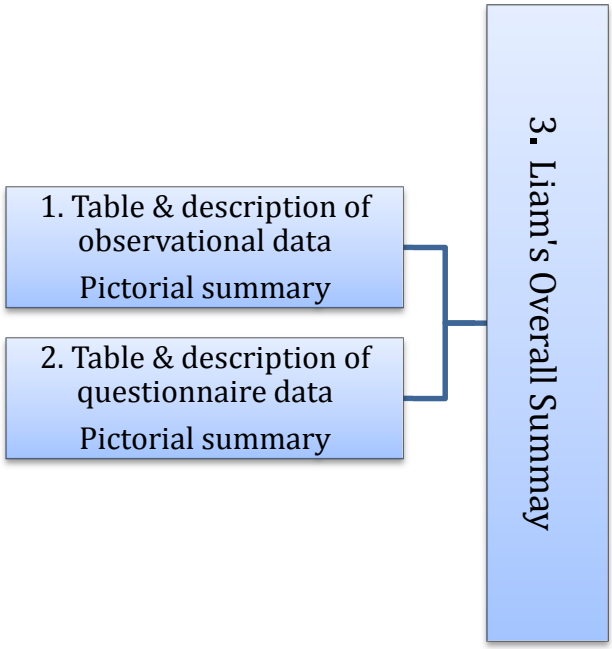
with understanding if the child is making a choice from the main image presented or is interested in an unrelated detail.

Figure 4.6 – Mark – Overall Summary of Analytic Findings



4.3 Participant 3 – Liam

Figure 4.7 Liam - Analytic Data Map



4.3.1 Observational Data – Analytic Findings

Table 4.5 – Liam – Observational Vignette Data

Case Study 3 – Liam*, Male, Aged 5, Black African		
Summary of child's SEND: Autistic spectrum disorder (ASD), speech and language delay and global developmental delay. Able to make pre-verbal utterances and giggles.		
Observational data (Vignette 1): I observed Liam outdoors lying down on a sensory swing with other children sitting around him or on top of him. The tambourine was sounded by the class teacher to indicate Circle Time inside. He required encouragement from the TA to go inside. During Circle Time the teachers used singing and rhymes to explain the actions or next activity as well as photographs and symbols on a Velcro timetable. After Circle Time Liam independently ran over to the table to check what was inside, e.g., water/sand. He stood for a while next to a partition and used his hands to swing the beads and decorations which were hanging of. He came over to me while I was crouched down and sat on my knee for a time. Liam had a chew toy; he cuddled the TA and squeezed her hands, and she responded by squeezing his hands and asking "Are you bored?" In attendance: Liam, class teacher and four TAs, his peers and the researcher		
SCERTS questions	**SCERTS observation**	**Observation notes**
Joint Attention: Why did the child communicate? For which purposes or functions (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share experiences, to express emotions)?	Initiates bids for interaction(1.1) Shifts gaze between people and objects (2.1) Shares negative and positive emotions (3.1)	• Takes and squeezes the hands of the TA • Looks at the photographs and visuals on the timetable during Circle Time and looks at the teacher and TA • Shares feelings through

	Requests comfort (5.1)	physical contact, hugging and squeezing • Approaches adults for cuddles and hand squeezes
Symbol Use: Did you observe the child initiating communication or communicating in response to others? If so, how did the child communicate (e.g., imitated actions/words, gestures, gaze, vocal, verbal, symbols)?	Follows situational cues in familiar and unfamiliar activities (2.1) Follows instructions with visual cues (2.3)	• He was able to follow the routine (with adult encouragement) of Circle Time, sitting on his chair and following small aspects of the activities • He observed and appeared to follow the visuals used in Circle Time and understood what to expect next
Mutual Regulation: How did the child respond to assistance offered by partners? Did he/she seek assistance from others?	Soothes when comforted by partners (2.1)	• He chose to seek cuddles and comfort from adults at times
Self-Regulation: What did the child do to attempt to regulate his/her emotions and arousal (e.g., sensory motor behaviours, talking to himself/herself, planning and self-reflecting)?	Responds to sensory and social experiences with differentiated emotions (1.4)	• He appeared to gain enjoyment and was soothed by the sway on the swing and watching the beads and decoration as he moved them from side to side; the chew toy also appeared to provide a level of ease
Interpersonal Support: Which interactive style modifications helped the child regulate, engage and participate? Which style factors appeared to hinder participation?	Follows child focus of attention (1.1) Recognises and supports child's behavioural and language strategies to regulate arousal level (1.4) Recognises signs of dysregulation and offers support Waits for and encourages initiations (2.2)	• The TAs and teacher were aware of his movements and attempted to engage his attention during activities • TAs recognised his behavioural strategies and interpreted his behaviours, e.g., swinging the swing when he lay on it, squeezing his hands when he squeezed their hands • Recognising that he could be bored due to his behaviours and engaging or introducing other activities or comfort • The adults made

	Gets down on child's level when communicating (4.1) Uses non-verbal cues to support understanding (6.1)	themselves available for initiation and encouraged initiation with others and objects/activities • The TAs were either sitting or crouched when not moving around the room • During Circle Time the teacher used visuals and photographs to support verbal instruction and understanding
Learning Support: Which aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or which visual supports were most effective for supporting the child's active engagement? Which variables appeared to hinder participation?	Defines clear beginning and ending to activity (1.1) Provides predictable sequence to activity (1.3) Offers varied learning opportunities (1.5)	• The tambourine signified the ending of outdoor play and the start of inside time, and the Circle Time activities were structured with familiar songs • There was a predictable routine for the children during the day and during each structured activity • There was a mix of outdoor and inside activities as well as guided structured activities
Research questions		
What techniques and strategies were used to ascertain the child's views?	• Observations of his behaviours and movements • Providing an open and accessible environment in which he was able to make choices • Arranging a variety of activities and objects for him to make a choice and show preference during free time	
What adaptations to the communication methods were needed to meet the needs of the children participating?	• Simple and clear instructions and questions • Visuals and photographs to support verbal language • Routine and structure provided a predictability element • Music, song and rhythm used to structure the sessions and create a beginning and end as well as encourage engagement	
What are the researcher's experiences of using the available methods of communication?	• Liam showed limited facial expressions and gestures, which I found caused ambiguity in recognising how he was feeling • Liam used physical contact and touch quite often. However, I am not sure if the squeezing of adults hands was communicating boredom, contentment, frustration or if it was satisfying a sensory need • Liam required adult prompting to attend and look at the	

	teacher and the activities during Circle Time • Adults were able to understand his movements and behaviours. As a new observer I found it was difficult to identify or understand feelings or the message he was communicating • Liam was very lethargic at times and it would appear that he would have preferred to be left to be alone and lying down. It appeared that the adults wanted to interact and communicate more than Liam did. • The interaction and communication were artificial and adult-led situations

Observational data (Vignette 2): In the Magic Carpet room Liam was able to explore the room independently. The lights were turned off and the interactive projector was switched on to display bright colourful images, which were used by the fishpond, flowerbed and other interactive sensory apps. Liam sat for a while and, after interaction from me and the class teacher, Liam began to make hand movements on the floor and watched the images. I imitated his behaviours as he moved back and forwards across the floor. He started to run around the floor independently. As I crouched down he, came over, squeezed my hands and hugged me very tightly.

In attendance: Liam, class teacher and researcher

SCERTS questions	SCERTS observation	Observation notes
Joint Attention: Why did the child communicate? For which purposes or functions (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share experiences, to express emotions)?	Initiates bids for interaction (1.1) Follows contact and distal point (2.2)	• Squeezed my hand and hugged me • Watched the images on the floor as they moved, and afterwards he interacted with them
Symbol Use: Did you observe the child initiating communication or communicating in response to others? If so, how did the child communicate (e.g., imitated actions/words, gestures, gaze, vocal, verbal, symbols)?	Follows situational and gestural cues in familiar and unfamiliar activities (2.1) Showed conventional and symbolic gestures (distal reach/point) (4.1)	• Liam was able to follow my cues and imitate my actions as I moved my hand and feet to interact with the images • Liam was reaching to touch and move the images around him on the floor
Mutual Regulation: How did the child respond to assistance offered by partners? Did he/she seek assistance from others?	Shares negative and positive emotions (1.1)	• Hugged me and squeezed my hand to indicate a positive or negative response or possibly satisfying a sensory need
Self-Regulation: What did the child do to attempt to regulate his/her emotions and	Initiates bids for interaction (1.1) Uses behavioural strategies to	• Squeezed my hand and hugged me • Hugged me and squeezed my hand, possibly due to

arousal (e.g., sensory motor behaviours, talking to himself/herself, planning and self-reflecting)?	regulate arousal level during solitary and social activities (2.1) Participates in new and changing situations (4.1)	a sensory need • Liam was able to engage in new and changing activities
Interpersonal Support: Which interactive style modifications helped the child regulate, engage and participate? Which style factors appeared to hinder participation?	Follows child focus of attention (1.1) Recognises and supports child's behavioural and language strategies to regulate arousal level (1.4) Imitates child (1.6) Waits for and encourages interaction (2.2) Gets down on child's level when communicating (4.1) Encourages imitation (5.1) Provided guidance and feedback as needed for success in activities (3.4)	• I was watching his eye tracking and which activity he was attending to • Attended to Liam's emotional responses and recognised when he wanted to end the activity through observing his behaviour • Imitated Liam's behaviour and movements as he interacted with the Magic Carpet • I sat by the carpet and interacted with it independently of Liam, and used his name and commented on his behaviours • Sat or crouched on the floor • I made some hand movements to interact with the Magic Carpet and wait for Liam to imitate • I provided a commentary on his movements and praise for any engagement I observed
Learning Support: Which aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or which visual supports were most effective for supporting the child's active engagement? Which	Creates turn-taking opportunities and leaves spaces for the child to fill in (1.2) Provides activities to promote initiation and extended interaction (4.8)	• I made some hand movements to interact with the Magic Carpet and waited for Liam to imitate • The Magic Carpet software is software that can be used by the child

variables appeared to hinder participation?		independently to manipulate cause and effect and/or with others, to promote interaction

Using the SCERTS model as a framework, key elements and approaches to facilitate Liam (a five-year-old boy with Autistic spectrum disorder (ASD), speech and language delay and global developmental delay) in his communication and interaction were observed. These included, joint attention, interpersonal support and learning support, explored below with extracts from the observation data.

4.3.1.1 Joint Attention

There were many examples of joint attention. This refers to the purposes or functions of the child's communication (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share experiences or to express emotions). Facilitating joint attention was one of the main areas identified.

Examples of observed Joint attention (SCERTS):

- Initiates bids for interaction (1.1);
- Shifts gaze between people and objects (2.1);
- Shares negative and positive emotions (3.1); and
- Requests comfort (5.1).

Examples observations:

- Liam takes and squeezes the hands of the TA.
- Liam looks at the photographs and visuals on the timetable during Circle Time and looks at the teacher and TA.
- He shares his feelings through physical contact, hugging and squeezing.
- Liam approaches adults for cuddles and hand squeezes.

4.3.1.2 Interpersonal Support

There were also examples of mutual regulation understood by SCERTS and this research as to which communication style and modifications help the child regulate, engage and participate, as well as identifying factors that appear to hinder participation.

Examples of observed self-regulation (SCERTS):

- Follows child focus of attention (1.1);
- Recognises and supports child's behavioural and language strategies to regulate arousal level (1.4);
- Recognises signs of dysregulation and offers support;
- Waits for and encourages initiations (2.2);
- Gets down on child's level when communicating (4.1); and
- Uses non-verbal cues to support understanding (6.1).

Example observations:

- The TAs and teacher were aware of Liam's movements and attempted to engage his attention during activities.
- TAs recognised his behavioural strategies and interpreted his behaviours, e.g., swinging the swing when he lay on it, squeezing his hands when he squeezed their hands.
- The adults recognised that his behaviours could be communicating his boredom, so they would try to engage him in other activities.
- The adults made themselves available for initiation and encouraged initiation with others and objects/activities.
- The TAs were either sitting or crouched when not moving around the room.
- During Circle Time the teacher used visuals and photographs to support verbal instruction and understanding.

4.3.1.3 Learning Support

There were examples of learning support understood by SCERTS and this research as those aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or which visual supports were most effective for supporting the child's active engagement, as well as those which appeared to hinder engagement.

Examples of observed interpersonal support:

- Defines clear beginning and ending to activity (1.1);
- Provides predictable sequence to activity (1.3); and
- Offers varied learning opportunities (1.5).

Observational notes below:

- The tambourine signified the ending of outdoor play and the start of inside time, and the Circle Time activities were structured with familiar songs.
- There was a predictable routine for the children during the day and during each structured activity.
- There was a mix of outdoor and inside activities as well as guided structured activities.

4.3.2 Questionnaires - Analytic Findings

Generic category:

Engagement is defined, for the purpose of this research, as the degree of Liam's participation in social and educational activities. The four sub-categories identified are: motivation, social engagement, strategies to facilitate engagement and sensory.

Sub-categories:

a) **Motivation r**elates to how adults encouraged Liam to interact and communicate.
E.g., use of new activities, toys and objects to motivate communication; gestures and eye contact help indicate Liam's turn; using the Magic Carpet as motivation.

b) **Social engagement** refers to Liam's level of communication and interaction with others.
E.g., likes adults; tolerates other children; plays mainly independently.

c) **Strategies to facilitate engagement** refer to methods and approaches used by adults and Liam to aid engagement in social interaction and communication.
E.g., PECS, limited range of objects and in certain situations, e.g., snack or certain toy; indicates 'more' or 'again' by holding out his hand during

'round and round the garden' games; intensive interaction; use of photographs, symbols and visual timetable.

d) **Sensory** signifies the manner in which Liam engages in sensory-based play and interactions.
E.g., splashing water and swishing; sensory tray, feel and touch; plays on a sensory level, e.g., messy play.

Generic category:

Remain curious is a category which captures the ways in which the adults around Liam are eager to learn more about the message that Liam is communicating. The three sub-categories identified are: observing, uncertainty and attunement.

Sub-categories:

a) **Observing r**efers to a method of understanding communicational methods.
E.g., the best way to get to know Liam is observing.

b) **Uncertainty** refers to how adults can feel occasionally when interpreting Liam's behaviours, noises and gestures.
E.g., Daily interaction with adults … 'What is he trying to tell us?' Three to four times per day there is an uncertainty as what is being communicated, e.g., when he hugs and squeezes.

c) **Attunement** was defined by behaviours and descriptions that related to the adult's and child's levels of understanding and empathy toward each other regarding communication meaning and feelings.
E.g., the teacher was most confident in identifying Liam's focus of attention, when he needs a break and when he feels frustrated. The teacher was less confident in identifying what he is interested in and when he is overwhelmed,; less confident still in identifying Liam's overall feelings; and least confident in identifying and understanding what is being communicated by Liam.

Generic category:

Body language, as defined for the purpose of this research, includes gestures, mannerisms or behaviours that can communicate feelings and attitudes. This category was composed of four sub-categories: facial expressions, eye contact, physical contact and gestures.

Sub-categories:

a) **Facial expressions** refer to Liam's expressive facial features.
E.g., interacts through facial expressions.

b) **Eye Contact** denotes the manner in which Liam used eye contact and looked at others. *E.g., good eye contact; looks closely at the adult's face; does not follow adult's direction of pointing.*

c) **Physical contact** is defined by tactile and touching behaviours displayed by Liam.
E.g., tactile; likes tickling games; touch, squeeze and bites; big hugs and squeezes with adults.

d) **Gestures** refer to Liam's movements, such as with his hand or his head, to express an idea or meaning.
E.g., can sign his name and use gestures during Circle Time songs.

Generic category:

Child's disposition was defined, for the purpose of this research, to highlight inherent qualities of mind and character. This category has one sub-category: emotional and physical presentation.

Sub-category:

a) **Emotional and physical presentation** refers to Liam's emotional presentation and personality and ways in which this was observed.

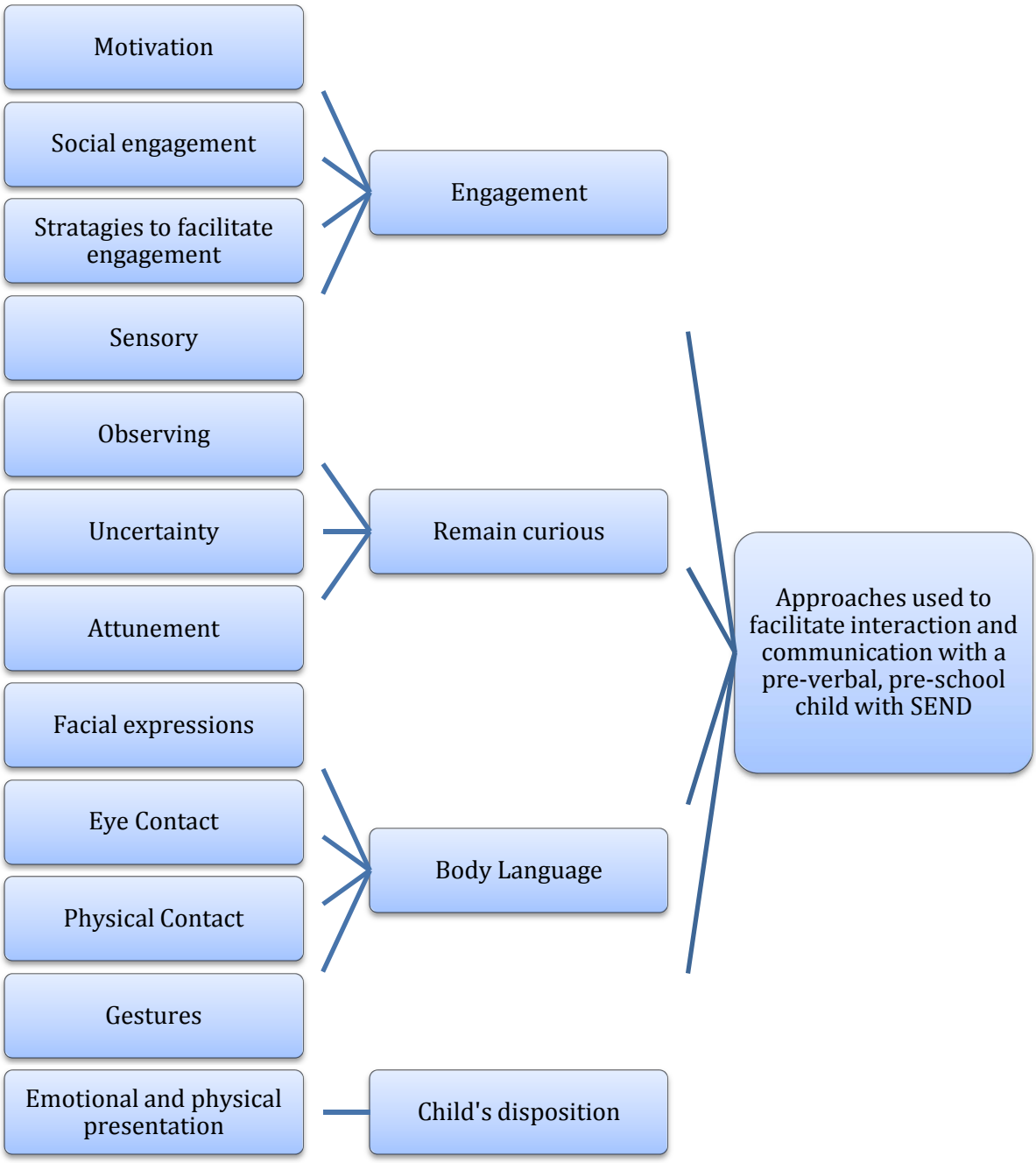
E.g., smiley and laughs; lovely disposition; smiles and giggles to indicate happiness; cries, grabs others, pulls and squeezes others to show sad feelings; when he is content he is placid and lies down; to show anger or frustration he squeezes, makes noises, eye contact; he vocalises and giggles when excited; when Liam is fearful he shies away, becomes avoidant, flinches and puts his hands up; he has a gentle nature; makes adults laugh; sweet.

Table 4.6 – Liam –
Questionnaire QCA

Category	Sub-Category	Responses from teacher questionnaire (Q)
Category 1: Engagement		
The degree of Liam's participation in social and educational activities.	Motivation	• Use new activities, toys and objects to motivate communication (9) • Gestures and eye contact help indicate Liam's turn (14) • Using the Magic Carpet as motivation (15) • Engages in cause-and-effect iPad and touch-screen games (15)
	Social engagement	• Likes adults (2) • Tolerates other children (4) • Plays mainly independently (11)
	Strategies to facilitate engagement	• PECS, limited range and in certain situations, e.g., snack or certain toy (3) • Indicates 'more' or 'again' by holding out his hand during 'round and round the garden' games (6) • Indicates refusals and protests (6) • Intensive interaction (9) • PECS and visual supports (9) • Photographs, symbols and visual timetable (14) • 'Finished' symbols and countdown to the end of an activity (14)
	Sensory	• Splashing water and swishing (1); Sensory tray, feel and touch (1) • Plays on a sensory level, e.g., messy play (11)
Category 2: Remain curious		
The ways in which the adults around Liam are eager to learn more about what is being communicated	Observing	• Best way to get to know Liam is observing (19)
	Uncertainty	• Daily interaction with adults … 'What is he trying to tell us?' (7) • Three to four times per day there is an uncertainty into what is being communicated, e.g., when he hugs and squeezes (8)
	Attunement	• The teacher was most confident in identifying Liam's focus of attention, when he needs a break and when he feels frustrated (18) • The teacher was less confident in identifying what he is interested in and when he is overwhelmed (18)

		• Less confident still in identifying Liam's overall feelings (18) • And least confident in identifying and understanding what is being communicated by Liam (18)
Category 3: Body language		
Includes gestures, mannerism or behaviours that can communicate feelings and attitudes	Facial expressions	• Interacts through facial expressions (3)
	Eye contact	• Good eye contact (2) • Looks closely at the adult's face (4) • Does not follow adult's direction of pointing (5)
	Physical contact	• Tactile; likes tickling games (2) • Touch, squeeze and bites (3) • Big hugs and squeezes with adults (4)
	Gestures	• Can sign his name and use gestures during Circle Time songs (12)
Category 4: Child's disposition		
Inherent qualities of mind and character	Emotional and physical presentation	• Smiley and laughs (2) • Lovely disposition (2) • Smiles and giggles to indicate happiness (16) • Cries, grabs others, pulls and squeezes others to show sad feelings (16) • When he is content he is placid and lies down (16) • To show anger or frustration he squeezes, makes noises, eye contact (16) • He says and giggles when excited (16) • When Liam is fearful he shies away, becomes avoidant, flinches and puts his hands up (16) • He has a gentle nature (20) • Makes adults laugh (20) • Sweet (20)

Figure 4.8 – Liam – Analytic Findings from Questionnaires



4.3.3 Individual Summary - Liam

This analysis explores qualitative data collected, exploring the methods and approaches used to facilitate communication and interaction between Liam and his communication partners. Liam is a five-year-old boy with a diagnosis of Autistic spectrum disorder (ASD), speech and language delay and global developmental delay. He is able to make P-V utterances and giggles. The two methods of analysis included Content Analysis, which highlighted key themes reported in the teacher and parental questionnaire and applying SCERTS questions to vignette observational data. These data sets were analysed separately, before the key findings were amalgamated and presented pictorially. Below, the findings are outlined and the research questions are addressed.

What techniques and strategies were used to ascertain the child's views?

Liam had access to an open and accessible environment in which he was able to make choices independently from a variety of activities and objects during free time as well as being encouraged to participate in Circle Time activities. Observations of his behaviours, eye contact and eye tracking, facial expressions and movements were used by adults to understand Liam's preferences for, and opinions of, certain activities, objects and other children/adults. PECS was being introduced and encouraged as a means for Liam to request particular snacks. It was reported and observed that the adults needed to find motivators for Liam to communicate and interact, e.g., the Magic Carpets, biscuits, as otherwise Liam could appear to be content lying down in his environment and observing others.

During the Magic Carpet session Liam demonstrated his ability to tolerate adults imitating and joining in with his play. He engaged adults in his play through physical contact, hand squeezing and hugging. However, the meaning behind this behaviour was something that the adults working with Liam were conscious of remaining curious about; there was ambiguity as to whether this physical contact was indicating frustration, boredom, excitement, comfort seeking, a sensory need or a wish for play.

What adaptations to the communication methods were needed to meet the needs of the children participating?

Liam was able to follow the routine of the day and was able to follow cues and prompts to move through the structure of the day. The adult used photographs, Makaton, visuals, music and song to indicate a particular time in the day and transition times as well as to support their verbal instructions, which were consistent and simple. Adults were accessible and approachable, and Liam would approach them and squeeze their hands, which was reciprocated. The adults needed to initiate interaction at times and they needed to explore various motivational materials in order to encourage engagement in activities or Liam's practice of choice-making skills. During the Magic Carpet session I engaged in imitation of Liam's behaviours and movements to facilitate a feeling of shared attention and to encourage interaction.

The adaptation of the School Preference Activity included a reduction in the number of photographs to two familiar objects (Bourbon biscuit and banana) and the method was adapted to be similar to an approach that Liam was already familiar with, PECS. It was originally thought by the class teacher that Liam might not be able to distinguish or make meaning from the photographs, as they were different to a PECS symbol. However, Liam was able to choose and differentiate between the two photographs every time, despite the photographs being placed in different areas around the room. Liam was not asked to choose by an adult; Liam was encouraged to explore the surroundings and choose and request a biscuit in his own time. The choice was made between only two items; it might have been helpful to explore Liam's choice-making abilities using a greater number of objects.

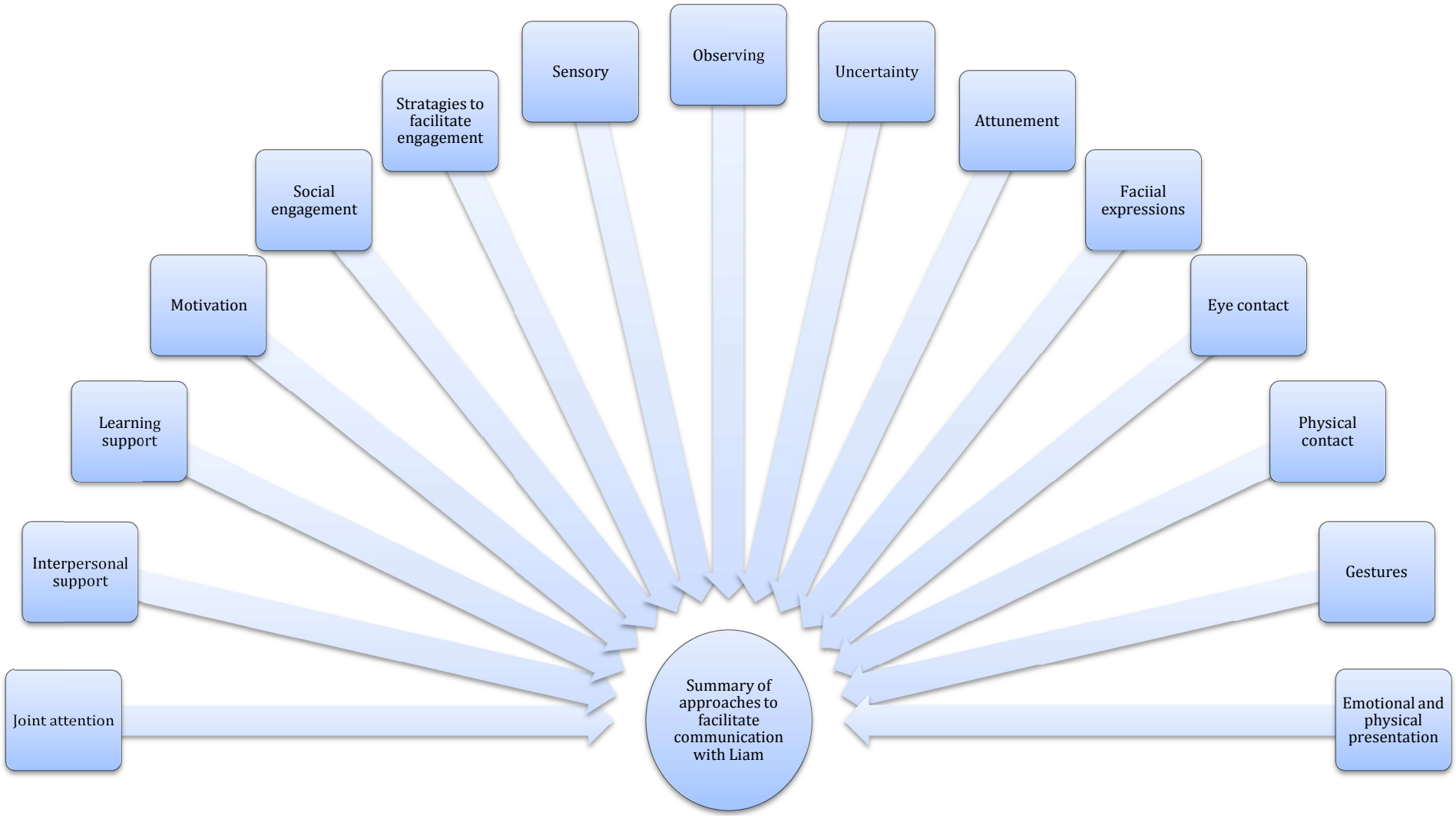
What are the researcher's experiences of using the available methods of communication?

During my time observing Liam and working with him he showed limited facial expressions and limited gestures, which I found caused difficulty in recognising how he was feeling. As mentioned previously, Liam used physical contact and touch quite often. Adults who worked with Liam were able to understand his movements and behaviours most of the time. As a new observer, it was difficult for me to identify or understand his feelings or the message he was communicating.

Liam required a high level of mediation by the adults to attend to the activities during Circle Time and engage with instructions and tasks. Most of the tasks and interaction took place in a situation constructed by the adults, and it appeared that the adults had a bigger need to interact and communicate with Liam than Liam had to communicate with them.

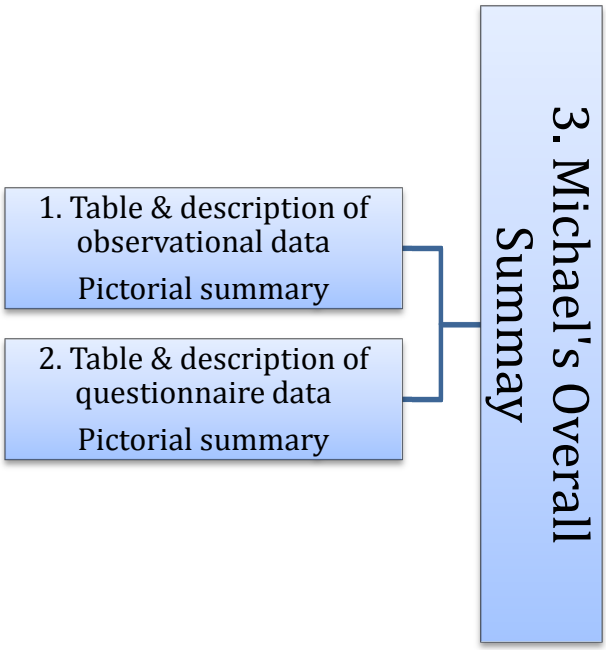
As well as the heterogeneous nature of the children's SEND, there is also a difference in each child's personality and disposition, which can impact on how much each child chose to engage and communicate their needs. Liam could be very smiley and giggly as well as appearing to be quite lethargic and relaxed, preferring to lie down and observe his surroundings. Liam's ASD and the social communication difficulties are also important to consider. In Liam's environment, as long as the approaches and adults were accessible for Liam to communicate with, I wonder how necessary it was to continuously encourage interaction and communication, if the adults can ensure that he is happy and safe. However, on the other hand, I consider that the nature of school is to provide a learning environment for the teaching of students, under the supervision and direction of teachers. For children with complex and SEND who are P-V this can also include providing a language-rich environment to facilitate development of communication as well as cognitive, physical and social development. Observing Liam highlighted the importance of motivation to communicate.

Figure 4.9 –Liam Overall Summary of Analytic Findings



1.4 Participant 4 – Michael

Figure 4.10 Michael - Analytic Data Map



4.4.1 Observational Data – Analytic Findings

Table 4.7 – Michael – Observational Data

Case Study 4 – Michael*, Aged 5 years, British Asian		
Summary of child's SEND: Michael has Pelizaeus–Merzbacher disease (a central myelination condition), Nystagmus (rapid, involuntary, rhythmic motion of the eyes) and he has difficulty with head movements. He is also pre-verbal.		
Observational data (Vignette 1): During the morning Circle Time Michael sat in his wheelchair, which supported his head, and had a table in front of him. The chair was lowered so he was at a similar level to the other children and the class teacher, who was sat down. The children sitting in a semi-circle. A visual timetable was presented to the children, with a clear visual and verbal message as to what activity was next. The children were encouraged to say good morning to one another through singing a "good morning" song. Michael's photograph was selected and shown to him and the other children, and adults sang the good morning song along with Makaton signs. Michael was presented with a button with a good morning sticker on it. He was encouraged to press it and needed to be physically scaffolded by the teacher to push the button, which played a voice recording of "Good morning". Michael was then asked to choose between two photographs of his peers and choose whose turn it was next; he did this using eye tracking and smiling. The teacher observed his gaze and interpreted his eye dwell time on one photograph as a choice. In attendance: Michael, six peers, five adults and the researcher		
SCERTS questions	**SCERTS observation**	**Observation notes**
Joint Attention: Why did the child communicate? For which purposes or functions (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share	Shifts gaze between people and objects (2.1) Shares positive and negative emotions (3.1)	• Michael was able to watch and follow the adults around him using symbols and photographs • Michael was able to share smiles during the Good Morning song

experiences, to express emotions)?		
Symbol Use: Did you observe the child initiating communication or communicating in response to others? If so, how did the child communicate (e.g., imitated actions/words, gestures, gaze, vocal, verbal, symbols)?	Follows instructions with visual cues (2.3) Responds to facial expression and intonation cues (2.4) Responds to own name (6.1)	• Michael followed the familiar routine of the good morning song and looked at, as well as attempted to press, the button • Michael listened to the song and smiled during it. He watched the faces of the adults and responded with facial expressions • Michael smiled and recognised it was his turn to say good morning during the song. His name was spoken verbally as well as reinforced with Makaton and his photograph
Mutual Regulation: How did the child respond to assistance offered by partners? Did he/she seek assistance from others?	Shares negative and positive emotions (1.1) Engages when alerted by partners (2.2)	• Michael was able to share smiles during the Good Morning song • He was able to engage in the activity when an adults used his name or touch to engage him
Self-Regulation: What did the child do to attempt to regulate his/her emotions and arousal (e.g., sensory motor behaviours, talking to himself/herself, planning and self-reflecting)?	Respond to sensory and social experiences with different emotions (1.4)	• Michael showed happy emotions through his facial expressions and hand movements. During the Circle Time he appeared observant at times, as well as showing unfocused expressions
Interpersonal Support: Which interactive style modifications helped the child regulate, engage and participate? Which style factors appeared to hinder participation?	Follows child's focus of attention (1.1) Attunes to child's emotion and pace (1.2) Recognises signs of dysregulation and offers support (1.5) Offers choices non-verbally or verbally	• Staff watched his eye tracking and dwell time, along with his facial expressions, to recognise his focus of attention • Adults were able to identify Michael's emotional state through shared knowledge and observing his facial expressions, gestures and eye contact • The TA sat beside Michael to observe Michael's regulation of emotions and sensory input and was on hand to offer support when needed • Adults provided Michael with a choice of two photographs or visuals, and Michael was

	(2.1) Waits for and encourages interaction (2.2.) Provides time for child to solve problems or complete activities at own pace (3.2) Gets down on child's level when communicating (4.1) Secures child's attention before communicating (4.2) Uses appropriate proximity and non-verbal behaviour to encourage interaction (4.3) Uses non-verbal cues to support understanding (6.1)	encouraged to use eye contact to make a choice • Time allowances were made for Michael to be able to make a choice between visuals as well as to attempt to move his hands to push the button • Michael's wheelchair was adjusted and was lowered when in Circle Time so he was at a similar level to his peers and adults who were sat on low chairs. • Adults moved into Michael's eye line and used his name and touch to gain attention before communicating • The adults moved freely around the room so they were able to get into an optimal position for the child to observe and see the non-verbal cues and visuals provided. • Makaton signs, visuals and photographs, music, routine and song were used to support understanding
Learning Support: Which aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or which visual supports were most effective for supporting the child's active engagement? Which variables appeared to hinder participation?	Defines clear beginning and ending to activity (1.1) Provides predictable sequence to activity (1.3) Offers repeated learning opportunities (1.4) Uses visual supports to enhance smooth transition between activities (3.3)	• The beginning of the morning activity was signified with a visual timetable clearly shown to all students • The good morning sung is sang by the whole class every morning, and the routine of saying good morning to one another that is followed • The visual timetable indicates and supports a change in activity and prepares the children for what is next • Michael was provided with a voice recording button to press to say good morning, visuals were placed in his eye line and his wheelchair was lowered to a suitable height

	Modifies sensory properties of learning environment (4.3)	
Research questions		
What techniques and strategies were used to ascertain the child's views?	• Observations, following Michael's eye tracking and eye dwell time between visuals to make choices, facial expressions and body language	
What adaptations to the communication methods were needed to meet the needs of the children participating?	• Choice making between photographs and choices to be made through eye-tracking • Voice recording button pressed with adult support • Time allowances for Michael to make a choice • Positioning of his wheelchair to the correct level to facilitate engagement • Adults use his name, touch and positioning themselves so he can see them clearly before interaction	
What are the researcher's experiences of using the available methods of communication?	• Difficult to interpret choices made by Michael through observing his eye contact. • Shared experiences between the school staff and Michael helped this process • Michael had limited control over his body and head movements, so it was important to encourage autonomy where possible through time allowances and attempts to reinforce or reaffirm his choices • Shared knowledge between Michael and adults supported communication and interpretation of his message	

Observational data (Vignette 2): Michael participated in a 'drama game', which took place in a smaller room adjacent to the classroom. The three children sat in a row, each in wheelchairs, and had their height adjusted. Michael was asked to make a choice between two visual symbols, each showing a different game. The TA watched his eye contact and facial expressions and tested the choice making and his reactions by removing one choice and then bringing it back. After the interactive singing game, using puppets, Michael was asked if he wanted to have 'more' of the same activity, of if that activity was 'finished'. Michael was encouraged to use his arms or eye contact to indicate 'more' or 'finished' using PECS symbols stuck on opposite sides of his table.

In attendance: Michael, two peers, TA and the researcher

SCERTS questions	**SCERTS observation**	**Observation notes**
Joint Attention: Why did the child communicate? For	Engages in brief reciprocal interaction	• Michael interacted with the TA as he was shown visuals to make a choice

which purposes or functions (e.g., to meet needs, to engage in back-and-forth interaction, to share attention, to engage socially, to share experiences, to express emotions)?	(1.2) Shifts gaze between people and objects (2.1) Shares negative and positive emotions (3.1) Requests desired food or object (4.1) Takes turns (5.3)	of activities • Michael observed the TA facilitating the session and watched the other two children when they were engaging in the activities • Michael smiled and moved his arms when he was enjoying the activity • Requests desired activity by choosing between two objects of reference using eye tracking • He was able to wait his turn and watch the other children participate in the games before his turn
Symbol Use: Did you observe the child initiating communication or communicating in response to others? If so, how did the child communicate (e.g., imitated actions/words, gestures, gaze, vocal, verbal, symbols)?	Follows situational and gestural cues in familiar and unfamiliar activities (2.1) Follows instructions with visual cues (photographs or pictures) (2.3) Responds to own name (6.1)	• This setting was familiar, and there was rotation of activities. Michael followed the cues from the TA, which included songs, visuals, objects/puppets and observing others • Michael responded to his name when supported with touch, photos, optimal positioning and eye contact
Mutual Regulation: How did the child respond to assistance offered by partners? Did he/she seek assistance from others?	Shares negative and positive emotions (1.1) Engages when alerted by partners (2.2) Makes choices when offered by partners (2.6)	• Shared smiles and body movements to indicate happiness or enjoyment • Michael engaged with the adults and the activity when attention was turned towards him • Choices were made between two objects or visuals and observation of his eye tracking and eye dwell time was used to determine choice
Self-Regulation: What did the child do to attempt to regulate his/her emotions and arousal (e.g., sensory motor behaviours, talking to himself/herself, planning and self-reflecting)?	Engages in brief reciprocal interaction (1.2) Responds to sensory and social experiences with different emotions (1.4)	• Michael interacted with TA as he was shown visuals to make a choice between activities • Michael showed smiling and happy emotions through his facial expressions and hand movements. Some of the activities included furry puppets touching Michael's face, which he appeared to enjoy • Michael was engaged in the activities

	Persists during tasks with reasonable demands (1.7)	and continued to show a level of participation and observation throughout
Interpersonal Support: Which interactive style modifications helped the child regulate, engage and participate? Which style factors appeared to hinder participation?	Follows child's focus of attention (1.1) Attunes to child's emotion and pace (1.2) Recognises and supports child's behavioural and language strategies to regulate arousal level (1.4) Offers choices non-verbally or verbally (2.1) Waits for and encourages interaction (2.2.) Gets down on child's level when communicating (4.1) Secures child's attention before communicating (4.2) Uses non-verbal cues to support understanding (6.1)	• The TA watched his eye tracking and dwell time along with his facial expressions to recognise his focus of attention • The TA was able to identify Michael's emotional state by observing his facial expressions, gestures and eye contact • The TA was familiar with Michael's communication methods and supported him with this • Adults provided Michael with a choice of two visuals or objects of reference and Michael was encouraged to use eye contact to make a choice • Time allowances were made for Michael to be able to make a choice • Michael's wheelchair was adjusted and was lowered so he was at a similar level to his peers and the TA • The TA moved into Michael's eye line and used his name and touch to gain attention before communicating • Visuals, objects of reference, photographs, music and song were used to support understanding
Learning Support: Which aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or which visual supports were most effective	Creates turn taking opportunities and leaves spaces for child to fill in (1.2) Uses visual support to enhance attention in group activities (3.5)	• The turn taking was structured by the TA, and each child was asked to choose whose turn is next by choosing between two photographs • The activities were visual and sensory, and instructions were provided visually and verbally

for supporting the child's active engagement? Which variables appeared to hinder participation?		
Research questions		
What techniques and strategies are used to ascertain the child's views?	• Observations, following Michael's eye tracking and eye dwell time between visuals to make choices, facial expressions and body language	
What adaptations to the communication methods were needed to meet the needs of the children participating?	• Choice making between objects of reference, photographs and choices to be made through eye tracking • Time allowances for Michael to make a choice • Positioning of his wheelchair to the correct level to facilitate engagement • TAs to use his name, touch and positioning themselves so he can see them clearly before interaction	
What are the researcher's experiences of using the available methods of communication?	• Difficult to interpret choices made by Michael through observing his eye contact • Michael's enjoyment of the activity was more obvious during the small group activity • Shared experiences between the school staff and Michael helped this process • Michael had limited control over his body and head movements, so it was important to encourage autonomy where possible through time allowances and attempts to reinforce or reaffirm his choices • Shared knowledge between Michael and adults supported communication and interpretation of his message	

Using the SCERTS model as a framework, key elements and approaches to facilitate Michael is communication and interaction were observed. These included joint attention, symbol use, interpersonal support and learning support, explored below with extracts from the observation data.

4.4.1.1 Joint Attention

There were many examples of joint attention. This refers to the purposes or functions of the child's communication (e.g., to meet needs, to engage in back-and-forth

interaction, to share attention, to engage socially, to share experiences, to express emotions). Facilitating joint attention was one of the main areas identified.

Examples of observed Joint attention (SCERTS):

- Engages in brief reciprocal interaction (1.2);
- Shifts gaze between people and objects (2.1);
- Shares negative and positive emotions (3.1);
- Requests desired food or object (4.1); and
- Takes turns (5.3).

Example observations:

- Michael interacted with the TA as he was shown visuals to make a choice of activities.
- Michael observed the TA facilitating the session and watched the other two children when they were engaging in the activities.
- Michael smiled and moved his arms when he was enjoying the activity.
- Michael is able to request a desired activity by choosing between two objects of reference using eye tracking.
- He was able to wait his turn and watch the other children participate in the games before him.

4.4.1.2 Symbol Use

There were also examples of symbol use, understood by SCERTS and this research as ways in which the child communicated (e.g., imitated actions/words, gestures, gaze, vocal, verbal, symbols)?

Examples of observed symbol use (SCERTS):

- Follows situational and gestural cues in familiar and unfamiliar activities (2.1);
- Follows instructions with visual cues (photographs or pictures) (2.3);
- Responds to own name (6.1); and
- Responds to facial expression and intonation cues (2.4).

Observational notes:

- Michael followed the familiar routine of the good morning song and looked at, as well as attempted to press, the button.
- Michael listened to the song and smiled during it. He watched the faces of the adults and responded with facial expressions.
- Michael smiled and recognised it was his turn to say good morning during the song. His name was spoken verbally as well as reinforced with Makaton and his photograph.

4.4.1.3 Interpersonal Support

There were also examples of learning support, understood by SCERTS and this research as those interactive style modifications which helped the child regulate, engage and participate, as well as style factors which appeared to hinder participation.

Examples of interpersonal support:

- Follows child's focus of attention (1.1);
- Attunes to child's emotion and pace (1.2);
- Recognises signs of dysregulation and offers support (1.5);
- Offers choices non-verbally or verbally (2.1);
- Waits for and encourages interaction (2.2.);
- Provides time for child to solve problems or complete activities at own pace (3.2);
- Gets down on child's level when communicating (4.1);
- Secures child's attention before communicating (4.2);
- Uses appropriate proximity and non-verbal; behaviour to encourage interaction (4.3); and
- Uses non-verbal cues to support understanding (6.1).

Examples of observational notes are shown below.

- Staff watched his eye tracking and dwell time along with his facial expressions to recognise his focus of attention.
- Adults were able to identify Michael's emotional state through shared knowledge and observing his facial expressions, gestures and eye contact.

- The TA sat beside Michael to observe his regulation of emotions and sensory input and was on hand to offer support when needed.
- Adults provided Michael with a choice of two photographs or visuals, and Michael was encouraged to use eye contact to make a choice.
- Time allowances were made for Michael to be able to make a choice between visuals as well as to attempt to move his hands to push the button.
- Michael's wheelchair was adjusted and was lowered when in Circle Time so he was at a similar level to his peers and adults, who were sitting on low chairs.
- Adults moved into Michael's eye line and used his name and touch to gain attention before communicating.
- The adults moved freely around the room, so they were able to get into an optimal position for the child to observe the non-verbal cues and visuals provided.
- Makaton signs, visuals and photographs, music, routine and song were used to support understanding.

4.4.1.4 Learning Support

There were also examples of learning support understood by SCERTS and this research as those aspects of the activity (e.g., a clear and predictable sequence, motivating meaningful materials) and/or those visual supports which were most effective for supporting the child's active engagement, as well as those which appeared to hinder engagement.

Examples of observed interpersonal support:

- Defines clear beginning and ending to activity (1.1);
- Provides predictable sequence to activity (1.3);
- Offers repeated learning opportunities (1.4);
- Uses visual supports to enhance smooth transition between activities (3.3); and
- Modifies sensory properties of learning environment (4.3).

Examples of observational notes are shown below.

- The beginning of the morning activity was signified with a visual timetable clearly shown to all students.

- The good morning song was sung by the whole class every morning, and the routine of saying good morning to one another was the routine followed.
- The visual timetable indicated and supported a change in activity and prepared the children for what is next.
- Michael was provided with a voice recording button to press to say good morning, visuals were placed in his eye line and his wheelchair was lowered to a suitable height.

4.4.2 Questionnaires – Analytic Findings

Generic category:

Body language, for the purpose of this research, was defined to include behaviours including gestures and mannerism that communicated feelings and attitudes. This category was composed of four sub-categories: facial expressions, eye contact, gestures and P-V vocalisations.

Sub-categories:

a) **Facial expressions** referred to Michael's expressive facial features.
E.g., '*He will use facial expressions combined with vocalisations to indicate if he doesn't want or enjoy something, i.e., at dinner turning his head, using facial expressions and groaning to indicate he doesn't like his taster'.*

b) **Eye contact** referred to how Michael used his eye tracking and eye dwell to communicate, and make choices.
E.g., **'***He will make choices within group activities to communicate using eye pointing'.*

c) **Gestures** referred to Michael's movements, such as of his hand or head, to express an idea or meaning.
E.g., '*He clearly turns his head to the side when we are sitting and vocalizes if he wants an adult to change the game/video he is playing or watching on his iPad'.*

d) **P-V vocalisations** capture the noises and intonations made by Michael to express his feelings or communicate.
E.g., *'He will vocalise sounds to either gain attention or express enjoyment or dislike of an activity'.*

Generic category:

Shared understanding is understood, for the purpose of this research, to include recently shared experiences, common ground and joint attention between communication partners. This category was composed of four sub-categories: verbal and P-V communication, providing opportunities, medical condition and symptoms, and imitating behaviours/noises.

Sub-categories:

a) **Verbal and P-V communication** describes the communication between communication partners that may also require further information acquired through previous shared experiences to accurately interpret the message.
E.g., *'Understands what I say to him, clearly lets me know if he doesn't like something'. 'Certain things he can vocalise, e.g., mmmm, for yes and nooooo, for no'.*

b) **Providing opportunities** refers to adults providing space and structured occasions for interactions, such as, choice making.
E.g., *'Continuously offering opportunities for choice making and ensuring an adult is with him throughout the day to communicate with him'.*

a) **Medical condition and symptoms** relates to the adults' knowledge of Michael's medical condition and how this can impact on his ability to communicate and interact.
E.g., *'He gets dystonia (body becomes ridged); he needs time to relax back his muscles', 'He has Nystagmus, so his vision is limited'.*

b) **Imitating behaviours/noises** refers to Michael's ability to observe and imitate noises or behaviors from others.
E.g., *'If you ask him how his brother cries he imitates that'.*

Generic category:

Perseverance is understood, for the purpose of this research, as doing something despite difficulty or delay in achieving success, e.g., communicating or interacting. This category was composed of two sub-categories: communicating/understanding a message, and activities and interaction.

Sub-categories:

a) **Communicating/understanding a message** describes how adults continue to understand the meaning or intent of what Michael is communicating.
E.g., *'When he is in some kind of pain, especially in his sleep, and he keeps crying, we keep wondering what the problem is'.*

b) **Activities and interaction** refers to how Michael is determined to partake in an activity or task.
E.g., *'Tries hard and gives his best if we give him a task to do, e.g., turning the page of a book'.*

Generic category:

Multi-method approach is a mix of various approaches, methods and tools to communicate. This category was composed of four sub-categories: song, rhythm and tune; technology; book and pictures; and visuals.

Sub-categories:

a) **Song, rhythm and tune** is a sub-category to acknowledge the enjoyment Michael has of songs and music.
E.g., *'Enjoys when his brother sings rhymes'.*

b) **Technology** refers to the communication methods and activities to facilitate interaction that include technology.
E.g., *'iPad helps to facilitate communication', 'He really enjoys cause-and-effect toys, we have a large spinner in class with touch pads, which creates different sounds or actions when pressed and M loves this'.*

c) **Book and pictures** refers to the communication methods and activities to facilitate interaction that include book and pictures.
E.g., *'Loves turning pages in his storybook'*.

d) **Visuals** include the use of symbols and pictures to support verbal and non-verbal communication.
E.g., *'He uses photos or objects of reference to make choices, and we are combining these with symbols to build on his understanding of some familiar symbols'*.

Table 4.8 Michael – Questionnaire QCA

Category	Sub-Category	Responses from parental questionnaire (Q)	Responses from teacher questionnaire (Q)
Category 1: Body language			
Includes gestures, mannerism or behaviours that can communicate feelings and attitudes	Facial expressions	• Facial expression and tone of voice helps you better understand what he is communicating (10) • Facial expressions for happy and sadness (14) Crying or makes a sad face to indicate sadness (16) Smiling indicates contentment (16)	• He will use facial expressions combined with vocalisations to indicate if he doesn't want or enjoy something, i.e., at dinner turning his head, using facial expressions and groaning to indicate he doesn't like the taste (6) • When seeing current or old class team M will smile and make sounds which resemble happiness (6) • He uses facial expressions to express enjoyment or dislike, along with vocalisations (10) • Facial expressions and vocalisations to express happiness (16) • Cries, looks away, facial expressions, body stiffens to express fear (16)
	Eye contact	• Choice making with eyes and touching (3)	• Enjoys using eye tracking (2) • He will make choices within group activities to communicate using eye pointing (5) • As mentioned already he uses eye pointing to communicate choices and we use objects of reference or photos supported with symbols for these (6) • M uses eye-tracking technology to refine and develop eye pointing skills (15)
	Gestures	• Body language helps you better	• His body language can change and

		understand what he is communicating (10) • He clearly turns his head to the side when we are sitting and vocalising to change something he is playing on his iPad (5) • Body language can indicate happiness (16)	become quite tight and he pulls his whole body away if he does not like something (6)
	Pre-verbal vocalisations	• Smiles, giggles and laughs, vocalises in a happy tone indicated happiness (16) • Crying or makes a sad face to indicate sadness (16) • Cries loudly or shrieks out to indicate anger or frustration (16) • He moves his whole body in excitement (16) • Starts crying loudly to indicate fear (16)	• He will vocalise sounds to either gain attention or express enjoyment or dislike of an activity (2) • He will use facial expressions combined with vocalisations to indicate if he doesn't want or enjoy something, i.e., at dinner turning his head, using facial expressions and groaning to indicate he doesn't like the taste (6) • He uses facial expressions to express enjoyment or dislike, along with vocalisations (10) • He cries to indicate sadness (16) • When he is content he indicates this by vocalisations, generally quiet with gaze focused on activity or object (16) • Laughing, facial expressions really happy, vocalising to express excitement (16) •
Category 2: Shared understanding			
Recently shared experiences/common ground and joint attention	Verbal and pre-verbal communication	• Understands what I say to him, clearly lets me know if he doesn't like something (2)	• Will indicate through expressive emotions, facial expressions, vocalisations (8)

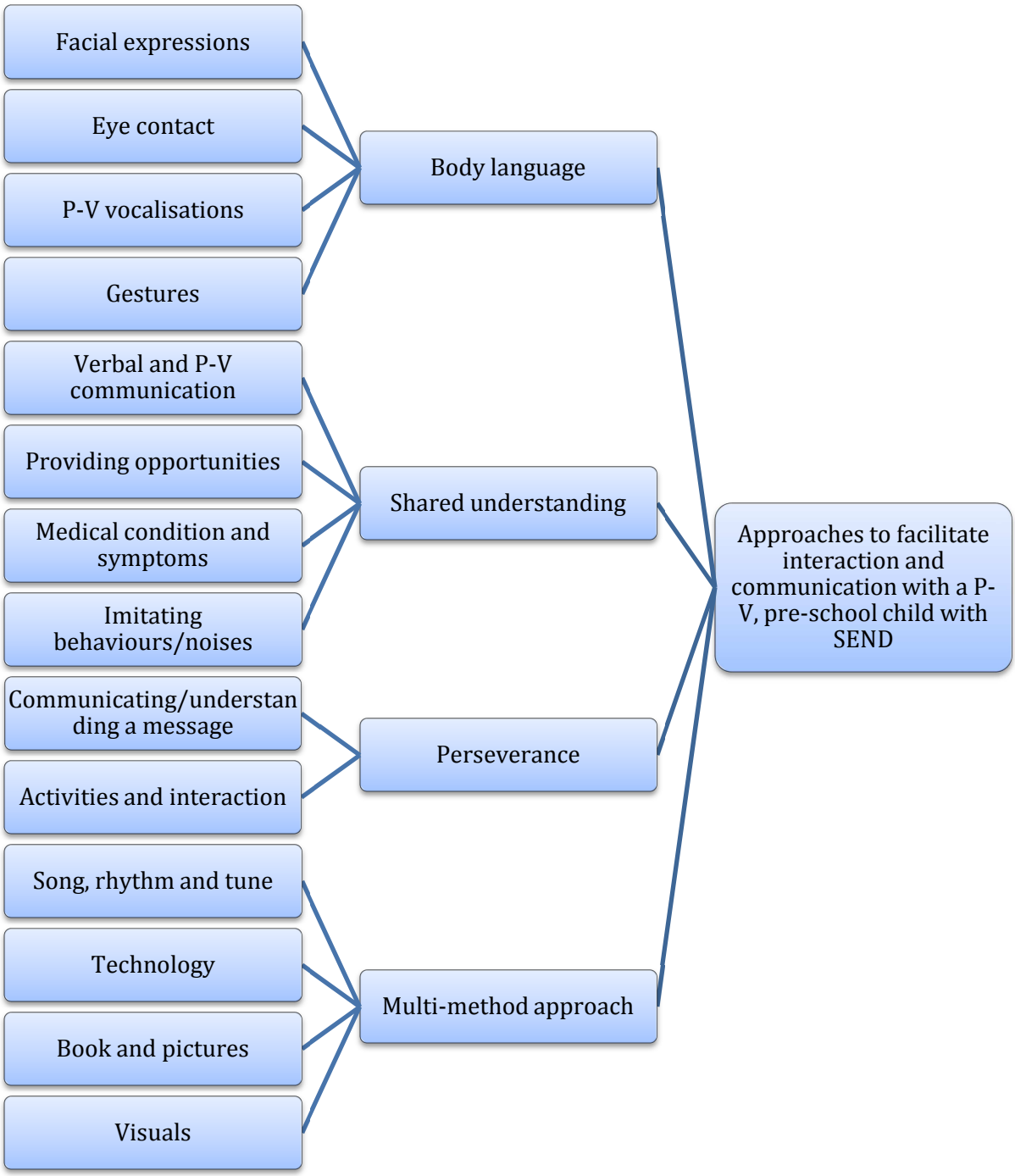
between communication partners		• Certain things he can vocalise, e.g., "mmmm," for yes and "nooooo", for no (3) • If he doesn't like what we are watching on television or iPad he cries (3) • Haven't got much chance to see him interacting with my friends at home (4) • Alongside his brother, likes playing ball games (11) • He clearly turns his head to the side when we are sitting and vocalising to change something he is playing on his iPad or if his favourite rhyme playlist finishes on the TV (5) • He is able to name toys, indicate endings, indicate refusals, shows a protest and is able to draw attention to something (6) • His mother is most confident in understanding when he is frustrated and his focus of interest, less confident in his focus of attention, the message he is communicating, when he needs a break and when he is overwhelmed and the least understood is how he is feeling generally (18) • (To get to know him) - observe him, gain his confidence and start talking to him. It would be better if a known adult introduces him to a new person he is going to meet (19)	• He responds really well to sound and so tone of voice is important along with clear simple language (14) • The school staff are more confident in understanding his focus of attention, what he is communicating, how he is feeling, when he needs a break, how interested he is and when he becomes overwhelmed. They are least confident in understanding when he is frustrated (18) • (To get to know him) engage him in an activity he enjoys, i.e., cause-and-effect toys, observing but letting him know you are there, speaking with the class team (19) • He can be quite an anxious child and in the past has become quite upset at meeting new people, moving to different environments etc. He has settled really well into our class and has become much more confident in handling new interactions and transitions, but it is important to be mindful that he can become upset if unsure (20)

	Providing opportunities		• His choice making is clear and so with regards to communication this is largely how he is communicating. However, he is not currently at the stage where he is initiating conversation (8) • Continuously offering opportunities for choice making and ensuring an adult is with him throughout the day to communicate with him (9) • As mentioned already, he uses eye pointing to communicate choices, and we use objects of reference or photos supported with symbols for these (6) • Happy to participate in play with his peers, always adult led, although if given a book will turn pages solitarily (11) • Symbols, photos and objects of reference shown as a choice of two horizontally (15)
	Medical condition and symptoms	• He gets dystonia (body becomes ridged); he needs time to relax back his muscles • Has Nystagmus, so his vision is limited (20)	
	Imitating behaviours/noises	• If you ask him how his brother cries he imitates that (12) • Imitates a kissing sound (13)	

Category 3: Perseverance			
Doing something despite difficulty or delay in achieving success	Communicating/understanding a message	• When he is in some kind of pain, especially in his sleep, and he keeps crying we keep wondering what the problem is (8)	• If there is something wrong, and then an adult can try to work out what is wrong (usually that he has been to the toilet or can feel that he is about to be sick) (8)
	Activities and interaction	• Tries hard and gives his best if we give him a task to do, e.g., turning the page of a book (2)	• He does not initiate at this current moment in time but will be attentive when working in small groups, particularly during play of what his peers are doing (this is often more through listening skills as opposed to fixating visually on his peers) (4) • He has opportunities for individual, small group and whole group work and activities and is demonstrating attention to the lead adult within these sessions (4)
Category 4: Multi-method approach			
The mix of various approaches, methods and tools to communicate	Song, rhythm and tune	• Enjoys when his brother sings rhymes (11)	• Loves sound and music (2)
	Technology	• Playing with his iPad (1) • Loves to play independently on his iPad (11) • iPad helps to facilitate communication (15) • He loves the flashlight when a picture is taken (20) • He doesn't like any sudden vibrating noise at home; we do let him know if we turn the pressure cooking or mixer	• He really enjoys cause-and-effect toys, we have a large spinner in class with touch pads which creates different sounds or actions when pressed and M loves this (1) • ALS boards are sometimes used, particularly for photos for example (15)

		on (20)	
	Book and pictures	• Loves turning pages in his storybook (11) • From his favourite story book 'Is that the Wolf', when I ask him how the daddy pig laughs he laughs too (12)	• He also enjoys engaging with stories (1)
	Visuals	• Visuals at school (to communicate) (3) • Uses cards given by his teachers, therapist for 'yes' and 'no', 'more', 'dinner time' etc. (9) • 'asks' for more for his bedtime story (5) • Use of symbols (14)	• Can make choices using pictures (2) • Beginning to recognise some symbols (2) • He uses photos or objects of reference to make choices, and we are combining these with symbols to build on his understanding of some familiar symbols (2) • He is building recognition of the 'more' symbol and being encouraged to use this within a range of contexts. He has a focused 20 minute session one to one during maths, working on this skill through motivational games and activities (6) • Photos and objects of reference are used to support development of symbol knowledge (14) • Symbols, photos and objects of reference shown as a choice of two horizontally (15)

Figure 4.11 – Michael – Analytic Findings from Questionnaires



4.4.3 Individual Summary - Michael

This analysis explores qualitative data collected, exploring the methods and approaches used to facilitate communication and interaction between Michael and his communication partners. Michael is a five-year-old boy with Pelizaeus–Merzbacher disease (a central myelination condition), Nystagmus (rapid, involuntary, rhythmic motion of the eyes) and he has difficulty with head movements; he is also P-V. The two methods of analysis included content analysis, which highlighted key themes reported in the teacher and parental questionnaire, and applying SCERTS questions to vignette observational data. These data sets were analysed separately, before the key findings were amalgamated and presented pictorially. Below, the findings are outlined and the research questions are addressed.

What techniques and strategies were used to ascertain the child's views?

To understand Michael's likes and dislikes, views on certain activities, objects and how he was feeling, adults were required to use observations of his facial expressions and listen to the various noises he made. Michael was also competent at using eye tracking to make choices, looking at the various objects of reference or visuals that were presented to him. On his wheelchair he has a table attached to the front of it, with visuals to indicate 'More' or 'Again' on opposite sides. Michael would use hand gestures to, and movements towards, either sign to communicate his preference. These methods, however, did require an adult to be vigilant in identifying his movements and eye tracking, as to an unknown adult these were not always obvious.

What adaptations to the communication methods were needed to meet the needs of the children participating?

Michael required a multi-method approach to facilitate communication, including song, rhythm and tune; visuals; technology; and book and pictures. During Circle Time, photographs of two of his peers were presented to Michael, and he made a choice by looking across both of the options before looking at one longer than the other. The good morning song was sung for Michael, and he was physically supported to press the 'Good Morning' voice recording button.

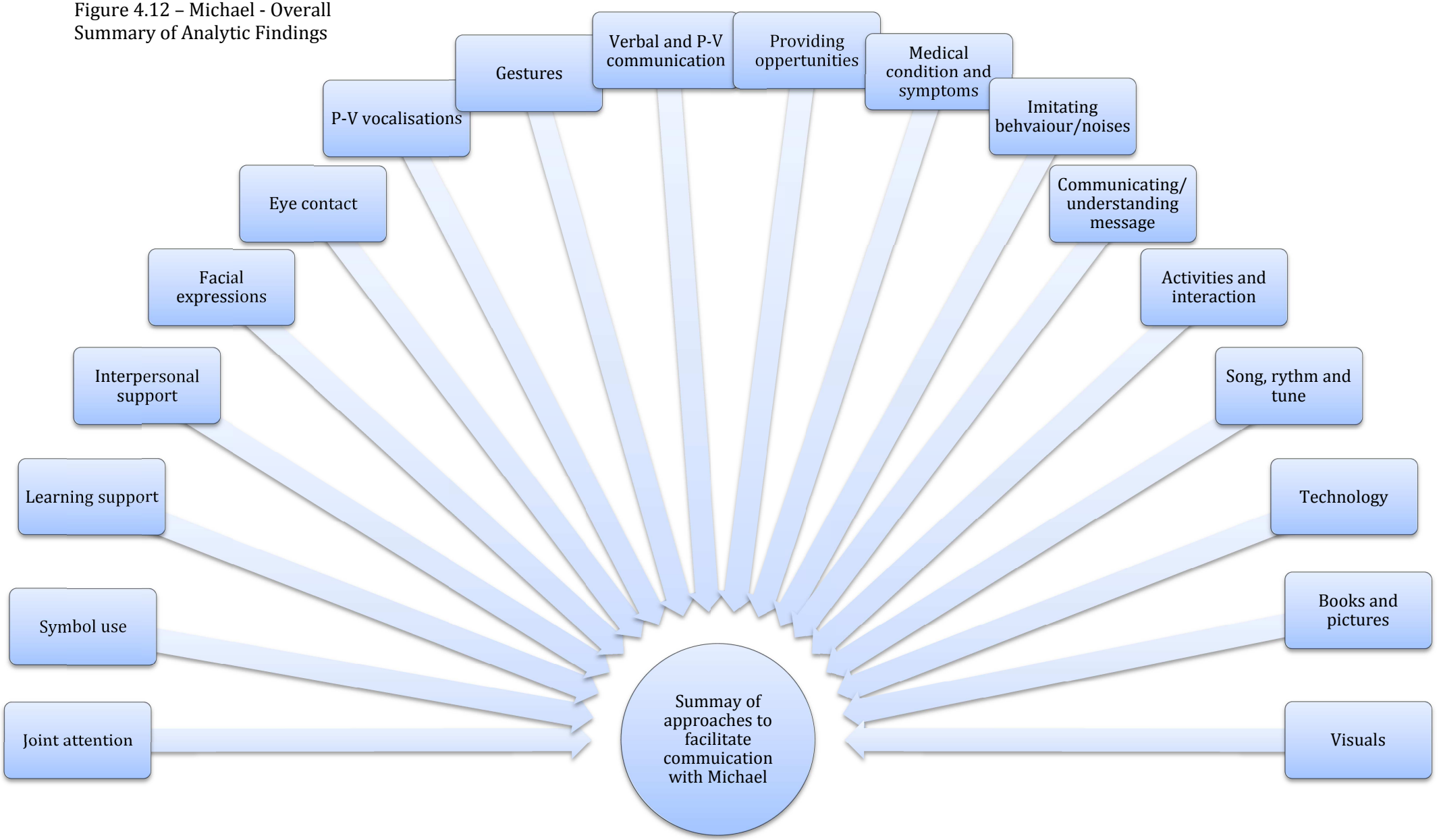
Time allowances were also needed for him to process questions as well as providing time for Michael to steer his arm and hand towards the object or visual in response to the question. Adults used his name, a light touch on his arm and positioning themselves in his field of vision so he could see them clearly before initiating interaction. His wheelchair height was adjusted regularly, depending on the activity, in order for Michael to have a clear visual of the activity to facilitate engagement and for the adults to be able to interact with him on his level.

What are the researcher's experiences of using the available methods of communication?

Working with Michael highlighted the importance of observation and shared knowledge between the child and communication partner. Due to Michael's medical needs, his emotional state, physical state and feelings needed to be understood quickly by the adults working with him, to provide the appropriate level of support. This level of shared understanding was also needed due to the subtlety of his eye tracking and physical movement, which can indicate his choices.

Michael had limited control over his limbs and head movements, so it was important to encourage autonomy where possible through time allowances and attempts to reinforce or reaffirm his choices. Technology and voice recorder buttons also allowed an element of autonomy, despite the messages being pre-recorded and presented to him at structured times of the day by adults. Michael did not have the ability to move and explore his environment freely, so all of his learning was constructed by adults. I feel it was important that there was a mix of routine in the day, for Michael to experience a structure and allow him to create a sense of familiarity with, ownership of, his school day, alongside a variation of activities which are presented in short and focused sessions which encourage development of various skills and exposure to different experiences. Exposure to familiar objects and activities could affirm likes and dislikes, which can help the adults create a picture of what Michael enjoys.

Figure 4.12 – Michael - Overall Summary of Analytic Findings



4.5 Chapter Summary

This chapter outlined the key findings from each of the data sets of the case studies I believed were important with regard to the research question ("How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?"). I presented the analytical findings for each case study in tables, pictorially and in prose. The findings were described, outlining the observational data as well as generic categories and sub-categories that were identified through coding and grouping of text from the teacher and parent questionnaires. The findings from each case study were amalgamated, explained and displayed pictorially in summary.

The next chapter provides an overview of findings in relation to the research question, relevant literature and theoretical frameworks. I discuss limitations and provide a critique of the research methodology. Future research is highlighted, and the findings are discussed in relation to implications for EP practice.

Chapter 5

Discussion

5.1 Overview

This chapter presents an overview of the findings in relation to the research question "How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?" I begin by exploring the challenges in communication and interaction with this heterogeneous group of children, before discussing the findings from the data analysis and common threads which were found to be prominent across all four case studies, also considering wider theoretical frameworks and literature. In considering the main findings, I draw on Bronfenbrenner's Ecological Systems Theory Model (1979) to explore the wider issues of developing methods of communication. I also draw on theoretical principles, which underpinned my methodology and research questions. This chapter highlights the reality of eliciting the voice of P-V children with complex and SEND in a 'real world' setting and explores additional adaptations and approaches. The final part of this chapter considers how the findings will inform practice, personal reflections regarding the methodology and research process, the identified limitations of the research and possible future research on this topic.

5.2 The Research Problem

This research stemmed from a need to listen to the views of children and young people, whilst providing them and their families with opportunities to participate in the development of their educational provision and increase the participation of children, YP and parents in decision-making (outlined by the SEND CoP and the Children and Families Act (2014). Despite this change to the legislation there remains a dearth of methods available for children and young people who are non-verbal, pre-verbal or who have emerging language (Goldbart, Chadwick, & Buell, 2014) to communicate their opinions and preferences. It is hoped that this research will inform professional development and build on practice-based evidence.

The literature review highlighted the need for further investigation into how professionals can work with P-V, pre-school children with complex and SEND and gain an understanding of their views, preferences, likes and dislikes. However, the literature and research discussing methods to gain the voices of P-V, pre-school children with

complex and SEND is limited, possibly because this is a complex issue and focuses on a heterogeneous population of children. Hill et al. (2016) reported a noteworthy lack of research conducted with this population of children and YP, and mentioned that this was likely to be influenced by the challenges in gaining the children's views.

This research adopted a case-study design; hence the research focuses on each individual child to explore the nature of the research topic. As a researcher and a practitioner I considered it fundamental to reflect on the individual factors as well as the wider environmental issues that can influence a child's method of communication and interaction opportunities. As a Trainee EP, I am comfortable with approaching my work from a systemic and holistic perspective rather than using a 'within-child' model. The data analysis indicated that, although each case study required individualised adaptations to the methods of communication and interactions used depending on the SEND of that particular child involved, consideration and tailoring of the wider systems around the child to meet their needs were also key. This is indeed a challenge for professionals, as found by Rabiee, Sloper, and Beresford (2005), who explained that some studies have focused on this population and concluded that it was not possible to elicit the perspectives of the children with the greatest learning and communication needs. One way to acknowledge the influences at work is to look at Bronfenbrenner's Ecological Systems Theory Model (1979). This theory essentially views the systems around the child as nested within one another, starting with the individual with attributes such as gender, age and health moving out to the child's family, home, school, resources and local community (Micro-system), then to the wider social systems which may impact indirectly upon the child, such as legal or social services and mass media (Meso-system) and finally to the macro-system, which includes society's laws, values, cultures and customs (Exo-system).

5.3 Major Findings and Theoretical Principles

Outlined below are the main findings from the data analysis and the common threads identified across the four case studies, the similar or contrasting findings from the literature review as well as theoretical frameworks that shaped the research questions and methodology. These are displayed under the Ecological Systems Model headings to emphasise the main finding from this research, which is to consider all systems when

developing methods to hear the voices of P-V pre-school children with complex and SEND.

5.3.1 Individual

5.3.1.1 Knowledge of the Child's SEND

Three out of the nine research papers included in the literature review focused on children with varied complex needs and limited or no spoken language (Pinto & Gardner, 2014, Balan & Manjula, 2009, Sigurd Pilesjö & Rasmussen, 2011). A review of the literature revealed that considerable variability in verbal comprehension abilities in children with complex communication needs was observed by Geytenbeek et al. (2010), and that children can vary in their level of communicative function (Balan & Manjula, 2009) and needs. One finding from this research was paramount: adults working with the child need to have an overview of the child's needs, medical conditions, treatments and presentation of symptoms. For example, one of the case studies, Michael, had a medical condition that impacted significantly on his movements. His mother indicated that knowledge of his symptoms was very important, especially to for new people working with him. This sharing of information is crucial to the safety and wellbeing of the child and impacts on Michael's methods of communication and interaction. Shared knowledge helps the communication partner to be aware of the child's needs; for example, children with ASD may respond to joint attention less than neuro-typical children do, and therefore interaction and communication methods need to be adapted appropriately. Isla had a vision impairment which impacted on the way she moved around her environment; some of the interactive and communicative situations were manufactured and needed to be scaffolded by adults, due to her limited ability to explore safely and independently.

5.3.1.2 Developmental Theory

This research focused on children aged five years and younger, so prompting consideration around early child development and developmental theory. Areas of development include physical, cognitive, language, sensory, social, emotional and self-care. It is important to consider the developmental stage of the child and recognise developed and emerging skills, to differentiate the level of activity/communication appropriately. This recognition of the child's level of development, as well as SEND, informed the approaches that were taken and the adaptations that were made in this

research; approaches and methods were adapted to facilitate the child's chance of successfully delivering their message. Developmental theory also highlights the importance of early intervention for the child to experience high-quality early child development. High quality early year provision aims to ensure children - especially those with the most disadvantages get the best start possible. Developing methods of being able to listen to the voice of young P-V children with complex and SEND can facilitate communication and interaction between the child and communicative partner, and the research showing the positive effect of cognitively stimulating interactions on later infant communication is in abundance (Cates et al., 2012).

5.3.2 Micro-System

5.3.2.1 The Role of the Communication Partner

The communication partner, shared understanding and observations were found to be important elements when thinking about inferring and responding to the child's preferences. This was also a finding from the literature review. Balan and Manjula (2009) and Sigurd Pilesjö and Rasmussen (2011) indicated that a high number of communication functions can be naturally elicited through non-verbal communication, rather than technology-aided communication (Balan & Manjula, 2009) and that, so far, the high-technology systems do not seem to be able to do all the jobs that the human communication partner can do (Sigurd Pilesjö & Rasmussen, 2011). The communication partner is highlighted as playing a big role in constructing the structure of interactions and the turn taking during communications (Sigurd Pilesjö & Rasmussen, 2011). The current research is in line with other literature that suggests that shared experiences and joint-attentional frames aid communication and positive interactions, as well as improving accurate interpretations of the message (Knight & Oliver, 2007).

5.3.2.2 Shared Understandings and a Joint Attentional Frame

"A text does not exist without a reader, a message does not exist without an interpreter and data do not exist without an observer" (Krippendorff, 2004, p. 22). The relationship, shared understandings and a joint attentional frame between the child and the communication partner were significant factors when communicating and interacting with the children in this study, this agrees with the conclusions of Balan and Manjula (2009) and Sigurd Pilesjö and Rasmussen (2011).

Dimitrova et al. (2015) provided support for the idea that shared knowledge helps caregivers in interpreting their infants' gestures. This conclusion is echoed in other research highlighting that, for the recipient to have the best chance at accurately interpreting the message of the infant's pointing, there need to be recently shared experiences/common ground and joint attention between them (Moll & Tomasello, 2007; Tomasello & Haberl, 2003). Despite the common thread of shared understanding to support communication and interaction, it was also important to acknowledge the contradictory finding from the data analysis in this study which shows the unfamiliar adults can infer, although vaguely at times, the child's emotional state or feelings towards an activity/object through observation alone. This could be due to the innate human ability to recognise facial expressions, even without access to the shared knowledge between child and communication partner.

Shared experiences between the communication partners were found to remove potential barriers to communicating and interacting, as they could confirm and strengthen interpretations and predict behaviour and preferences. Another argument, however, that is shared experiences could reduce further exploration or development, due to adults anticipating the child's preferences and therefore limiting the child's choices.

Shared intention was encouraged by the researcher by adopting a calm and naturalistic play environment. However, at times the shared intention may not have been synchronised. The adults in the room intended to display joint communication and choice-making opportunities, whereas Isla intended to play with her favourite toys.

5.3.2.3 Participation Theory

Participation refers generally to the process of sharing decisions which affect one's life and the life of the community in which one lives (Shier, 2001). Active participation can vary from conversations, to children identifying concerns and collaborative problem solving with adults. The UN Rights of the Child Article 12, states the child's right to express an opinion and have that opinion taken into account (UN, 1989). This convention has possibly influenced a range of participation models and frameworks; one of the most influential in the literature is Hart's Ladder of Participation (Hart,

1992). This hierarchical pictorial model builds on principles of empowerment and respect for children and young people. Clark and Moss (2001) place emphasis on child participation by using Shier's participation model (2001), based on Hart's ladder of participation. Hierarchal models suggest a stepped approach to participation (Hart, 1992) suggesting the closer to the top of the ladder, the greater the participation. It has been argued that this model is simplistic (Woodhead, 2010) and static (Hobbs, 2005). Hardy & Hobbs (2017) emphasises the importance of considering the context and conditions which may facilitate or hinder participation and agree with Kirby et al (2003), who highlights the importance for professionals and adults working with children of emphasising the processes of enabling participation.

5.3.3 Meso-System

5.3.3.1 Multi-method and Multi-Sensory Approaches

In this study multi-method approaches (sensory, technology, interactive, visuals, song, rhythm, books, pictures and objects of reference) to facilitate interaction were found to be beneficial in providing a range of opportunities for the child to communicate and interact. This is similar to the Mosaic Approach (Clark & Moss, 2001, 2005), which uses multiple methods to research the children's perceptions and views. Using multiple methods encapsulates the idea of equality, speech and listening and requires the researcher to use all of their senses to capture the many ways in which children communicate. It aims to advocate for the child's own agency and equality in their own lives by allowing the child to use different methods to communicate. This work requires time and patience from the researcher to listen to and hear what the child is communicating through picture elicitation, drawings, interviews, audio recordings, conversations and touring of the setting.

5.3.3.2 Observation

Due to the exploratory nature of this research and the limited literature on this specific issue, the decision was made to use an inductive qualitative content analysis, which involves a 'bottom-up' data-driven approach, in contrast to testing espoused theory. Observational data formed a large portion of the data gathered, which, by the nature of the approach, allows the researcher to 'see it as it is' and can be an enlightening research method (Oakley, 2000). An observation looks at theory in practice ('what people actually do') instead of espoused theory ('what people say they do'). Argyris

and Schön (1974) argue that people have mental maps regarding how to act in situations, and Argyris (1980) explains that few people are aware of the maps or theories that they do use. One way of making sense of this is to say that there is a split between theory and action. Observations made up one element of my data set for each child. This information was also, crucially, triangulated with parental and teacher questionnaires as well as mixed activities adapted to meet the child's needs. The importance of triangulation was mentioned earlier (3.6.7 Triangulation of Data).

5.3.3.3 Motivation

Motivation to communicate and interact is recognised to be a key part of children's learning and development. Children with complex learning needs should be taught in ways that match their learning style and have their abilities and potential for engagement with learning recognised. This population of children can be encouraged to be active learners by releasing their motivation, unlocking their curiosity and increasing their participation (Carpenter, 2010). Motivation was also found to be fostered via the tools that were being used and from the encouragement and praise given by the adults; for example, Mark responded positively and enjoyed giving 'high fives'.

5.3.3.4 Technology

Technology appeared to be a motivational tool for the children, and I observed an increase in engagement and movement (Liam), interaction and shared attention (Isla) and choice making (Mark) when using technology. One of the main findings from the data analysis is that the use of eye-tracking and interactive technology allowed for customisation and added to the multi-method and multi-sensory methods of communication accessible to the child. Over time, technology may begin to become more accessible, user friendly and mobile; the limits of technology development are endless. Barriers to the use of technology in the past have been social acceptability and device abandonment, as devices remained under-utilised, at home or school, for reasons such as lack of training, operational challenges and portability (Waller et al., 2005). To instil confidence in a communication dyad, Pinto and Gardner (2014) highlight the fact that early intervention must target the interaction strategies of not only the child but also their family members. The findings also indicate that the interventions should focus on both the non-speaking and the speaking participants.

5.3.3.5 Setting and Environment

The data collection included observations of the children within their educational setting, which encouraged a naturalistic play environment. The adults created a calm setting and, where possible, tried to minimise the disruption of the child's usual routine and arranged a learning environment to enhance attention. This approach allowed me to observe and make meaning of the child's intent and preferences through observations of their facial expressions, P-V vocalisations, gestures, eye contact and gaze, body movements, termination and re-engagement with activities, time spent exploring the objects (mouthing, listening and touching the object) or the rejection of, or disinterest in objects (turning away, moving away and moving the object away). Isla, for example, responded to the modified sensory properties of her learning environment, and she appeared to feel comfortable to explore her environment and objects, despite her vision impairment, due to the comfort of known adults, the environments and some known objects and toys. Isla, at times, created a triangle between the object, herself and the adult through touch, possibly to confirm or encourage shared attention and instil a feeling of security.

5.3.3.6 Child-Centred Language

The analytical data revealed that consistency and repetition of single words and phrases facilitated the level of understanding and responsiveness from the child. Most instructions were also supported with visuals, objects of reference or Makaton. The adults adjusted the complexity of their language to their child's developmental level by using clear simple verbal language, providing a verbal commentary on the child's actions and being on the child's level when communicating.

5.3.3.7 Social Learning Theory

This research took place in a special school with a focus on inclusion and removing barriers to access and learning for all its children and families. The findings showed that as part of the Meso-system, which places focus on the school, family and community, there were several factors that influenced the methods of communication, accessibility and participation. These factors were: multi-method and multi-sensory approaches;

observation; motivation; technology; adaptations to the setting and environment; and using child-centred language. These findings highlight the methods used within school to facilitate communication and interaction with the children, which appears in line with Bandura's Social Learning theory (Bandura, 1977). Bandura developed Social Learning theory, which states that learning (behavioural and cognitive) takes place through observing, modelling and imitating others. This theory proposes that academic and behaviour modelling occurs through verbal instruction, live modelling by a person and symbolic modelling through four steps: attention, retention, reproduction and motivation (Lamport, Graves & Ward, 2012).

5.3.4 Exo-System

5.3.4.1 Ethos of Educations and Setting

The aim of this piece of research is to inform professional practice in communicating with P-V children with complex and SEND under the age of five. Through the research process I found the wider system around the child, and the processes and services in place, to impact upon the options and information available. One of the findings from this research is that multi-method approaches are beneficial for facilitating communication and interaction. For teaching staff and adults working with children with complex and SEND this requires time and patience to listen to and hear what the child is communicating. The core values of the educational setting impact the priorities and expectations of the staff, children, parents, and on the school's outcomes. This cannot be a top-down command but constitutes an ethos which the staff share and co-operate with. It has been found that more effective settings had an organisational culture which supported risk-taking, with practitioners who felt confident in trying new approaches (to work with children), reflecting on success and discussing as a team how to address identified difficulties (DfE, 2010). The importance of the school's ethos was one of the consistent themes identified by the Autism Education Trust (2011) for enabling pupils to reach their potential, helping pupils to identify activities that they enjoyed and to build on their strengths and talents (Autism Education Trust, 2011).

5.3.5 Macro-System

5.3.5.1 Ethnicity and Culture

My inclusion criteria for the participants did not state culture or ethnicity, just as the literature search was not limited to the UK, to avoid a western-centric perspective on approaches and methods to capture the voice of the child. The case studies were selected from an experimentally accessible population and resulted in each child being of a different ethnicity. The increased globalisation of the world is reflected in the UK city where the research was conducted, and these changes call for culturally responsive approaches to meet the needs of, be accessible to, varied populations. There is growing evidence for the potential benefits of using technology to aid communication for a population of individuals from diverse backgrounds (Light & McNaughton, 2012). So although any EAL concerns were addressed in the data gathering methods, cultural differences were not a barrier, possibly because each approach was customised to the needs of each child and informed from school and parental information. It has been suggested that P-V communication was found not to vary across cultures and Liszkowski et al. (2012) stated that all children and caregivers used pointing in one and the same situation, and index-finger pointing emerged in all cultures within the same age range. Even the frequency of infants' *pointing* did not differ across cultures. Dimitrova et al. (2015) also highlighted that to provide a meaningful interpretation of young children's early gestures, caregivers probably rely on the information available within the context of their interaction. Non-verbal gestures such as index pointing is found to be common across cultures, however more research is needed to show the extent of cross-cultural pre-linguistic gestures before we can be sure certain communication methods are universal (Liszkowski et al., 2012).

5.3.5.2 Children's Rights theory

In thinking about hearing the voice of P-V children with complex and SEND I draw on Children's Rights theory and how that influences practice. The UN Rights of the Child (1989) produced a legally-binding international agreement outlining the rights of every child, regardless of their race, religion or abilities, where children were given the right to express themselves, as written in Articles 12 and 13. Although this legislation may not appear to be revolutionary in this day and age, it continues to remain relevant and is updated (e.g., updated protocols were adopted in the year 2000 relating to child

involvement in military conflicts, child prostitution and the sale of children) in order to meet the needs of children in today's world.

5.4 Acknowledgment of the Study's Strengths and Limitations

5.4.1 School Processes

One of the limitations of my research design was the lack of video or audio recording. These methods were used in most of the studies included in the literature review (Balan & Manjula, 2008; Dimitrova et al., 2015; Harding & Atkinson, 2009; Liszkowski at al., 2012; Sigurd Pilesjö & Rasmussen, 2011; Pinto & Gardner, 2014). Audio or video recording allows the opportunity for transcription, a second level of analysis by an objective researcher reducing researcher bias and various systematic analysis techniques. Recordings were not used, despite these findings, due to the process of consent and information security the school has in place. This was a lengthy process, and as a result data gathering needed to begin without audio or video recording so as to stay on schedule and meet the university deadlines and expectations for the research. I was not going to adjust my ethical principles and practice to achieve a richer data set. Prior knowledge of the school's processes and gatekeeping would be something to consider for future research with similar populations.

5.4.2 Case-Study Design

This research sought to provide an analysis of the communication methods used by practitioners and adults working with P-V, pre-school children with complex and SEND, to inform practice and to help develop these approaches further. The small case study design may be perceived as both a strength and a limitation. Case studies can be more manageable and can be taken on by a single researcher rather a whole research team, and they allow for a deep analysis of the communicative approaches used by each child, as well as providing insight into unique features that may otherwise be lost in larger scale studies. However, these findings cannot be representative and generalised to the wider population. The case studies were identified from a special school whose ethos was to develop the children's ability to identify and communicate their feelings and emotions and for staff to develop their teaching through reflective practice, co-operative working and research. Consequently, the findings from the case studies may have been biased and, again, not representative of the population of special schools.

5.4.3 Bias

Despite efforts, bias was unavoidable and occurred at a variety of levels. The participants of this study may have been influenced by the researchers' presence during observations; the parents and staff members may have answered questions by saying what they thought I would like to hear or describing their 'espoused theory' or giving politically correct responses, rather than 'in action theory' or what happens in reality. The exploratory multiple case study design was chosen to answer the "when", "how and "why" questions that are posed, and there is a strong sense of reality in the findings and transparency about the limited control I had over events in the 'real world' setting. The pragmatic post-positivist position of this research meant that there needed to be an element of flexibility in the way that reality was captured and although one reality does exist, it does so imperfectly due to the researcher's limitations.

Researcher bias and presumptions may have impacted on the reliability of the research. Despite the inductive qualitative content analysis, which aimed at a 'bottom-up' approach to the findings, bias was undeniable in my decision about the research topic, formulation of the main and sub-research questions, questionnaire design and interpretation of the data. The impact that researcher bias has on the quality of the research can depend on the research purpose; does it aim to seek the truth and fact or does it ask questions and explore common practice and provide insight? This research aimed to do the latter, detailing certain communicative approaches, to make a strong case for developing methods to elicit children's views and preferences. It is hoped that the findings instigate conversations between other professionals, the EPS, the EP community and local authorities about including the voices of this population of children. Rather than remove researcher bias, I have shown the processes that informed my research questions, research design and data analysis. This has been done by being clear about the ontological and epistemological position taken and providing a clear description of the processes.

5.4.4 Eye Tracking

Limitations and difficulties with the eye-tracking technology and software impacted my data gathering and therefore influenced my research design, changing it from a mixed-methods design to a qualitative research design. Despite the school being well resourced and having access to the eye-tracking hardware and software, there were technical issues which could not be rectified. There were also issues with the software

and the unforeseen limitations of the lack of recording and of the eye-tracking results. Not all the participants were able to access the eye tracking; Isla was unable to use this due to her significant vision impairment. To overcome these limitations, I observed and reported the findings. This experience provided information about the eye tracking as a communicative method, the challenges that can occur and how these methods could be developed further.

5.4.5 Qualitative Content Analysis (QCA)

QCA is an unobtrusive and non-reactive way to study the phenomenon of interest (Babbie, 2001). The process of using QCA means the data is coded and the codes are extracted before analysis, which brings into question the objectivity of the researcher and the accuracy of interpreting the poignancy or emphasis of the message. If the initial coding is inaccurate, then the findings are invalid. The QCA for this research aimed to minimise the issues regarding reliability and validity of the data by following a systematic procedure, based on the process shown by Elo and Kyngäs (2008). Following a systematic procedure can increase the reliability of the findings and can be used on a variety of data sources, e.g., words, images or sounds. Due to the inductive QCA approach, the frequency and strength of the content in the data set and the analysis were less likely to be informed by preconceived theories and researcher bias. To produce unbiased results, an audit trail and clear mapping of the responses (evidence) categories and sub-categories were presented.

5.4.6 Observations

Observations were used as a key element of the qualitative data collection as observations allowed for notes that provided a detailed description. Naturalistic observation provides information about a child's spontaneous communication and emotional regulatory capacities in functional and meaningful situations (Prizant et al., 2006). Despite efforts to overcome challenges with observational data, there are still unavoidable limitations. One of which is that different researchers may gain different understanding of the same scene; and the skill of the researcher in observing, documenting, and interpreting what has been observed. To overcome this limitation, I took accurate and detailed observation notes and was careful not to impose preconceived ideas or theories but to allow theories to emerge over time. It was important to consider how my presence in the school community may have impacted on what I observed. Participant observation is conducted by a biased human who serves as the instrument for data collection; the researcher must understand how his/her

gender, sexuality, ethnicity, class and theoretical approach may affect observation, analysis, and interpretation (DeWalt, and DeWalt., 2002). Practicing reflexivity enabled me to understand the biases I brought with me into a situation. There are a range of potential issues relating to observation as a data-gathering tool. However, this research used different approaches to data collection to lead to a richer understanding of the issue being explored, the social context and the participants.

5.4.7 Key Adults

The involvement of key adults was important for most of the participants, as they could support the child's emotional regulation, create a sense of security and facilitate shared attention while also supporting the child's communication. The key adults may have had an impact on how the children interacted with the activities and could have influenced how the child communicated and interacted, due to the level of inferred meaning and shared knowledge between the child and adult. An attempt to overcome this limitation involved suggesting to, and reminding the key adults not to lead or guide the child's communication but to be there as a support. The sessions were very short to minimise any distress or discomfort for the children and to maximise focus and interaction. To overcome this limitation, I could have facilitated the sessions independently. However, this would have required building, over a significant period of time, a trusting relationship with the child to understand their communication style, behaviours and needs.

It is important to acknowledge that most, if not all, of the settings in which I observed the children were artificial situations set up by adults, with activities and methods designed by adults to facilitate interaction and a sharing of opinions and preferences within a particular time frame. Conversations do not happen in isolation; for typically functioning individuals, conversation and interaction happens throughout the day. Adults, to a certain extent, are the gatekeepers to hearing the voices of young children, and their perceptions of the child's perceptions and views shape the decisions made. Article 12 of the Convention on the Rights of a Child (1989) recommends twelve as a viable age for children to have the maturity to express an opinion. Consideration of this power imbalance and reflection on practice can support co-constructed communication approaches and help negotiate greater participation by the child. Empowering children's voices involves a trusting partnership and building of relationships with the key adults who work with the children and listen to them. It would be a bright future if

P-V children with complex and SEND of all ages could access a range of methods and technology to freely make their opinions and preferences known to others and participate in interactions without premeditated and timetabled situations.

5.4.8 Time

The case study, multi-method design allowed rich data to be collected from each child. This design required each approach to be adapted to the needs of the child, as well as having options to differentiate the approaches during the data-gathering sessions. It was necessary to familiarise myself with the technology used, the staff and setting, and the extra time spent in the school allowed me to become more familiar to the children participating, reducing any potential distress. Data from parental and researcher questionnaires was also gathered. The data collection element of this research was time consuming, something which Hill et al. (2016) had pointed out that collecting and analysing the information was time consuming, which reflects the time and flexibility needed to have meaningful interactions with complex populations such as children with complex and SEND.

5.4.9 Writing Style

Although some academic authors avoid writing in the first person, possibly to create an objective, neutral or uninvolved tone, my involvement and active role in the data gathering and analysis of this research was integral and I felt that my writing in the first person would reflect this. In fact, the APA Publication Manual (2010) recommends using first person, when appropriate, to avoid ambiguity (McAdoo, 2009). Writing in the first person in this instance was agreed with my academic tutor and director of studies.

5.5 Suggested Areas for Further Research

The lack of literature highlights the complexity of this area of research and this current exploratory multiple case study is not going to resolve this entirely. It is hoped that it has contributed to the growing body of research and paves the way for future research with this unique, diverse and complex population of young children. The limited research in this area suggests that it may be beneficial to repeat this study with more participants, across different local authorities and different school settings. This research focused on children who attended a special school that had a research-driven ethos. It would be interesting to also carry out comparative research in a mainstream school as it is possible those findings may show a difference in the communication approaches and

methods available. It may have been useful to have built on the existing literature around methods used to hear the voices of children with profound and multiple learning difficulties (PMLD). Due to the heterogenic nature and complexity of the PMLD population, exploring the range of communication methods used with these children and their families, as well as children with complex and SEND, could have informed the methodologies applied in this current study and therefore helped to support the development of methods used for children and communicative partners.

An identified limitation of this research was the lack of audio or video recording. A future study could use recording equipment to document and record communication methods between the child and the communication partner across different settings, e.g., school and home, to provide a richer data set. The recordings would also provide an opportunity to minimise researcher bias by inviting a co-researcher to give a second-level analysis.

The use of technology was widespread across the studies included in the literature review. Future research could expand on the technology used and how it is used. This research used interactive 'Magic Carpets' and eye-tracking software, however these were stationary and positioned in a dedicated room in the school. The school also had eye-tracking technology on PCs located some of the classrooms. Future research could include greater access to mobile technology, where adults and the child can build and record a 'persona' of the child. Technology has the potential for gathering and analysing the data which is collected about each child, including eye-tracking data, to provide data-driven rather than adult-constructed results. Using eye-tracking technology can also lead to multi-variance testing, which can provide more detailed information and responses, e.g., if the child has indicated a preference for books over building blocks; the multi-variance testing can build a picture of which type of book would be the most favoured. Using data-driven results can also indicate whether the child is responding to the question that has been asked. For example, a child could be presented with a question and binary choice on the screen; however, due to a range of potential biases or variables (e.g., Left choice bias or Novelty) this could potentially create a false positive result. Looking at the eye-tracking data over time could provide the adults with information on the child's receptive/comprehension skills, processing and method of decision making and focusing style (e.g., whether they focus on local details rather than global information).

Finally, the importance of observation was a key element of this research, which was reflected in the findings. Throughout our lives, we are observing and creating meaning from what we witness. Future research could explore observation further and perhaps use multiple observers over multiple settings to record their findings from a situation. EPs work in the community and utilise consultation skills and observation frameworks. This research harnessed those skills and showed how the diverse skill set an EP has can be utilised to address listening and hearing the voices of P-V pre-school children with complex and SEND. This research hoped to highlight the importance of triangulation of findings and to provide a rich data set through which to understanding and develop individualised approaches of communication.

5.6 Implications for Practice

The hopes of this research are to extend and develop professional communication approaches with young P-V children with complex and SEND. Listening to the voice of the child is an agenda which has been highlighted through recent legislations (CoP 2014; Children and Families Act 2014) and therefore influenced the expectations of how EPs work. Interestingly there has been a recent publication edited by Hardy & Hobbs (2017) produced through the Division of Educational and Child Psychology (DECP) addressing the work of EPs and fundamentally the efforts taken to gain the views of children and young people. Hardy & Hobbs (2017) encourage readers to develop their own professional practice, drawing on qualitative methodologies that allow the voices of children and young people to be heard. In the final chapter of the publication Hardy & Hobbs (2017) suggest practical steps EPs can take to promote child participation by challenging thinking and constructions of childhood, developing enabling environments, challenging professional expectations and policies in the workplace. This recent publication by the DECP illustrates the current EP climate and the inherent need for this current and further research into eliciting the voices of children. Although none of the papers answer my main research question in full many of them support my findings, summarised below.

- Harding (2017) identified the importance of ascertaining the views of children with complex needs and found that identifying key people in the child's life and sharing information is important, as well as triangulating between various sources and multi-method approaches.

- Howarth (2017) calls for adaptation of mobile technologies that can be embraced and used as a way of listening to children. Technology can be differentiated for children with additional needs and used with children of all ages.
- The importance of triangulation and using multi-method approaches to gather rich data in early years settings is argued by Soni (2017) who also acknowledges the time allocations required to do so (Soni, 2017).
- Hill et al. (2017) endorsed the view that there are challenges and barriers for professionals in planning creative methods to elicit the voice of pre-verbal children. They used a multi-method approach and described how the challenging and time consuming nature of this approach is reported to have provided insight in the daily experiences of these children and their families.

5.6.1 Communicating with Pre-Verbal Children in Early Years with Complex Needs Checklist

This recent publication by the DECP is the first edition; if a second edition is published I hope to have developed a piece of research which may be considered. To illustrate the implications from the findings of this current research I have designed and produced a document titled 'Communicating with Pre-Verbal Children in Early Years with Complex Needs Checklist' (Appendix I). The checklist is based my empirical research and indirectly addresses the points Hardy & Hobbs (2017) put forward as well as reflecting Lundy's (2007) model of participation, which is based on the Children's Rights theory and UN Convention, (1989). Lundy proposes four elements which should be considered for positive participation of children; 1) Space: Children must be given the opportunity to express their view; 2) Voice: Children must be facilitated to express their views; 3) Audience: The view must be listened to and 4) Influence: The view must be acted on, as appropriate.

The Checklist (appendix I) is designed to help develop professional practice and to support professionals working with P-V children with complex and SEND. The aims of the checklist are to:

- Support adults who communicate and interact with early years children who have limited or no verbal language with SEND

- Support this complex population of children in contributing their views and preferences
- Support adults in facilitating opportunities for positive interactions
- Help develop confidence in listening to and acting upon what the children communicate in order to facilitate greater child participation
- Encourage consideration of the processes and the context which surround child participation and communication, as well as practice.

This checklist includes direct implications for EP and professional practice and is a working document which could be developed and informed through evidence-based practice as well as practice-based evidence. One aim of this research was to produce an artefact that could be helpful to the reader and to support and develop practice. Hardy & Hobbs (2017) believe that EPs can raise the status of children and young people and support them in contributing to decisions made about their lives, however further discussions regarding participation are needed.

5.6.2 Systemic Work

It may be thought by some that the emphasis on developing methods to hear the voice of the child could be challenging the popular Consultation model. A pure consultation model of working is an indirect model of service delivery (Conoley & Conoley, 1990), providing an alternative to working with the child and creating change on a systems level. EPs at times aim to shift focus more on to the systems around the child and less on the individual child, by conducting consultations with other agencies and professionals involved. For some EPs, individual casework remains a large part of the role of an EP, and observations, assessments and interventions can be part of a multi-method approach which can be triangulated with other information sources. Developing methods to listen to the voice of the child should enrich the information and therefore inform formulations and next steps.

5.6.3 Social Justice and Advocacy

Part of the EP role is to question thinking habits and promote positive, lasting change through collaborative problem solving. To challenge thinking at times involves engaging in difficult dialogues, which includes thinking critically about a variety of issues. Listening to the dominant discourses and encouraging unheard voices can shape individual world views and promote equality and social justice. Duncan (2010) defines social justice as fair, equitable and appropriate resources considering what the person

needs; one of the challenges to social justice is learning to address what for some is unnoticed or unheard. As health care professionals, we have a moral and ethical duty to act with the child's best interest in mind. As EPs, we may advocate for a child when others do not see that point of view or do not have the professional experience to understand the taken position. People who are not affected by, or witness to, prejudice, discrimination and exclusion may not be aware that there is a problem that needs fixing. Communicating and listening to the voices of young P-V children with complex and SEND as part of our work involves respecting their views and it may include advocating on their behalf. The EP's role is fluid, and each practitioner is guided by individual moral principles and core values. When thinking about my practice I hope to listen to and respect the voice of the child, advocate on their behalf if needed, endeavour to do good without harm, and ensure fair opportunities and inclusion.

Below are some further points for consideration when thinking about how the findings from this research and implication for practice.

- For EPs working in early years settings, consultations with staff could provide opportunities to promote and help develop a depth of understanding regarding children's perspectives and encourage this to be part of the educational settings ethos.

- Multi-disciplinary work and working alongside parents, staff and children allows an opportunity to triangulate information about the child's opinions, views, likes and dislikes to ensure objectivity and reduce the likelihood of the 'voice of the chid' becoming tokenistic.

- For EPs to use expertise in child development and refer to learning and developmental stages to identify the acquired or emerging skills of the child and help to provide age and developmentally appropriate methods of communication.

5.7 Ethical Implications

EPs support and promote the development of children and YP and in doing so do not only work directly with the child or YP but with the adults who teach and care for them (DECP, 2002). During this research process, I worked with the children, parents and school staff. My initial involvement was to gather information that would inform my

next steps and the differentiation and of various communication methods and approaches. In all EP work it is important to inform our involvement with the fullest and more accurate information available. In this research I gathered a range of information, both written and verbal, from people who knew the children best before commencing my direct work with the children. Working with adults who knew the children well also supported the child with regard to consent and willingness to participate.

In practice and research EPs should not allow personal views and biases to reduce the possibility of alternative interpretation of the data. Communicating with young pre-verbal children with complex and SEND could throw an endless amount of interpretations of their pre-verbal communication methods to an adult unfamiliar with the child. It is important to triangulate information and involve key people in order to gain a clear and accurate picture.

Although this research was not a commissioned piece of work I do want to highlight the challenges faced when working in a traded EPS service. Within a traded service, EP time in bought in usually by the educational settings. It is important to consider the possible power imbalances and queries regarding 'the client'. During practice and research EPs should reflect on the interests or requirements of the paying clients and be aware of any pre-conceived agenda which may challenge or impact on the interpretations of the findings. The literature on service delivery models (traded services) show time allocations as a barrier to effective working practices, often reported to lead to school staff becoming frustrated with the limited time EPs have in schools (Farrell, Wood, Lewis et al., 2006; Fallon, Woods & Rooney 2010). The findings from this current research, as well as other relevant literature noted above, is that a great amount of time is required to plan, design and implement personalised communication methods for the heterogenic population of children. For EPs in traded services, time allocations can support and help EPs manage their work load, however Imich (1999) argues that time allocation can actually reduce flexibility within the service and can lead to EPs developing a sense of a lack of autonomy and control over their work. As well as being aware of the service users' autonomy in EP work it is also important to consider the autonomy of the EPs themselves. Building capacity in educational settings, supporting staff in using frameworks (such as the Checklist,

appendix I) and sharing psychological knowledge regarding communicating with P-V pre-school children with complex and SEND may overcome these issues.

5.7 Personal Reflections

Throughout, I was self-aware of my own experiences and background and how this may have influenced my data collection and analysis. I am a white female working as a practitioner for a local authority and studying in the postgraduate education system. I currently live in south-east London, but I am originally from the North West of England. I lived in Australia for three years before moving back to the UK. Through my co-educational state-school education, I could create opportunities and explore paths less trodden to create a well-rounded education and identify and develop personal attributes. This could have contributed to my preoccupation with issues related to creating opportunities for all and problem-solving issues that may hinder individuals' development and participation. How might have this influenced the data? Have I over-/under-interpreted aspects of the data because of my socio-cultural positioning? Have my own motivations influenced the identified need for the research?

The main 'niggle' I struggled with throughout the research process relates to issues of adult-to-child power relationships and the adult-constructed world in which the children reside in. One of the ways I tried to overcome this was to create multi-method approaches over different settings, over a period of time, and use observations of the child in a free-flow naturalistic setting to triangulate the findings, although none of these are influence free. However, there is also a balance between the level of child participation and health and safety policies. I was keen to ensure that the research was collaborative and that I worked with the children, their families and school staff. I also communicated my reasoning, methods and approaches where possible. The use of the first-person writing style also helped me to remain involved, active and accountable for the decisions made in the research.

I was aware of my position and role as a researcher in the school community and my socio-cultural background. The school is in a culturally-diverse community, which is reflected in the school's population. Through my experience of training as an EP, most of the trainees were usually females from a white, middle-class background. How does this 'voice' influence the identified gaps in the literature? How do I ensure that I am not imposing white middle-class values on the participants and the findings? Am I seeing a

problem where one does not exist? Contributing research to the limited body of knowledge in this area may subsequently provide a 'voice' and a platform for these conversations to continue among educational and local authority settings. Let us step outside of what we think is true, or what we have known. To move psychology and professional practice forward we need to be critical of historical approaches and think about ways practice could be better.

5.8 Conclusion

This research sought to add the existing literature regarding hearing the voices of P-V pre-school children with complex and SEND and to inform and contribute to the development of communication and interactive methods for this population. This research is pertinent to the local and national context and recent SEND legislation that promotes collaboration and participation with children, young people and their families.

The exploratory research took a post-positivist pragmatic position, with elements from a transformative paradigm. This stance allowed flexibility in the way reality can be captured from this heterogeneous and potentially vulnerable population. A multiple case study design allowed an in-depth and holistic exploration of real life events. The findings of the children's parents and teachers' questionnaires were analysed using QCA and were triangulated with the findings from observational data and the various activities. This was in order to realise a more accurate picture of how the child communicates their preferences and needs. Main and sub-categories from the QCA were reported, along with findings from the observational vignettes, using guidance from the SCERTS observational framework for each case study.

The findings showed that each child required individualised communication methods, and adaptations were informed through observations and parental and teacher information. The findings also indicated a common thread across the case studies, which placed emphasis on adapting and considering the systems around the child (the Micro-system, Meso-system and Exo-system in Bronfenbrenner's model (1989)) as well as the individual needs of the children themselves. The findings also showed the following key points to consider when developing approaches to working and communicating with young P-V children with complex and SEND: knowledge of the child's SEND; the key role of the communication partner, the shared understandings and joint attentional frame the adults share with the child; multi-method and multi-

sensory approaches; the importance of observation; the child's motivation to communicate; effective use of technology and eye-tracking; preparation of the setting and environment; the use of child centred language; the ethos of the education setting; awareness of ethnicity and culture; and understanding of the school's processes. The research topic being explored was underpinned by Developmental Theory, Participation Theory, Social Learning theory and Children's Rights Theory. I also drew from Bronfenbrenner's Ecological Systems Theory Model (1979) to present the overall findings.

The findings resonated with existing literature relating to listening to the voice of this complex population of children. Hill et al. (2016) found that schools are developing creative techniques to promote children's voice and for professionals working with this population, and a more holistic conceptualisation of how children express their views may be beneficial. Dimitrova et al. (2015) proposes that shared knowledge helps caregivers interpreting their infants' gestures, and, for the recipient to have the best chance at accurately interpreting the message of the infant's pointing, there needs to be recently shared experiences/common ground and joint attention between them (Moll & Tomasello, 2007; Tomasello & Haberl, 2003). Shared experiences are also crucial when infants are interpreting messages through adult pointing (Tomasello, et al., 2007). The current findings demonstrate that the communication partner plays an important role in constructing the turns of the non-speaking co-participant as proposed by Sigurd Pilesjö & Rasmussen (2011) and highlight the importance of support, consideration of learning opportunities that occur and exploring different communication aids as argued by Pinto & Gardner, 2014).

As a consequence of the findings I designed a checklist (Appendix I) which I hope will be able to help develop professional practice and to support professionals working with P-V children with complex and SEND. This Checklist highlights implications for professional practice: promoting multi-method approaches to gaining the voices of all children when completing individual case-work; triangulation of information through consultation and systemic work and creating change on a systems level; promoting social justice and advocacy when needed through work with children and their families; and recognising dominant discourses and providing space for the less dominant views to heard. EPs are in a position to promote change and can help to develop a depth of

understanding regarding children's perspectives and to encourage this to be part of the educational setting's ethos.

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Appendices

Appendix A Table of Included Research Papers

1st Author	Date	Title	Country	Purpose of study	Type of study	Data collection methods	Data analysis	Sample population	Main findings	Relevance of paper (1 - 5
Balan, P	2008	Communication function in children with severe speech and physical impairment	India	To explore the communicative functions of children with severe speech and physical impairments using un aided communication strategies with their mothers	Clinical setting Semi-structured interaction mode	Audio video recorded (15mins)	Verbal communication transcribed 2 judges coded transcripts and viewed the video Coding was separate with a principle investigator present	N = 4 Age - 2-3 yrs SEND-Diagnosis of CP	Wide range of communicate functions found	**2**
Dimitrova, N	2015	Caregivers interpret infants' early gestures based on shared knowledge about referents	Switzerland	How do caregivers interpret infant gestures	Qual Longitudinally Naturalistic setting	Video taped	Coding gestures using ELAN Inter-coder reliability	N = 6 Ages - 8/10/12 /14/16 and mths old No SEND	Caregivers play a fundamental role in shaping young children's early gestural forms into meaningful communication.	**2**
Geytenbeek, J.J.M	2010	Assessing Comprehension of Spoken Language in Non-	Netherlands	Assess comprehension of spoken language of	Qual and Quant Video and observation	Computer-Based instrument for Low motor	Wilcoxon Signed Ranks tests Cohen's Kappa	N = 42 Age - 14-60mths	The C-BiLLT was	**2**

1st Author	Date	Title	Country	Purpose of study	Type of study	Data collection methods	Data analysis	Sample population	Main findings	Relevance of paper (1 - 5
		speaking children with cerebral palsy: Application of a Newly Developed Computer-Based Instrument		children with communication difficulties The scarcity of assessment tools of the heterogeneous population prompted this study	In an education setting with researchers	language Testing (C-BiLLT) Raynell development Language Scales (RDLS)	Inter-observer and intra-observer reliabilities for direct observation and video recordings	SEND – Cerebral Palsy	well accepted by children without disabilities and by children with complex communication needs and CP Performance on the C-BiLLT varied among the group of children with complex communication needs.	
Harding, E	2009	How EP's record the voice of the child	UK	Aimed to establish how EPs in one authority ascertain and present children's views in written reports	Qual EPS	EP reports EP focus groups Audiotape and transcription	Content analysis of EP reports open and axial coding of focus group transcripts	N = 7 EP's	EPs described a wide range of techniques and strategies to ascertain pupil voice. The method selected depended	**4**

1st Author	Date	Title	Country	Purpose of study	Type of study	Data collection methods	Data analysis	Sample population	Main findings	Relevance of paper (1 - 5
									on the child's needs, the nature of the interview and the time available. Different EPs used different approaches.	
Hill, V	2006	Research methods for children with multiple needs: Developing techniques to facilitate al children and YP to have a voice.	UK	To explore the experiences of children and YP educated in a residential school and to develop techniques and approaches to hear the voice of children and YP.	Qual and Quant (However Qual is only discussed in paper) Residential special school Participatory research	Graffiti wall, Diamond ranking activity and school preference cards Observations Research group	SCERTS observational checklist Observations, photographs, researchers group	N =83 Age - 8yrs 3mths –19yrs 8 mths SEND - Variety	Research provided evidence to support professionals in fulfilling their statutory obligations to hear the voice of the child. Challenged other authors who state that it is not possible to access the voices of	**5**

1st Author	Date	Title	Country	Purpose of study	Type of study	Data collection methods	Data analysis	Sample population	Main findings	Relevance of paper (1 - 5
									children with complex needs	
Liszkowski, U	2012	A pre-linguistic gestural Universal of Human Communication	Netherlands	To show evidence from pre-linguistic gestural communication	Semi-natural elicitation Quant	Video recording, 2 from two angles 5 minutes recording Participants were not told about pointing Relaxed environment were researchers were known to participants	Video recordings were digitized, synchronized, and then all analysed by one trained assistant using ELAN, a free video annotation program Time-locked coding of multiple events	N=96 dyads No SEND 7 different culture settings Age - 9-15mths	Index finger pointing is used in all cultures Pointing facilitates joint attention	**2**
O'Connor	2011	Pupil voice: listening to and hearing the educational experiences of YP with	UK	Aimed to develop innovative, exploratory research strategies for	Phd Pilot study overview	Group activity sessions Student interviews	Constructivist grounded theory	N = ? Age 14-16yrs	Noted difficulties gaining access and developing suitable methods of data collection.	**3**

1st Author	Date	Title	Country	Purpose of study	Type of study	Data collection methods	Data analysis	Sample population	Main findings	Relevance of paper (1 - 5
		behavioral, emotional and social difficulties (BESD)		harnessing the pupil voice of children with behavioural emotional and social difficulties (BESD).				Purposive sampling method SEND - BESD	Further research to focus how BESD is defined and identified, the causes of behavioural difficulties, educational provision, teacher perceptions and teacher training will all have an impact on the educational journeys of YP with BESD	
Pilesjo, M. S	2011	Exploring interaction between a non-speaking boy using aided AAC	Sweden		Home and mum Home and assistant School and classmate	Video recorded (3 camera, 3 hours in total)	Transcribed Conversational Analysis	Case study 8 yrs old He family at home speak Persian	Exploring interaction between a non-speaking boy using aided AAC	**3**

1st Author	Date	Title	Country	Purpose of study	Type of study	Data collection methods	Data analysis	Sample population	Main findings	Relevance of paper (1 - 5
								and at school, it is Swedish		
Pinto, M	2014	Communication interaction between a non-speaking child with cerebral Palsy and her mother using an ipad	UK	How is communication turn taking with technology How does a child participate in ipad aided conversations?	Qual Case study At home with mum	Transcribed and coding analysed using conversational analysis	Video recorded	1 (case study) 8 yrs old	Turns during interactions are facilitated using ipads Mother/care giver has multiple roles is the interpreter of the non-speaking child The use of pauses after questions and personal pronouns Early intervention for the interaction strategies of the family/care givers	**3**

Appendix B Parents & Staff Questionnaires

Parent/Carer

COMMUNICATION QUESTIONNAIRE

Child's 1st Initial Age: Date filled out:

Filled out by: Relationship to child:

Please answer this questionnaire about the child's communication (understanding and use of nonverbal and verbal communication in social interaction) as honestly and accurately as possible, adding additional comments or examples when necessary.

1. What is your child's favourite activity/toy?

2. List the top strengths or assets you observe in your child.

3. Describe the methods your child uses regularly to communicate E.g. objects of reference, visuals, hand holding, refusal, clapping, use of words/noises?

4. How does your child interact with other adults and children *E.g. Does your child initiate interaction, engage in shared attention, take turns in communicative acts, seeks help when needed, seeks comfort from others?*

5. How does your child use eye gaze to communicate and engage others*? E.g. creates and holds eye contact with others? Looks back at the adult when engaging in activities? Responds to eye gaze/pointing from others?*

6. What are the most common reasons for your child to use his/her communication skills? This could be with the use of either words, visuals, written words or other symbols? (Please tick all that apply and add additional information where needed).

	Tick	Comments
Naming things e.g. toys, food		
Naming people or animals		
Indicating ‘again’ or ‘more’		
Indicating refusal or endings		
Greeting others		
Action words e.g. eat, walk, go		
Describing words e.g. big, cold, fast		
To request help		
To protest – Showing a dislike		
To ask permission		
To draw attention to something		
To ask for information about something		
Other		

7. How often would your child communicate with others? *E.g. Not at all; A little; A lot*

8. How often, in one day, do you not understand what your child is communicating?

9. What approaches do you use to further your understanding of what your child is communicating?

10. Describe what helps you better understand what your child is communicating*? E.g. facial expression; tone of voice; body language; pointing; use of symbols; other actions*

11. How does your child play? *E.g. independently; alongside others; with others*

12. Does your child imitate actions by others? If so how?

13. Does your child imitate sounds made by others? If so how?

14. Describe what helps your child best understand what is being communicated by others. *E.g. facial expression; tone of voice; particular language; repeated*

words; body language; photographs; pointing; written words; use of symbols; other action

15. What visual/technological supports etc. do you use to communicate with your child?

16. How does your child express the following emotions?

Emotion	**Comment**
Happiness	
Sadness	
Contentment	
Anger or frustration	
Excitement	
Fear	

17. Who does your child interact with on a daily basis?

18. On the scale 1-5 (5= being most confident) please indicate your understanding of;

	1-5
Your child's focus of attention	
What your child is trying to communicate	
How your child is feeling	
When your child needs a break	
Whether your child is interested	
Whether your child is frustrated	
Whether your child is overwhelmed	

19. When first meeting your child what are the best methods you would recommend when trying getting to know your child (*E.g. observation; speaking with other adults; direct work*) please comment.

20. Is there anything else about your child that you think is important to share with us?

THANK YOU FOR YOUR PARTICIPATION.

Samantha Weld-Blundell

Email:

Phone:

Address:

School staff

COMMUNICATION QUESTIONNAIRE

Child's 1st Initial: Age: Date filled out:

Filled out by Relationship to child:

This questionnaire is designed to be completed by a member of school staff who interacts with this child on a regular basis. Please answer this questionnaire about the child's communication (understanding and use of nonverbal and verbal communication in social interaction) as honestly and accurately as possible, adding additional comments or examples when necessary.

1. What is the child's favourite activity/toy ?

2. List the top strengths or assets you observe in the child.

3. Describe the methods the child uses regularly to communicate E.g. objects of reference, visuals, hand holding, refusal, clapping, use of words/noises?

4. How does the child interact with other adults and children *E.g. Does the child initiate interaction, engage in shared attention, take turns in communicative acts, seeks help when needed, seeks comfort from others?*

5. How does the child use eye gaze to communicate and engage others*? E.g. creates and holds eye contact with others? Looks back at the adult when engaging in activities? Responds to eye gaze/pointing from others?*

6. What are the most common reasons for the child to use his/her communication skills? This could be with the use of either words, visuals, written words or other symbols? (Please tick all that apply and add additional information where needed).

	Tick	Comments
Naming things e.g. toys, food		
Naming people or animals		
Indicating 'again' or 'more'		
Indicating refusal or endings		
Greeting others		
Action words e.g. eat, walk, go		
Describing words e.g. big, cold, fast		
To request help		
To protest – Showing a dislike		
To ask permission		
To draw attention to something		

To ask for information about something		
Other		

7. How often would the child communicate with others? *E.g. Not at all; A little; A lot*

8. How often, in one day, do you not understand what the child is communicating?

9. What approaches do you use to further your understanding of what the child is communicating?

10. Describe what helps you better understand what the child is communicating*? E.g. facial expression; tone of voice; body language; pointing; use of symbols; other actions*

11. How does the child play? *E.g. independently; alongside others; with others*

12. Does the child imitate actions by others? If so how?

13. Does the child imitate sounds made by others? If so how?

14. Describe what helps the child best understand what is being communicated by others. *E.g. facial expression; tone of voice; particular language; repeated*

words; body language; photographs; pointing; written words; use of symbols; other action

15. What visual/technological supports etc. do you use to communicate with the child?

16. How does the child express the following emotions?

Emotion	**Comment**
Happiness	
Sadness	
Contentment	
Anger or frustration	
Excitement	
Fear	

17. Who does the child interact with on a daily basis?

18. On the scale 1-5 (5= being most confident) please indicate your understanding of;

	1-5
The child's focus of attention	
What the child is trying to communicate	
How the child is feeling	
When the child needs a break	
Whether the child is interested	
Whether the child is frustrated	
Whether the child is overwhelmed	

19. When first meeting the child what are the best methods you would recommend when trying getting to know the child (*E.g. observation; speaking with other adults; direct work*) please comment.

20. Is there anything else about the child that you think is important to share with us?

THANK YOU FOR YOUR PARTICIPATION.

Samantha Weld-Blundell

Email

Phone:

Address:

Appendix C Research Information Sheet

Information sheet

PARENT, CARERS AND STAFF INFORMATION SHEET

How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?

Name of head Researcher: Samantha Weld-Blundell

A summary of the research project:

- There is a national and local need to find the best ways of listening to the voice of children who do not have dominance in language, speech or writing.
- This research aims to find the best methods of listening to young pre-verbal children with special educational needs and disabilities and help them communicate their needs and make choices.
- I will spend a period of time in Willow Dene exploring a variety of methods such as eye tracking equipment, observations, children's drawings and photographs as well as interviews and questionnaires from the staff and the parents.
- I will be asking each child to view a video and photos of their nursery setting on a screen and record their eye movements. I will observe them free playing in the nursery and (depending on level of need) we would ask each child to draw and take photographs within the setting.
- As parents, carers or school staff I would like you to complete a questionnaire and talk to me about your experience of being involved.
- I understand the need to keep parents informed so they shall receive verbal feedback after your child has participated.
- The research will collect data about what each child participating likes or dislikes, their preferences, views and opinions. The data will be kept confidential and anonymous.
- By summer 2017 this research should hopefully be able to inform practitioners on how they can improve their practice and methods to elicit the voice of pre-verbal pre-school children.
- My contact details are on the bottom of this information sheet if you have any questions.

What does the research involve?

- This study will involve participation of children aged between 0-5 years.
- I shall meet with each child a maximum of three times.

IMPORTANT

- If any child becomes distressed at any point we will stop the activity straight away.
- I will record any interviews with a Dictaphone; all information remains confidential unless it raises concerns about a situation that is putting someone at risk. In such a situation the regular policies and protocols of the local authority and the school will be followed.

All Educational Psychologists adhere to strict ethical and conduct guidelines outlined by the British Psychological Society and the Health Professionals Council.

Researches Contact Details

- **Name:** Samantha Weld-Blundell
- **Office address:**
- **Phone number:**
- **Email:**

Appendix D Parent, Staff and Head Teacher Consent Forms

Parental consent Form

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?

Name of Researcher: Samantha Lock

Please initial all boxes

1. I confirm that I have read and understand the information sheet for the above study and been given a copy to keep. The nature of the research has been explained to me and had the opportunity to ask any questions and have had these answered so I understand. ☐
2. I understand that any data gathered will remain strictly confidential and full anonymity will be ensured. Only the researcher will have access to the data and the data will be destroyed once the study has been completed and parental permission sought and shared with the school ☐
3. I understand that after the research has been completed parents have the right to have access to their own child's data by contacting the researcher. ☐
4. I understand that my participation is voluntary and that I am free to withdraw my child at any time before data analysis, without giving any reason and without any disadvantage. ☐
5. I hereby fully consent to my child participating in the study. ☐

Name of Parent	Date	Signature
Name of Researcher	Date	Signature

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?

Name of Researcher: Samantha Weld-Blundell Please initial all boxes

1. I confirm that I have read and understand the information sheet for the above study and been given a copy to keep. The nature of the research has been explained to me and had the opportunity to ask any questions and have had these answered so I understand. ☐
2. I understand that any data gathered will remain strictly confidential and full anonymity will be ensured. Only the researcher will have access to the data and the data will be destroyed once the study has been completed. ☐
3. I understand that after the research has been completed parents have the right to have access to their own child's data, which can be used to inform statutory EHC requests for their child. ☐
4. I understand that my participation is voluntary and that I am free to withdraw at any time before data analysis, without giving any reason and without any disadvantage. ☐
5. I hereby fully consent to my participation in the study. ☐

Name of Staff member	Date	Signature
Name of Researcher	Date	Signature

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?

Name of Researcher: Samantha Lock

Please initial all boxes

1. I confirm that I have read and understand the information sheet for the above study and been given a copy to keep. The nature of the research has been explained to me and had the opportunity to ask any questions and have had these answered so I understand. ☐
2. I understand that any data gathered will remain strictly confidential and full anonymity will be ensured. Only the researcher will have access to the data and the data will be destroyed once the study has been completed and parental permission sought and shared with the school ☐
3. I understand that after the research has been completed parents have the right to have access to their own child's data, via the researcher, which can be used to inform statutory EHC requests for their child. ☐
4. I understand that participation is voluntary and that the participants are free to withdraw at any time before data analysis without giving any reason and without any disadvantage to themselves. ☐
5. I hereby fully consent to the selected children at Willow Dene participating in the study. ☐

Name of Head Teacher	Date	Signature
Name of Researcher	Date	Signature

Appendix E Research Poster

Research project: Improving how we communicate with students

Dear Parent/carer,

My name is Samantha and I am inviting you to take part in this research project.

I have found that there is a national and local need to find the best ways of listening to the voice of children who do not have dominance in language, speech or writing.

What is involved for your child?

- I will be asking each child to view a photos of their nursery setting on a screen
- I will observe them in the school or nursery
- I may ask each child to draw and take photographs within the setting.

What is involved for you?

- A short questionnaire
- A brief conversation with the researcher

How to get involved

Please let myself, or

(Parent Partnership lead at

'know if you would be interested to learn more about this project.

Contact:

Phone: Email:

Thank you

Appendix F Extract from Research Presentation to Staff

How can practitioners improve the methods of hearing the voice of pre-verbal pre-school children with SEND?

Introduction

- Samantha
- 2nd Year Educational Psychology Trainee at University of East London
- 2 year placement at
- Thesis research to be completed Summer 2017
- Why

Research in a nutshell

- National and localised need for professionals who work with pre-school children who do not have dominance in language, speech or writing, to find effective methods of listening their 'voice', to help them communicate their needs and make choices.
- All Educational Psychologists abide by the BPS Code of Ethics and Conduct (2009)
- Participants:
  - Children 3-5
  - Who are pre-verbal with Special educational needs and disabilities (SEND)
  - Key school staff
  - Parents/carers

Setting the scene

- Statutory requirements during an EHC needs assessment (Code of Practice, 2014)
- UN rights of the child - All children have the right to express their views and feelings, to have them considered and taken seriously.

(DfE Code of Practice, 2014)

(The United Nations Convention on the Rights of the Child, 1989)

Setting the scene

- Children's SEND can be thought of in four areas;
  - Communication and interaction;
  - Cognition and learning;
  - Social, emotional and
  - Mental health and sensory and/or physical needs (Code of Practice, 2014).
- Often children in early years with SEND have needs across all areas, e.g. speech language and communication needs can feature across the board.
- The high level of need those children in early years setting and the comorbidity of difficulties, gaining the child's views can be difficult.
- Ensures professionals are keeping children safe, confirm that children are receiving support they want and need, ensuring they are happy and healthy and to help children achieve their potential.

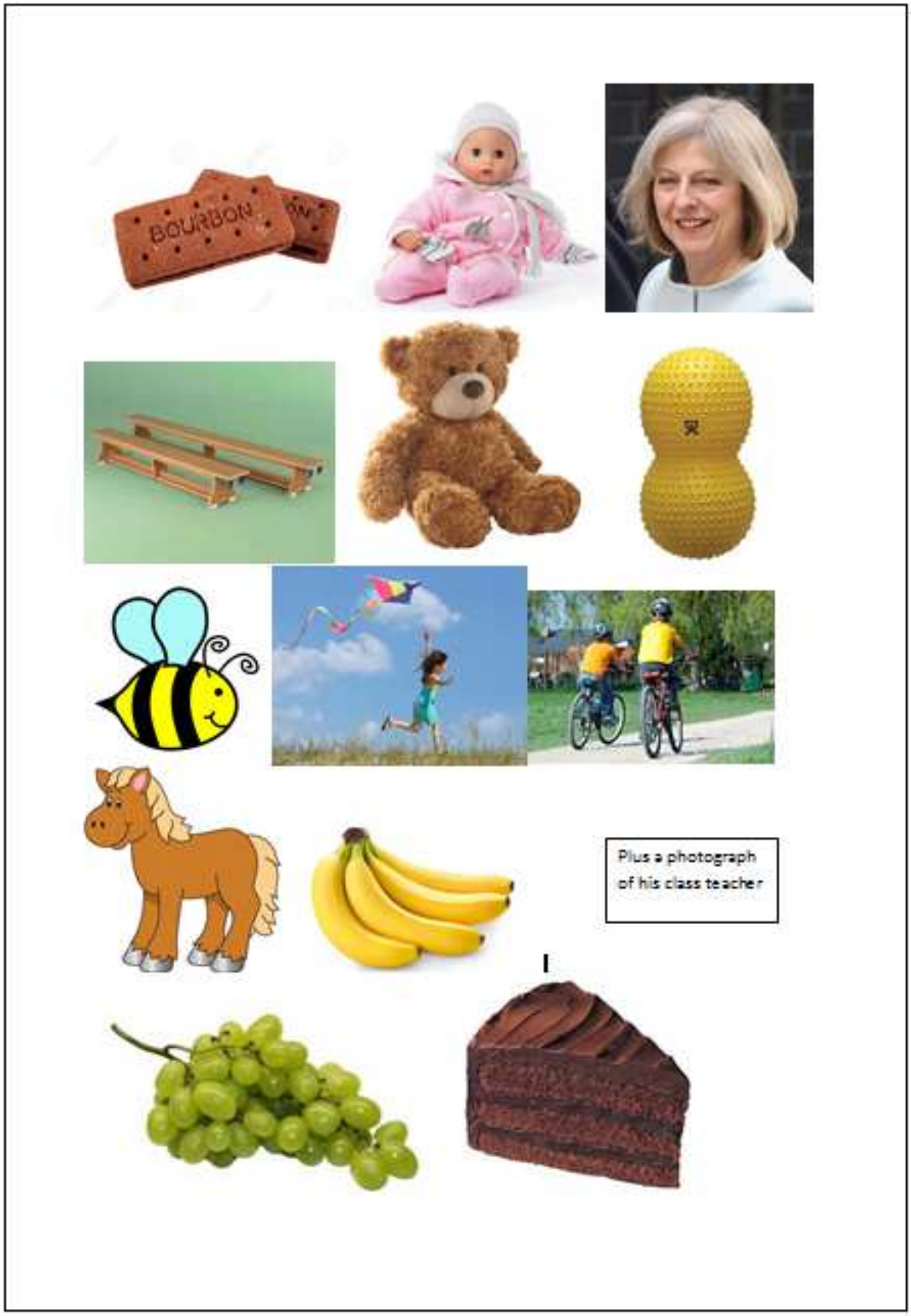
Local needs

- This research will be carried out in the Royal Borough of Greenwich. Listed in their priorities in their Children and Young People Plan (2015-17), one priority was to;

  Listen to children, young people and their parents to shape services. As well as a focus on person-centred consultation methods.

- As also promoted in the Children and Families Act, 2014.

Appendix G Examples of Images used in Eye-Tracking Activities



Appendix H SCERTS Observational Framework (reproduced)

SAP-OBSERVATION FORM: Language Partner Stage **(page 2)**
Social Communication

Child's name: _____

Qtr 1	Qtr 2	Qtr 3	Qtr 4	JOINT ATTENTION
				1 Engages in reciprocal interaction
				JA1.1 Initiates bids for interaction (= SR1.1)
				JA1.2 Engages in brief reciprocal interaction (= SR1.2)
				JA1.3 Engages in extended reciprocal interaction (= SR1.3)
				2 Shares attention
				JA2.1 Shifts gaze between people and objects
				JA2.2 Follows contact and distal point (= SU2.2)
				JA2.3 Monitors attentional focus of a social partner
				JA2.4 Secures attention to oneself prior to expressing intentions (≈ JA5.5)
				3 Shares emotion
				JA3.1 Shares negative and positive emotion (= MR1.1; ≈ MR3.1, MR3.2)
				JA3.2 Understands and uses symbols to express a range of emotions (≈ MR1.2, SR3.5)
				JA3.3 Attunes to changes in partners' expression of emotion (≈ SU2.4; = MR2.5)
				JA3.4 Describes the emotional state of another person (≈ SU5.6)
				4 Shares intentions to regulate the behavior of others (↔ JA7.2, JA8.2, SU4–SU5, MR3.7)
				JA4.1 Requests desired food or objects (≈ MR2.6)
				JA4.2 Protests/refuses undesired food or objects (≈ MR3.4)
				JA4.3 Requests help or other actions (≈ MR3.3)
				JA4.4 Protests undesired actions or activities (≈ MR3.4)
				5 Shares intentions for social interaction (↔ JA7.2, JA8.2, SU4–SU5)
				JA5.1 Requests comfort (≈ MR3.1)
				JA5.2 Requests social game
				JA5.3 Takes turns
				JA5.4 Greets
				JA5.5 Calls (≈ JA2.4)
				JA5.6 Shows off
				JA5.7 Requests permission
				6 Shares intentions for joint attention (↔ JA7.2, JA8.2, SU4–SU5)
				JA6.1 Comments on object
				JA6.2 Comments on action or event
				JA6.3 Requests information about things of interest
				7 Persists and repairs communication breakdowns
				JA7.1 Uses appropriate rate of communication for context
				JA7.2 Repeats and modifies communication to repair (↔ JA4–JA6)
				JA7.3 Recognizes breakdowns in communication
				8 Shares experiences in reciprocal interaction
				JA8.1 Coordinates attention, emotion, and intentions to share experiences
				JA8.2 Shows reciprocity in speaker and listener roles to share experiences (↔ JA4–JA6)
				JA8.3 Initiates interaction and shares experiences with a friend

SCORING KEY: 2, criterion met consistently (across three partners in two contexts);
1, criterion met inconsistently or with assistance; **0,** criterion not met

SAP-OBSERVATION FORM: Language Partner Stage (page 3)
Social Communication

Child's name: _____

Qtr 1	Qtr 2	Qtr 3	Qtr 4	SYMBOL USE
				1 Learns by observation and imitation of familiar and unfamiliar actions and words
				SU1.1 Spontaneously imitates familiar actions or words immediately after a model
				SU1.2 Spontaneously imitates unfamiliar actions or words immediately after a model
				SU1.3 Spontaneously imitates actions or words and adds a different behavior
				SU1.4 Spontaneously imitates a variety of behaviors later in a different context
				2 Understands nonverbal cues in familiar and unfamiliar activities
				SU2.1 Follows situational and gestural cues in familiar and unfamiliar activities (= SR4.2)
				SU2.2 Follows contact and distal point (= JA2.2)
				SU2.3 Follows instructions with visual cues (photographs or pictures)
				SU2.4 Responds to facial expression and intonation cues (≈ JA3.3)
				3 Uses familiar objects conventionally in play
				SU3.1 Uses a variety of objects in constructive play
				SU3.2 Uses a variety of familiar objects conventionally toward self
				SU3.3 Uses a variety of familiar objects conventionally toward other
				SU3.4 Combines a variety of actions with objects in play
				4 Uses gestures and nonverbal means to share intentions (↔ JA4–JA6, MR3.3, MR3.4)
				SU4.1 Uses a variety of conventional and symbolic gestures ☐ a. show ☐ d. clap ☐ f. head nod ☐ b. wave ☐ e. head shake ☐ g. other _____ ☐ c. distal reach/point
				SU4.2 Uses sequence of gestures or nonverbal means in coordination with gaze
				5 Uses words and word combinations to express meanings (↔ JA4–JA6, MR3.3, MR3.4)
				SU5.1 Coordinates sounds/words with gaze and gestures
				SU5.2 Uses at least 5–10 words or echolalic phrases as symbols
				SU5.3 Uses early relational words ☐ a. existence ☐ b. nonexistence/disappearance ☐ c. recurrence ☐ d. rejection
				SU5.4 Uses variety of names for objects, body parts, and agents
				SU5.5 Uses variety of advanced relational words ☐ a. personal-social ☐ b. action ☐ c. modifier ☐ d. *wh-* word
				SU5.6 Uses variety of relational meanings in word combinations (↔ JA3.4) ☐ a. modifier + object ☐ b. negation + object ☐ c. agent + action + object
				6 Understands a variety of words and word combinations without contextual cues
				SU6.1 Responds to own name
				SU6.2 Responds to a variety of familiar words and phrases (= SR1.6)
				SU6.3 Understands a variety of names without contextual cues
				SU6.4 Understands a variety of relational words without contextual cues ☐ a. action ☐ b. modifier ☐ c. *wh-* word
				SU6.5 Understands a variety of relational meanings in word combinations without contextual cues ☐ a. modifier + object ☐ b. negation + object ☐ c. agent + action + object

SCORING KEY: 2, criterion met consistently (across three partners in two contexts);
1, criterion met inconsistently or with assistance; **0,** criterion not met

SAP-OBSERVATION FORM: Language Partner Stage **(page 4)**
Emotional Regulation

Child's name: _____

Qtr 1	Qtr 2	Qtr 3	Qtr 4	MUTUAL REGULATION
				1 Expresses range of emotions (↔ SU4–SU5)
				MR1.1 Shares negative and positive emotion (= JA3.1)
				MR1.2 Understands and uses symbols to express a range of emotions (≈ JA3.2; = SR3.5)
				MR1.3 Changes emotional expression in familiar activities based on partners' feedback
				2 Responds to assistance offered by partners
				MR2.1 Soothes when comforted by partners
				MR2.2 Engages when alerted by partners
				MR2.3 Responds to bids for interaction
				MR2.4 Responds to changes in partners' expression of emotion
				MR2.5 Attunes to changes in partners' expression of emotion (= JA3.3)
				MR2.6 Makes choices when offered by partners
				MR2.7 Changes regulatory strategies based on partners' feedback in familiar activities
				3 Requests partners' assistance to regulate state
				MR3.1 Shares negative emotion to seek comfort (≈ JA3.1, JA5.1)
				MR3.2 Shares positive emotion to seek interaction (≈ JA3.1)
				MR3.3 Requests help when frustrated (≈ JA4.3; ↔ SU4–SU5)
				MR3.4 Protests when distressed (≈ JA4.2, JA4.4; ↔ SU4–SU5)
				MR3.5 Uses language strategies to request a break
				MR3.6 Uses language strategies to request regulating activity or input
				MR3.7 Uses language strategies to exert social control (↔ JA4)
				4 Recovers from extreme dysregulation with support from partners
				MR4.1 Responds to partners' efforts to assist with recovery by moving away from activity
				MR4.2 Responds to partners' use of behavioral strategies
				MR4.3 Responds to partners' use of language strategies
				MR4.4 Responds to partners' attempts to reengage in interaction or activity
				MR4.5 Decreases amount of time to recover from extreme dysregulation due to support from partners
				MR4.6 Decreases intensity of dysregulated state due to support from partners

SCORING KEY: 2, criterion met consistently (across three partners in two contexts);
1, criterion met inconsistently or with assistance; **0,** criterion not met

SAP-OBSERVATION FORM: Language Partner Stage **(page 6)**
Transactional Support

Child's name: _____

Qtr 1	Qtr 2	Qtr 3	Qtr 4	INTERPERSONAL SUPPORT
				1 Partner is responsive to child
				IS1.1 Follows child's focus of attention
				IS1.2 Attunes to child's emotion and pace
				IS1.3 Responds appropriately to child's signals to foster a sense of communicative competence
				IS1.4 Recognizes and supports child's behavioral and language strategies to regulate arousal level
				IS1.5 Recognizes signs of dysregulation and offers support
				IS1.6 Imitates child
				IS1.7 Offers breaks from interaction or activity as needed
				IS1.8 Facilitates reengagement in interactions and activities following breaks
				2 Partner fosters initiation
				IS2.1 Offers choices nonverbally or verbally
				IS2.2 Waits for and encourages initiations
				IS2.3 Provides a balance of initiated and respondent turns
				IS2.4 Allows child to initiate and terminate activities
				3 Partner respects child's independence
				IS3.1 Allows child to take breaks to move about as needed
				IS3.2 Provides time for child to solve problems and complete activities at own pace
				IS3.3 Interprets problem behavior as communicative and/or regulatory
				IS3.4 Honors protests, rejections, or refusals when appropriate
				4 Partner sets stage for engagement
				IS4.1 Gets down on child's level when communicating
				IS4.2 Secures child's attention before communicating
				IS4.3 Uses appropriate proximity and nonverbal behavior to encourage interaction
				IS4.4 Uses appropriate words and intonation to support optimal arousal level and engagement
				5 Partner provides developmental support
				IS5.1 Encourages imitation
				IS5.2 Encourages interaction with peers
				IS5.3 Attempts to repair breakdowns verbally or nonverbally
				IS5.4 Provides guidance and feedback as needed for success in activities
				IS5.5 Provides guidance on expressing emotions and understanding the cause of emotions
				6 Partner adjusts language input
				IS6.1 Uses nonverbal cues to support understanding
				IS6.2 Adjusts complexity of language input to child's developmental level
				IS6.3 Adjusts quality of language input to child's arousal level
				7 Partner models appropriate behaviors
				IS7.1 Models appropriate nonverbal communication and emotional expressions
				IS7.2 Models a range of communicative functions ☐ a. behavior regulation ☐ b. social interaction ☐ c. joint attention
				IS7.3 Models appropriate constructive and symbolic play
				IS7.4 Models appropriate behavior when child uses inappropriate behavior
				IS7.5 Models "child-perspective" language

SCORING KEY: 2, criterion met consistently (across three partners in two contexts);
1, criterion met inconsistently or with assistance; **0,** criterion not met

SAP-OBSERVATION FORM: Language Partner Stage **(page 7)**
Transactional Support

Child's name: _____

Qtr 1	Qtr 2	Qtr 3	Qtr 4	LEARNING SUPPORT
				1 Partner structures activity for active participation
				LS1.1 Defines clear beginning and ending to activity
				LS1.2 Creates turn-taking opportunities and leaves spaces for child to fill in
				LS1.3 Provides predictable sequence to activity
				LS1.4 Offers repeated learning opportunities
				LS1.5 Offers varied learning opportunities
				2 Partner uses augmentative communication support to foster development
				LS2.1 Uses augmentative communication support to enhance child's communication and expressive language
				LS2.2 Uses augmentative communication support to enhance child's understanding of language and behavior
				LS2.3 Uses augmentative communication support to enhance child's expression and understanding of emotion
				LS2.4 Uses augmentative communication support to enhance child's emotional regulation
				3 Partner uses visual and organizational support
				LS3.1 Uses support to define steps within a task
				LS3.2 Uses support to define steps and time for completion of activities
				LS3.3 Uses visual support to enhance smooth transitions between activities
				LS3.4 Uses support to organize segments of time across the day
				LS3.5 Uses visual support to enhance attention in group activities
				LS3.6 Uses visual support to foster active involvement in group activities
				4 Partner modifies goals, activities, and learning environment
				LS4.1 Adjusts social complexity to support organization and interaction
				LS4.2 Adjusts task difficulty for child success
				LS4.3 Modifies sensory properties of learning environment
				LS4.4 Arranges learning environment to enhance attention
				LS4.5 Arranges learning environment to promote child initiation
				LS4.6 Designs and modifies activities to be developmentally appropriate
				LS4.7 Infuses motivating materials and topics in activities
				LS4.8 Provides activities to promote initiation and extended interaction
				LS4.9 Alternates between movement and sedentary activities as needed
				LS4.10 "Ups the ante" or increases expectations appropriately

SCORING KEY: 2, criterion met consistently (across three partners in two contexts);
1, criterion met inconsistently or with assistance; **0,** criterion not met

Appendix I Communicating with Pre-Verbal Children in Early Years with Complex Needs Checklist

Communicating with Pre-Verbal Children in Early Years with Complex Needs Checklist

Weld-Blundell, S. A. (2017). How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs? (D.Ed.Psy). University of East London

Rationale

This checklist was created as a result of the findings from a qualitative case-study doctoral research project. It is not representative of one particular child. The aims of this checklist are to:

- Support adults who communicate and interact with early years children who have limited or no verbal language with SEND
- Support this complex population of children in communicating their views and preferences
- Support adults in facilitating opportunities for positive interactions
- Help develop confidence in listening to and acting upon what the children communicate, in order to facilitate greater child participation
- Encourage consideration of the processes and the context which surround child participation and communication, as well as practice

Instructions for use

This checklist was designed to help develop professional practice and to support professionals working in educational settings identify areas they may wish to develop further, with regards to child participation, interaction and communication.
The user can record their progress for each of the criteria using a scale. The three-point scale includes;

- Emerging (E) - Aspects of the criteria are evidenced very occasionally
- Developing (D) –Aspects of the criteria are used most of the time
- Securing (S) – The criteria could be evidenced all, or almost all, of the time

Initial information gathering

To begin with it may be helpful for family members and school staff to think about the points outlined below and gather some key information to help with gaining a greater understating of the child as well as planning communication approaches.
This could be part of a person-centred planning meeting or completing a person centred information document (e.g. Pupil Passport or All About Me).

- Demographic information (Age, language spoken at home, family members at home etc.)
- Details regarding the child's needs (diagnoses, secondary needs, medical information and physical supports)
- What is important to them
- What is important for them (to keep them healthy and safe)?
- What do others like and admire about the person?
- What are their likes and dislikes?
- What makes them happy or sad?
- How do they communicate with others?
- How do others communicate with them?
- What helps to support the child understanding?
- What places do they like to go to?
- Who are the important people in their life?
- What are their gifts, qualities and skills?
- Eating, drinking and self-care needs
- Learning and curriculum information
- Agencies or services involved

Communicating with Pre-Verbal, Pre-School Children with Special Educational Needs and Disabilities (SEND) Checklist - Criteria	**E/D/S**
A - Whole School Policies	
The school promotes an inclusive culture and prioritises enabling all students to reach their potential	
School staff feel confident in trying new approaches when communicating and interacting with children	
School staff routinely reflect on successful communication approaches (e.g., what worked well?)	
School staff have opportunities to discuss as a team how to address identified difficulties	
The school staff seek professional input and work with relevant agencies in developing communication methods and opportunities	
B - Child's Emotional Wellbeing	
The adults have an awareness of the child's SEND, medical condition(s), any presenting symptoms and the treatment plan procedures	
The communication partner has an understanding of the child's typical emotional state as well as indicators of their distress or anxiety	
The communication partners have an understanding of the child's typical behaviors as well as indicators of their distress or anxiety	
The adults make allowances and understand the child's self-regulatory and stimulating behaviors	
There are opportunities for the child to increase or reduce their level of independence in their communication and interaction with adults	
The developmental stage of the child is considered to inform the differentiation of the approach/communication method	
The child's developed and emerging developmental skills are recognised in order to appropriately differentiate the communication activity or interaction	
C - Environment and Context	
Efforts are made to minimise the disruption of the child's usual routine	
The sensory properties of the learning environment are modified according to the needs of the child (e.g., lighting, noises, space, smells, and other people)	
A familiar setting, familiar adults and access to familiar objects are available to instil a feeling of security and safety for the child	
Opportunities to explore and interact with a variety of communication methods are provided	
Time adjustments are made to reduce any distress to the child	
Additional time adjustments are made in order to have a meaningful interaction and to take into consideration the child's possible processing and responding difficulties	
The communication methods are un-obtrusive and the child is able to move	

freely	
During focused communication sessions a calm environment to enhance attention and minimise distractions is made available	
D - Interpersonal Support	
The adult communication partner facilitates the structure of interactions and turn taking	
Shared experiences between the child and the communication partner are encouraged to support accurate interpretations of the communicated message	
Adults facilitate and scaffold joint attention to assist in communication and positive interactions	
To understand the child's intent and message communicated more accurately, key adults with a close relationships and greater attunement with the child are asked to support the process	
The communication methods are appropriately adapted to include motivational elements (tailored to the child's interests)	
Adults provide appropriate verbal, physical & visual encouragement to engage and trial new communication methods	
The adults are aware of how the child 'uses' adults in their communication (E.g., using adults to request or retrieve information)	
New adults working with the child are taught the appropriate methods to approach and to engage during the initial meeting	
The adults imitate behaviours or noises the child makes to ensure a feeling of attunement and encourage interaction	
The adults provide a verbal commentary on the child's behaviours and communication methods to ensure a feeling of attunement and encourage interaction	
The adults use developmentally appropriate language, visuals and objects of reference where appropriate to support the child's understanding	
The adults use modelling and scaffolding to support the child's interactions and communication	
E - Communication Methods/Approaches	
Multi-method communication approaches are available for the child to communicate and interact (e.g., multi-sensory, interactive technology, visuals, song, rhythm, books, pictures and objects of reference)	
Adults use observations to record the child's body language, facial expressions, pre-verbal vocalisations and gestures	
Interactive technology is provided for the child to communicate and make choices	
Eye-tracking/gaze resources are available for the child to communicate and make choices	
F – Facilitating Understanding	

Triangulation of information (e.g., parental and staff information; observational notes; eye-tracking results) is routinely used to inform a greater understanding of the child's preferences and views	
Visuals and objects are provided to support the child's communication and understanding	
Songs, rhythm and tunes are used to supports the child's understanding of the task/question/activity	
Observational frameworks are used over different setting at different times to record the child's behaviours and interactions	
Video or audio recording (used according to the setting's guidelines) of the child provide a more in depth understanding of the child's communication methods	
Key adults, who have a greater shared understanding, facilitate and support the child's communication and understanding	
Mobile interactive/eye-gaze technology is available for the child to access at undesignated times	

Appendix J School of Psychology Research Ethics Committee

School of Psychology Research Ethics Committee

NOTICE OF ETHICS REVIEW DECISION

For research involving human participants
BSc/MSc/MA/Professional Doctorates in Clinical, Counselling and Educational Psychology

REVIEWER: Meredith Terlecki

Course: Professional Doctorate in Child Educational Psychology

STUDENT: Samantha Lock

SUPERVISOR: Miles Thomas

Title of proposed study: How Can Practitioners Develop Methods of Hearing the Voices of Pre-Verbal Children in Early Years with Complex Needs?

DECISION OPTIONS:

1. **APPROVED:** Ethics approval for the above named research study has been granted from the date of approval (see end of this notice) to the date it is submitted for assessment/examination.

2. **APPROVED, BUT MINOR AMENDMENTS ARE REQUIRED BEFORE THE RESEARCH COMMENCES** (see Minor Amendments box below)**:** In this circumstance, re-submission of an ethics application is not required but the student must confirm with their supervisor that all minor amendments have been made before the research commences. Students are to do this by filling in the confirmation box below when all amendments have been attended to and

emailing a copy of this decision notice to her/his supervisor for their records. The supervisor will then forward the student's confirmation to the School for its records.

3. **NOT APPROVED, MAJOR AMENDMENTS AND RE-SUBMISSION REQUIRED** (see Major Amendments box below)**:** In this circumstance, a revised ethics application must be submitted and approved before any research takes place. The revised application will be reviewed by the same reviewer. If in doubt, students should ask their supervisor for support in revising their ethics application.

DECISION ON THE ABOVE-NAMED PROPOSED RESEARCH STUDY

(Please indicate the decision according to one of the 3 options above)

Approved

Minor amendments required *(for reviewer)*:

Major amendments required *(for reviewer):*

ASSESSMENT OF RISK TO RESEACHER *(for reviewer)*

If the proposed research could expose the researcher to any of kind of emotional, physical or health and safety hazard? Please rate the degree of risk:

☐ HIGH

☐ MEDIUM

☐ **LOW**

Reviewer comments in relation to researcher risk (if any):

Reviewer *(Typed name to act as signature)*: Mark Holloway

Date: 28th February 2016

This reviewer has assessed the ethics application for the named research study on behalf of the School of Psychology Research Ethics Committee

Confirmation of making the above minor amendments *(for students)*:

I have noted and made all the required minor amendments, as stated above, before starting my research and collecting data.

Student's name *(Typed name to act as signature):*
Student number:

Date:

(Please submit a copy of this decision letter to your supervisor with this box completed, if minor amendments to your ethics application are required)

PLEASE NOTE:

*For the researcher and participants involved in the above named study to be covered by UEL's insurance and indemnity policy, prior ethics approval from the School of Psychology (acting on behalf of the UEL Research Ethics Committee), and confirmation from students where minor amendments were required, must be obtained before any research takes place.

*For the researcher and participants involved in the above named study to be covered by UEL's insurance and indemnity policy, travel approval from UEL (not the School of Psychology) must be gained if a researcher intends to travel overseas to collect data, even if this involves the researcher travelling to his/her home country to conduct the research. Application details can be found here:
http://www.uel.ac.uk/gradschool/ethics/fieldwork/