How frequently do deaf children initiate and engage in conversational turns in Early Years settings in comparison to hearing peers: the correlation of conversational turns with language and attainment outcomes.

A study submitted in partial fulfilment of the requirements for the degree of Master of Arts of the University of Hertfordshire

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Abbreviations:

ALD	Assistive Listening Devices
ASL	American Sign Language
BATOD	British Association of the Teachers of the Deaf
BPVS	British Picture Vocabulary Scale
BSL	British Sign Language
CHSWG	Children Hearing Services Working Group
CRB	Criminal Records Bureau
CRIDE	Consortium for Research in Deaf Education
CSW	Communication Support Workers
CTC	Conversational Turn Count
CT	Conversational Turn
DC	d/Deaf children[1]
DEC	Deaf Education Centre
DCSF	Department for Children, Schools and Families
DfE	Department for Education
EF	Executive Functioning
EHCP	Education Health and Care Plan
ELG	Early Learning Goal
EYFS	Early Years Foundation Stage
GLD	Good Level of Development
HC	Hearing children[2]
LENA	Language ENvironment Analysis
MRI	Magnetic Resonance Imaging
NDCS	National Deaf Children's Society
NHSP	Newborn Hearing Screening Programme
OC	Oral Communication
PA	Personal Amplification
SD	Standard Deviation
SEND	Special Educational Needs/Disability

[1] *the term d/Deaf children refers to any degree of hearing loss which is permanent. The capital D in Deaf represents those children who share a cultural identity with the Deaf Community.*

[2] *the term hearing children refers to a child who has normally developed hearing and passed the NHSP*

SES	Socio-economic Status
SIR	Speech Intelligibility Rating
SNR	Signal to Noise Ratio
SPHL	Severe to Profound Hearing Loss
ToD	Teacher of the Deaf
ToM	Theory of Mind
TC	Total Communication

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Abstract:

It is established that a greater rate of conversational turns is associated with improved language outcomes for hearing children.

This study investigates the number of conversational turns experienced by d/Deaf children and hearing children matched for age, gender and Special Educational Needs (SEN) over 10 hours of observations in an Early Years mainstream setting. Both successful and failed conversational turns were recorded and coded. Each participant undertook a receptive vocabulary assessment and their attainment data was collected.

The results evidenced that in the Early Years, d/Deaf children experience statistically fewer successful conversational turns than hearing children and statistically more failed attempts at conversational turns than hearing children.

For both d/Deaf and hearing children, there was a strong positive correlation between successful conversational turns and receptive vocabulary and attainment levels. There was also a strong negative correlation, for both d/Deaf and hearing children, between failed conversational turns and receptive vocabulary levels and attainment levels. Deaf children were more likely to have lower than average receptive vocabulary levels and not meet attainment outcomes in the Early Years Foundation Stage.

This study provides evidence that successful conversational turns play an important role for d/Deaf children in developing language skills and achieving academic attainment. Results are limited due to the small scale however it suggests that future research into this area is important. Recommendations were made based on this research to influence future practise in how the interactions of deaf children are supported in mainstream Early Years settings.

1. Introduction

The landscape of d/Deaf education has changed dramatically over the years- influenced by advancements in technology, beliefs around inclusion and updates to governments policy.

Around 40 years ago, d/Deaf children (DC) were more likely to be educated in a specialist provision - there were 502 specialist Deaf provisions in the UK in 1982 (Simpson, 2017) compared with 237 in 2022 (CRIDE, 2022). The ability to acquire spoken language has changed dramatically with the introduction of the Newborn Hearing Screening Programme (NHSP) allowing early intervention; and technological advancements, especially Cochlear Implants (Marschark & Spencer, 2006) allowing children to access more 'Oral' language and mainstream educational system.

The Warnock Report (DFES, 1978) gave parents new rights in relation to special need, urged the inclusion of special needs children in mainstream classes and was a pivotal moment in the journey to what is now known as 'Inclusion'. The current Special Educational Needs and Disability Code of Practice (SENDCOP, 2015:25) maintains this approach and goes on to specify that "Where a child or young person has Special Educational Needs (SEN) but does not have an Education Health Care Plan (EHCP) they **must** be educated in a mainstream setting". Given that in 2019, 85% of DC did not have an EHCP (CRIDE, 2019), evidently the majority of DC are now supported through the 'Inclusion' model in a mainstream school.

Both personal experience and national data (NDCS, 2022) suggests that DC continue to underachieve in comparison to hearing children (HC) which raises the question if 'Inclusion' is providing the appropriate level of support and educational approach for DC.

Having been working with DC in Early Years for over 10 years, and knowing that an attainment gap exists before children even enter the Key Stage One schooling system, it was my aim to explore specific factors that may be underpinning this trend- in particular the role of Conversational Turns (CTs) on linguistic and attainment outcomes. Subsequently recommendations may be made to address any barriers relating to CTs for DC in mainstream Early Years Settings.

2. Literature Review

2.1 Introduction

This literature review is formed in three sections. The first section will review literature that has been published regarding the importance of conversational turns (CTs) on outcomes, correlations between CTs and language levels for hearing children (HC) and the role of conversational turns in Early Years settings in the UK. The second section will review literature on what is currently known about how d/Deaf children (DC) acquire language and engage in CTs within Early Years settings. The final section will justify the current study based on the findings from the above literature.

2.2 The importance of Conversational Turns in Early Years

2.2.1 The influence of language on child development

A wealth of research links early language exposure with greater linguistic, academic, and social outcomes. Aspects of early language exposure including quantity of words (Caskey, et al., 2014; Chang & Monaghan, 2019; Zimmerman, et al.,2009) and quality of words (Hirsh-Pasek, et al., 2015; Rowe, 2008) have been evidenced to positively correlate with outcomes. Cruz et al. (2012) provide examples of quality language for DC: sentence complexity- a range of grammar including plurals and articles; expansions- repeating and correcting child's utterances; recasting- repeating a sentence with more detailed or correct language and the use of open-ended questions. In 1995, a significant study was undertaken that estimated by the age of 3, a child from a lower Socio Economic Status (SES) background had heard 30 million words less than children from a higher SES background - the impact of this was that not only did children from a lower SES background have a resulting smaller vocabulary, they also learnt new words at a slower rate (Hart and Risley, 1995). Although this study focused on comparisons between children from different SES backgrounds, it has been repeatedly evidenced that accessing a low quantity and quality of words is detrimental to child development for HC (Rowe, 2008; Rodriguez & Tamis-LeMonda, 2011) and DC (Szagun & Stumper, 2012).

2.2.2 The influence of Conversational Turns on child development

A conversational turn is an episode of joint attention which uses language back and forth in turn. According to MacWhinney & McTeague (2004) joint attention is a shared

experience between a child and partner and is an essential skill for social, language and speech development.

Turn taking during joint attention episodes begins during play in the infant and toddler years and is a prerequisite skill to becoming an effective communicator (MacWhinney & McTeague, 2004). As a child develops, turn taking in play develops into conversational turns. A non-profit organisation called Language Environment Analysis (LENA) work internationally using talk technology and data driven programmes to transform children's futures and their technology is widely used in language research (Marchman et,al 2021; Suskin et, al. 2013). LENA state that a CT occurs when 'an adult speaks and a child follows, or vice versa, with no more than five seconds in between'.

Since Hart and Risley's research (1995), newer evidence has come to light (Fedorenko et al*.,* 2012; Romeo et al.,2018) that suggests it is in fact access to CTs, rather than quality or quantity of language that has a bigger impact on language and outcomes. The newer evidence will be discussed in the following paragraphs.

Evidence from studies of brain activity by Romeo et al. (2018) showed that CTs are important for activation of language areas in the brain (the Broca's area) - a link between types of language exposure (not just the quality or quantity) and linguistic / cognitive / neural mechanism development was established. The relationship between language experience and language skills was assessed by using Magnetic Resonance Imaging (MRI) to determine activation of the Broca's area. It evidenced that it was CTs experienced by children that determined greater activation of the Broca's area, independent of other variables assessed; including a child's SES, cognitive ability or sheer number of adult words and child utterances.

The work of Fedorenko et al. (2012), established how the Broca's area supports working memory, executive functioning, action perception and cognitive control. This adds to an evidence base that CTs have a strong influence on the development of the brain areas that govern language, and it is CTs and interactions that are a specific determiner of developmental outcomes including linguistic outcomes (Romeo et al*.*, 2021) and literacy outcomes (Merz et al.,2020).

2.2.3 The influence of Conversational Turns on language

There is an established relationship between the Broca's area and language, speech production and the Theory of Mind (ToM) network that is essential in using language to create utterances with an awareness of the listener (Hagoort, 2014).

The findings around the link between CTs, the Broca's area and language scores adds further weight to other research into the link between CTs and language development in the early years. King and Dockrell (2014) found that in a nursery setting, HC's interaction rates were positively correlated with greater scores on the Clinical Evaluation of Language Fundamentals Pre-School, Second Edition (CELF-P-2 UK). Duncan et al. (2019) examined to what extent pre-kindergarten language environments were associated with the vocabulary skills of HC. Receptive vocabulary skills were assessed on pre-kindergarten HC at a mean age of 4.77 years, using the Peabody Picture Vocabulary Test – 4 (PPVT; Dunn & Dunn, 2007). It was found that CTs were more robustly associated with children's vocabulary skills than the adult words they heard. In both these studies and with Romeo et al. (2018) it is the CTs that are the biggest determiners of linguistic outcomes independent of other variables examined.

During adult / child CTs, the link between CTs and linguistic outcomes may be related to the child being placed in the 'zone of proximal development' by the adult. According to Taumoepeau and Ruffman (2008) this is when a caregiver's language is challenging enough that a child is learning but not too challenging for them to access. Zimmerman et al. (2009) describe this process as a feedback loop which allows adults to hone their own speech to optimal complexity whilst ensuring the child has understood. This links back to the work of Cruz et al. (2012) in Section 2.2.1 which describes quality language and its positive impact on language development.

2.2.4 The use of language during Conversational Turns

The complexities of CTs are reliant on understanding and using language. According to Ibertsson et al. (2009a, 2009b) a conversation is an activity that both partners co-construct utilising the ability to consider a partner's prior contribution as well as preparing for future contributions. This co-construction is therefore dependant on the child having enough language to employ conversational contingency and add information to the previous utterance.

In Early Years settings, language is frequently used for CTs within play and by just 30 months old a typically developing child will use language to script, explain and label complex play with social themes using imaginary objects, people and settings; as per findings by Casby (2003).

2.2.5 Occurrence of conversational turn taking in Early Years settings

In the UK, the Early Years Foundation Stage (EYFS) statutory framework provides Early Learning Goals (ELGs) to be achieved by the end of reception (EYFS: Department for Education (DfE), 2017.) The following ELGs in the statutory framework relate directly to the use of CTs:

> Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions
>
> Make comments about what they have heard and ask questions to clarify their understanding
>
> Hold conversations when engaged in back-and-forth exchanges with their teachers and peers.
>
> (DfE,2021: page11)

By the end of Reception children are expected to be able to initiate and engage in CTs with adults and peers using well-formed sentences, a range of connectives, descriptive vocabulary and debate skills (Development Matters: Department for Education, 2017).

2.3 What is currently known about deafness and Conversational Turns?

2.3.1 The impact of deafness on language delay

A range of evidence shows that DC are more likely to have lower than expected language levels as a result of a wide range of factors including: the quality and quantity of maternal language input (Des Jardin & Eisenberg, 2007); late identification of deafness (Yoshinaga-Itano et al., 1998); timing of early intervention (Moeller, 2003) and the challenges of developing joint attention (Lieberman et al., 2014).

For spoken language to develop, there is a necessity of joint attention, two minds focusing on one context, (Moore and Dunham, 1995) and a transfer of language through auditory linguistic input that names or describes it (Moore and Dunham, 1995). This is an instant barrier for DC, as Cruz et al. (2012) noted that children who experience significant auditory deprivation are unable to access this auditory linguistic input, placing them at risk for difficulties with oral language.

Therefore, for DC, it is known that their spoken language may develop at a slower pace (Swanwick & Watson. L. 2005, Meinzen-Derr et al., 2018), with more limited access to the conventions of language including through incidental learning.

Deaf children are potentially entering Early Years settings with less expressive and receptive spoken language. With reduced language and language systems, it may then be assumed there is less prior knowledge for a child to draw upon when entering the complex task of CTs.

2.3.2 Research relating to deafness and conversations

2.3.2.1 Deaf Children in education

To engage in conversations, children require both a language system and the pragmatic skills to develop the language into a sustained and satisfying conversation (Paatsch & Toe, 2013). Children are required to either initiate a conversation or respond appropriately to a peers' initiation.

Researchers have explored how DC interact with HC and changes in audiology and education over the last few decades mean this research needs to be regularly reviewed.

The British Association of Teachers of the Deaf (BATOD) share quantitative and qualitative research and reports on DC in education. BATOD report that whereas historically, DC have been educated in specialist d/Deaf schools or specialist d/Deaf provisions, as amplification has improved, children have had better access to an oral language system and education, and more DC are now educated in a mainstream provision than specialist– 65% in 2019 and 77% in 2022 (CRIDE 2019, 2022). Therefore, newer research needs to reflect that DC are now spending more time around HC in a mainstream provision.

The majority of DC will be following the National Curriculum, expected to be in line with their hearing peers and achieve the same attainment targets. Of interest to this study are the attainment targets for obtaining a Good Level of Development (GLD) and the Communication and Language attainment targets in the Early Years Foundation Stage (EYFS). In 2016, the NDCS Right From the Start Campaign highlighted that 72% of pre-school DC are failing to achieve their GLD and are not in line with HC.

2.3.2.2 Research on children who are deaf and their interactions

Given that an attainment gap exists between DC and their hearing peers in Communication and Language ELGs, what does research suggest the impact of deafness is on interactions and CTs?

Research from Canada in 2010 by DeLuzio and Girolmetto analysed the frequency, type and modality of initiations during group play in a mainstream Early Year setting, amongst DC and HC, with an average age of 4 years and 7 months. This Canadian research is included in this review as in the UK the same age children are within the EYFS and it took place in an inclusive mainstream setting. They noted the number of initiations showed no significant difference between DC and HC, however it was the type of initiation that differed, with DC tending to 'Wait and Hover' more than HC. This strategy was rarely successful and did not lead to an interaction. In addition, the DC were invited to interact less often than HC, took part in shorter lengths of interaction and were in fact systematically excluded from interactions through fewer responses and invitations to interact. One can therefore assume that the DC had less opportunity to engage in CTs and therefore accessed less language within peer interactions.

Paatsch and Toe (2013) undertook a comparison between the pragmatic abilities of DC and HC, aged 8 to 12 in Australia. The comparison, although not Early Years includes children who were supported in a specialist unit alongside their mainstream provision (as per this study), and involved both formal assessment and observations of conversations that were then coded to include number of turns, number of topic initiations and mean length of turns. The researchers noted a lack of conversational contingency (sharing the topic and adding information to prior utterances) which as evidenced previously is the back and forth required to correct errors, develop language and the Broca's region. This research therefore suggests that challenges in CTs persist beyond the Early Years for DC.

2.3.2.3 Research relating to deafness and conversational turn taking in Early Years

The following databases were used to find relevant research: University of Hertfordshire's Study Net and Google Scholar. In addition, a search engine was used to find relevant information outside of journals (Google); and the following four websites that include a wealth of information on the development of DC and HC: BATOD; NDCS; LENA and Harvard Centre on the Developing Child. The following keywords were applied: deaf early years; interactions; hearing impaired; conversations; conversational turns; deaf children interaction; deaf children early years; turn taking outcomes; conversation and language levels. Relevant articles and research were identified and from these I have extracted key themes and findings that directly relate to the interactions and CTs of DC in early years.

Shirin (1982), undertook a study of DC in a mainstream school in America, across the ages from 6 to 11 and identified that DC interacted less frequently with peers than did HC.

Spencer et al. (1994), undertook a study in American Day Care Centre (which would be considered an Early Years provision in the UK) and identified that the initiations of DC were more likely to be ignored by their peers and a tendency for children to interact with peers of the same hearing status. Similar results were found by Keating and Mirus (2003) in their American study of 7 and 8 years old in a mainstream school- across learning sessions and during break times-they noted that not only were DC more frequently ignored by their peers but when they were responded to the vocal interactions lacked quality linguistic content and were brief.

In a two-year study, Preisler et al. (2002), analysed communication exchanges in natural play settings of children between the ages of 2 and 6 (at the point when the study started) in a Swedish pre-school. The findings showed there was no symbolic communication between the preschool DC (who were all implanted) and their hearing peers and additionally, the DC tended to take a non-communicative role when they did play.

Batten et al. (2014), a British study, produced a systematic review of the literature on the social interactions between DC and HC. Although the search criterion applied

included studies with children aged 4 upwards, the studies usually spanned a range of ages and were not limited to age 4 and 5, which could still be considered Early Years. It found that across the literature the deaf child's communication competency, age and level of mainstreaming were positively associated with peer interactions but found evidence that suggested DC tend to be more withdrawn and less collaborative than their hearing peers.

2.4 Justification for current study

This study aims to address gaps from the above literature to determine if any link can be found between CTs and receptive vocabulary and attainment for DC in Early Years, specifically achieving the expected level of development in Communication and Language. Previous studies have investigated conversational skills of DC during structured tasks, this study however seeks to compare deaf and hearing children through Continuous Provision which is largely unstructured. Given that the majority of the day in Early Years setting are not in structured tasks, it is crucial to understand how DC are accessing CTs within this type of environment.

It also aims to build on the research by the NDCS Right from the Start (2016) campaign, to determine if DC are still less likely to achieve their ELG and what a potential cause of this may be.

3. Method

3.1 Introduction

This chapter describes the methods used to gather and analyse data to compare variables in the conversational turns (CT) and attainment of deaf children (DC) and hearing children (HC).

3.2 Methodology

The study uses an Action Research approach that combines analysis of data from observation and assessment. Observations of children's interaction with peers and adults alongside results from a standardised language assessment and attainment levels provide quantitative data from three different methods. Gathering multiple sets of quantitative data allows a more in-depth insight into the posed question of how DC interact- as per Cremwell (2013) who highlights that combining approaches allows this. This triangulation of data can provide a deeper insight (Robson, 2007) as well as acting as a fact- checking system.

3.2.1 Research approach

The intent of this study is to determine if DC are initiating and engaging in successful CTs talking as frequently as their hearing peers, identifying if a link exists between the frequency of these turns and receptive vocabulary and their EYFS attainment levels. The researcher later intends to recommend whether changes to educational practise need to be developed or recommend further research in order to support the development of their CTs- this study therefore takes an investigative approach highlighted by Baumfield et al. (2012) within Action Research.

3.2.1.1 Action Research

Numerous researchers recognise Kurt Lewin as the founder and creator of 'Action Research' (Clem, 1993; Baumfield et al., 2012; Efron & Ravid, 2013; Saez Bondia & Cortes Gracia, 2021). According to Baumfield et al. (2012) Lewin described the process as research that will help the practitioner to provide clarity about a complex situation. The Literature Review highlighted that CTs for DC are complex and involve language, joint attention, Theory of Mind, pragmatic skills and initiation strategies.

The use of an ‘Action Research’ model therefore is appropriate to delve further into this complex issue.
Somekh and Zeichner (2009) specify that a variation of Action Research is school reform. Hohmann & Mamas (2015) further expand on school reform within the context of early childhood and suggest Action Research involves a series of linked enquiries. This study mirrors this with its linked questions that lead on from the initial enquiry:

- How frequently do DC initiate and engage in CTs in early years settings in comparison to HC?
- Is there a link between number of CTs and receptive vocabulary/ CTs and EYFS attainment?
- If an imbalance is evidenced for DC, does further work need to be done to reflect this?

This study aims therefore to identify if there is an imbalance between CTs between CD and HC; Wickes et, al. (2008) state that Action Research address issues that are of real concern to people: in this case the researcher was made aware of the gap in attainment between DC and HC reaching a Good Level of Development (GLD) in the EYFS (as per the Literature Review) and her own experience working with DC in Early Years. From this initial observation the study developed and as per Baumfield et al. (2012) - a belief that Action Research leads to further questions- the researcher aimed to determine if further work is needed to develop reforms in how teachers support the language, communication and interaction skills of DC. Ultimately as per Bell (2014) the researcher wanted to use the findings to influence the best possible practice in education, and as per Efron & Ravid (2013) to use the findings to lead school changes where necessary and be an agent for educational renewal.

3.2.2 Quantitative Research Methods

According to Voght (2005) research involves the systematic investigation of a topic aimed at uncovering new information. File et al. (2016) further break down the components of a Quantitative Research model which is mirrored in the current study: A researcher explores ‘what we know’ in the Literature Review highlighting research on CTs, language development and outcomes for DC and how previous studies were conducted. To add a new instalment to ‘what we know’ the Literature Review

highlights the gap in knowledge regarding the link between CTs and Early Year educational and linguistic outcomes for DC; to ensure ‘objectivity’ the methodology was defined prior to data gathering; statistical analysis subsequently includes descriptions, correlations and comparisons; finally the ‘discussion of patterns within the findings’, how they relate to case examples and reflections and limitations.

This study, with its observations of children and analysis of their behaviours to draw conclusions, utilises a positivism paradigm. According to Nel, Dr J. (2016):

> The positivist paradigm of exploring social reality is based on the idea that one can best gain an understanding of human behaviour through observation and reason.

The researcher acknowledges the drawbacks of this approach and it’s limitations on generalising beyond the participants. As per Hohmann, U., & Mamas, C. (2015), human beings do not form homogenous groups and act with individual agency, however what will be observed and analysed within this study will provide a good starting point for further research.

3.2.3 Sampling

Alder and Clark (2008) explain that sampling involves learning about a large group without having to study each member individually. Baumfield et al. (2012) expand on this by stating that to ensure a study with a positivism paradigm (as mentioned previously) has rigour and warrant, the sampling should be neutral and balanced.

To ensure a neutral and balanced approach, there is an argument that probability sampling is the appropriate approach as it implies the use of random selection.

Draugalis & Plaza (2009) state that before any data is collected, coverage, sampling, and non-response rates all need considering. When considering the samples for this study the researcher took the following into account:

- The study took place during the Covid 19 Pandemic- as per government guidelines Gov.UK (2021) schools across England had a contingency framework in place to reduce and manage Covid 19 outbreaks including schools adopting an Essential Visitor Policy and as rates continue to increase

again, visiting a range of schools across different sites is unviable for the researcher.

- Coverage must include a group of DC matched in some variables for HC. A mainstream school with a provision for DC would have an appropriate number for the study to take place. As the researcher is based in a provision for DC it would also ensure the researcher has access to personal data required for the study.
- Non-response rates would be prevented as the researcher would be able to approach parents and carers face to face during school drop off and pick up.

As a result of the above, although probability sampling allows for better generalisation of findings (Alder & Clark 2008) it would not have been possible for this study at the current time.

Therefore, the researcher employed a non-probability convenience sampling approach which Setia (2016) highlights is based on researcher's choice and a population that are accessible and available. As per Banerjee & Choudhury (2010), the researcher used her own discretion in obtaining samples and as the research was taking place in her own workplace, it was appropriate to work with DC on her current caseload.

The researcher is aware that there is belief that non-probability sampling may reduce the generalizability and accuracy of the findings as per Draugalis & Plaza (2009). However, as the researcher wanted to understand a specific issue in greater detail for one particular population (DC in early years settings) this was the chosen approach rather than focusing on ‘generalizability’ of these results (Setia 2016). Additionally, Bryman (2012) highlights that convenience samples are a valid method of initial research and can spur further research- as per the Action Research approach mentioned previously by Baumfield et al. (2012) this study may facilitate further research into the education of DC in the Early Years.

3.3 Setting

3.3.1 Mainstream school

The setting for this research is a mainstream primary school with a specialist Deaf Education Centre (DEC). The School Ofsted report is ‘Good’ and the report highlights

“Teaching for pupils with a hearing impairment is excellent”. The school has capacity to educate up to 450 children including up to 18 children who are also part of the DEC (these children must have an Educational Health Care Plan- EHCP) and 18 DC who are not part of the DEC (these children do not have an EHCP).

The researcher felt it was appropriate to use a school that had a range of DC as DC are not homogenous. The annual Consortium for Research into Deaf Education (CRIDE) surveys show that: DC attend a range of educational settings, only 15% have an EHCP and access to a Teacher of the Deaf (ToD) varies by child and by Local Authority. Within the setting for this study DC will reflect some of these variables. Table 1 below provides an insight into the variety of DC in the UK and within this study- collated from Cride (2019) and NDCS (2019).

Table 1 Variety of Deaf children nationally

	All DC in the UK (CRIDE, 2019)	DC in the setting for this study
DC with an EHCP plan	15%	60%
DC without an EHCP	85%	40%
DC with an additional SEND	22%	40%
Part of specialist provision	5%	60%
Not part of a specialist provision	64%	40%
Mild level of deafness	26%	20 %
Moderate level of deafness	31%	20%
Severe level of deafness	8%	0%
Profound level of deafness	12%	60%

The researcher acknowledges that the percentages in this study do not mirror the national picture: this study is limited to using one setting during the Covid-19 pandemic. However, closer parallels are drawn for DC who are not part of a specialist provision, or have a mild or moderate level of deafness.

Although non-probability convenience sampling has been employed for this study- the above data shows that the participants do have varying needs.

3.3.2 Deaf Education Centre

All DEC children have EHCP's, are members of their mainstream class and receive a variety of individualised support from either ToDs, Communication Support Workers (CSW) or specialist TAs for DC. During the observations DEC specialist staff were not present- this ensured that all interactions recorded were independent and reflected the natural autonomous behaviour of DC.

The DEC children used a variety of communication methods including: Oral Communication (OC), Total Communication (TC) and British Sign Language (BSL). The DC in this study all use OC.

3.3.3 Mainstream Deaf Children

Across the mainstream school are a further 18 DC who do not have an EHCP and receive advisory support only from a ToD – referred to as non-DEC.

3.3.4 All children and staff in school

All DC (DEC and non-DEC), HC and staff in the school are taught Deaf Awareness and BSL.

3.4 Participants

The DEC DC were known to the researcher and did not need identifying further- the researcher had access to their audiology, language and attainment levels as part of the researcher's job role.

The non-DEC DC were also known to the researcher who had access to their audiology but not their language and attainment levels.

There are two criteria tables that participants need to fit into: DC and HC as shown in Table 2 and Table 3.

Table 2 Deaf Children Participant Criteria

Deaf Children Participant Criteria	
1.	Have a permanent bilateral hearing loss

2.	Consistently use Personal Amplification Device (PAD)
3.	Attend a mainstream Early Years setting
4.	Use Oral Communication (OC)

Table 3 Hearing Children Participant Criteria

Hearing Children Participant Criteria	
1.	Had a clear response on the NHSP and no known audiology concerns
2.	Attend a mainstream Early Years setting

The researcher felt that it was appropriate to allow both DC and HC to be included who have an additional Special Educational Needs/Disability (SEND) and that these would be specified for in the characteristics. The researcher has made this choice as CRIDE (2022) suggest around 23% of DC have an additional SEND.

Table 4 Characteristics of Deaf Children

Participant	Age in months	Degree of hearing loss	Current Amplification	DEC vs non-DEC	Additional SEND	Gender
A	52	Profound	Bilateral Cochlear Implant	DEC	Yes	Male
B	64	Profound	Bilateral Cochlear Implant	DEC	No	Male
C	68	Severe/ Profound	Hearing aids	DEC	No	Male
D	60	Mild	Hearing aids	Non-DEC	No	Male
E	60	Moderate	Hearing aids	Non-DEC	Yes	Female

Table 4 states the characteristics of the DC -of these participants all parents agreed to take part in the study. Participant C was subsequently removed from the study- his surgery date for cochlear implantation was moved suddenly and the researcher felt it inappropriate to make observations prior to 'switch on' and during the early rehabilitation process. This would impact his ability to identify and recognise sounds including speech understanding and affect his ability to interact using language. Any language assessments therefore would also not be a true reflection of his abilities.

Table 5 states the characteristics of the HC -of these participants all parents agreed to take part in the study.

Table 5 Characteristics of Hearing Children

Participant	Age in Months	Clear response on NHSP	SEND	Gender
A1	52	Yes	Yes	Male
B1	62	Yes	No	Male
C1	64	Yes	No	Male
D1	60	Yes	No	Male
E1	61	Yes	Yes	Female

3.5 Observations

Observations took place on six occasions across three different early years scenarios:

1) Continuous Provision Morning Session (resources and areas for children to explore freely with or without an adult)
2) Lunch hall
3) Continuous Provision Afternoon Session

Each observation lasted 20 minutes in line with the work of Deluzio & Girolmetto (2010) - although no reasoning was provided for this length of time in their study- as this study has similar structure the researcher felt it was an appropriate length to ensure a balanced picture is obtained. In total each child was observed for 120 minutes. To ensure the observations captured a wider scope, three different scenarios were used rather than just a morning observation for example.

3.6 Data Collection

3.6.1 Initiation and engagement in conversational turn

According to Language Environment Analysis (LENA) a CT occurs when ‘an adult speaks and a child follows, or vice versa, with no more than five seconds in between’. As such each episode of CT taking counts as ‘one’ - in line with the work of Duncan et al. (2019). For continuity the researcher chose to follow a further definition by LENA (2021) that a break of 5 seconds between the turn taking will initiate a ‘new’ CT taking.

The researcher did a preliminary observation prior to commencement of the study to trial the observation schedule during which the researcher noted that DC appeared to be experiencing more failed initiations and engagement attempts from others. Therefore, to provide a broader perspective of DC’s experiences the researcher

amended the observation schedule to include both successful and failed attempts at CTs as well as capturing data as to who made the initiations e.g., adults or other children. In the Literature Review work by DeLuzio & Girolmetto (2010) highlighted that DC were excluded from interactions- the researcher felt it would be beneficial to determine if this was the same in the UK and a trend that had continued.

Appendix A illustrates the final Observation Schedule used for each participant.

3.6.2 Language Measure

Receptive vocabulary was assessed using the British Picture Vocabulary Scale 3rd Edition (BPVS III; Dunn et al., 2009). The BPVS III measures children's receptive vocabulary by asking children to identify the picture of the target word presented (spoken). It has a broad range of content areas including actions, animals, toys, emotions, nouns, verbs or attributes, across a varying range of difficulty and is intended for children aged 3 to 16. It gives an age-related standardised score along with percentiles and is used frequently by ToDs to assess language to determine any gap between a child who is deaf and their hearing peers.

The BPVS III was administered within 30 days of observations to ensure the data collection was concurrent and is used routinely by ToDs.

3.6.3 Attainment Measure

To determine attainment levels, each child's EYFS end of year data was obtained- specifically looking at Communication and Language. The attainment targets were either: Met Expected Standard or Not Met Expected Standard. For those children at the end of the EYFS phase, data was also collected to determine if they had met their Early Learning Goal (ELG) in Communication and Language.

3.6.4 Analytic Plan

The data was entered into and analysed using SPSS Statistics 27, 2020 (IBM) to determine the mean and standard deviation for each variable on the observation schedule. Non-parametric statistical methods for analysis were then used to investigate the data further.

The non-parametric Mann Witney U test was used to determine if the scores of the two groups (DC and HC) were significantly different on each variable.

A correlation co-efficient was calculated using the Spearman's Rank (rho) two tailed test to discover the strength and direction of the correlation between CTs and receptive vocabulary.

The results from the data analysis can be found in the Results chapter.

3.7 Ethics

Data was in part collected within the remit of the researcher's work. Consent was sought from participants' parents/carers to use the data within this research. A Participant Information sheet was provided alongside Consent forms due to the participants being minors. Ethical approval was granted by the Research Ethics Committee, University of Hertfordshire. See Appendix B for copies of the approved documentation.

3.8 Reflexivity

As researchers bring their own experiences and personal beliefs to each study, it is essential to be reflexive and ensure any bias is minimised to allow greater critical evaluation of research findings and conclusions (Smith & Noble, 2017)

Consequently: The researcher is a Qualified ToD who has worked within peripatetic services and specialist Deaf provisions. The researcher is aware that educational outcomes for DC nationally remain lower than their hearing peers and is an active member of the local Children Hearing Services Working Group (CHSWG) and the NDCS to strive for change. Consequently, the researcher was interested in researching gaps and imbalance between the Early Years experiences of DC and HC.

3.9 Conclusion

This chapter described the research approach, outlined methods utilised in this study and the limitations to the chosen research approach. A small number of participants were carefully targeted and recruited however Covid-19 restrictions were a significant factor in the small sample size resulting in an unequal gender distribution. The results from the observations, standardised language assessments, attainment outcomes and analysis of data will be discussed in the Results Chapter.

4. Results

4.1 Introduction

Results presented here are taken from observations of 8 participants over two hours in their Early Years Foundation Stage (EYFS) setting, 4 DC and 4 HC, the number of successful and failed CTs that occurred, results from each participant's BPVS III language assessment and end of year attainment within the EYFS. The raw data can be found in Appendix C. Various elements will be presented for the results of this research.

Descriptive statistics are used to provide the mean and related standard deviation for each variable – the differences between groups are then presented using the non-parametric Mann Witney- U test determine if the difference reached statistical significance- this test was chosen due to low numbers in the study.

Results from the BPVS III language assessment and end of year attainment data were analysed to determine the strength of the correlation with the total Conversational Turn Count (CTC) each participant experienced.

4.2 Subjects Characteristics

Each deaf child was paired with a hearing child to establish a deaf/hearing dyad. The characteristics of each dyad were matched as closely as possible within the EYFS cohort at the participating school. The characteristics matched were: age, gender, additional SEND and type of additional SEND- these variables were controlled to increase the likelihood that any differences found between the two groups of children could be linked to deafness. To make each dyad easily identifiable they were named Child A and Child A1. All children with a number (A1, B1, C1, D1, E1) are HC. Table 6 presents the characteristics of each dyad.

At the start of the project a total of 10 children were to participate- as mentioned in the methodology one deaf child then received cochlear implants and was unable to take part. This dyad was then not used for the study (Child C and C1).

Table 6 Subjects Characteristics

	Year and completed months as of 1st Feb 2022	Age in months	Deaf	Additional SEND and type	Male/Female
Child A	4 years 4 months	52	Yes	Physical	Male
Child A1	4 years 4 months	52	No	Physical	Male
Child B	5 years 4 months	64	Yes	No	Male
Child B1	5 years 2 months	62	No	No	Male
Child C	5 years 8 months	68	Yes	No	Male
Child C1	5 years 4 months	64	No	No	Male
Child D	5 years	60	Yes	No	Male
Child D1	5 years	60	No	No	Male
Child E	5 years 1 month	61	Yes	Social, Emotional and Mental Health	Female
Child E1	5 years 1 month	61	Yes	Social, Emotional and Mental Health	Female

4.3 Presentation of results

The raw data for CTC and BPVS III scores are plotted in bar charts in Figure 1 and 4.2 below, with dyads presented next to each. Colour coding is used to highlight which children are deaf and which are hearing.

Figure 1 Comparison of total CTC for each child and dyad

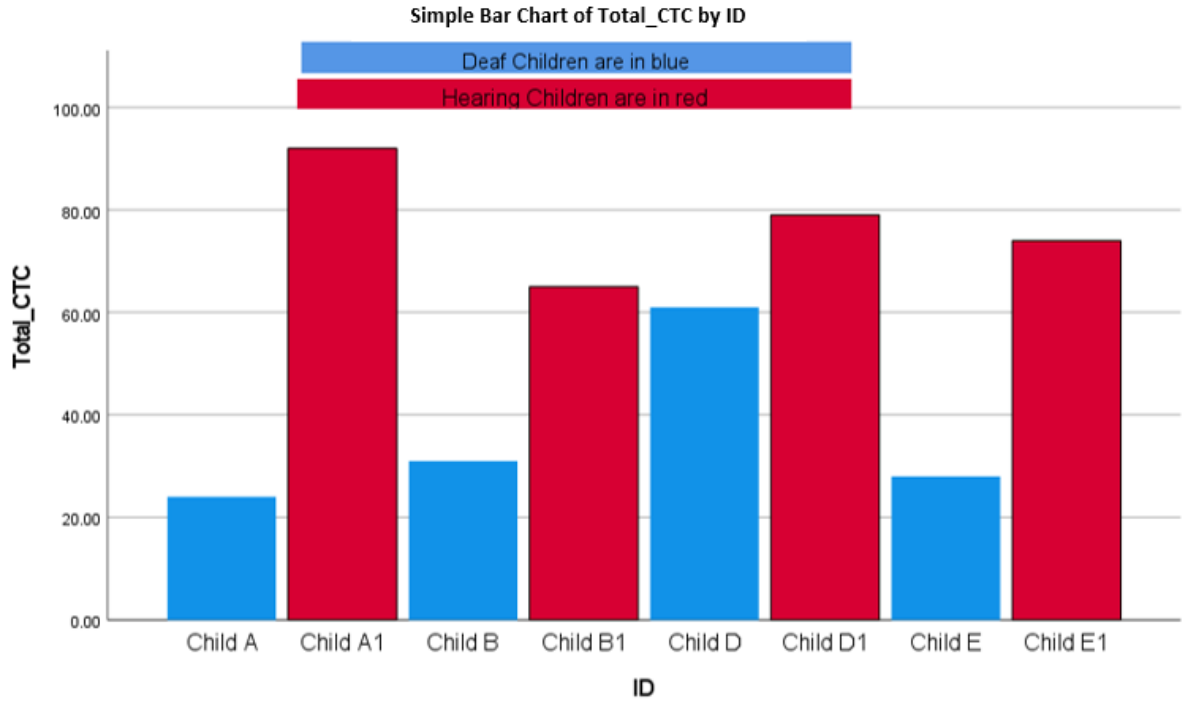


Figure 1 shows that although each dyad was matched for variables, their total CTC were different across all observations- within each dyad the HC (Child A1, B1, D1, E1) experienced more CTs than the DC (Child A, B, D, E). Further analysis of this data is presented in section 4.4.1.

Figure 2 Comparison of BPVS III Score for each child and dyad

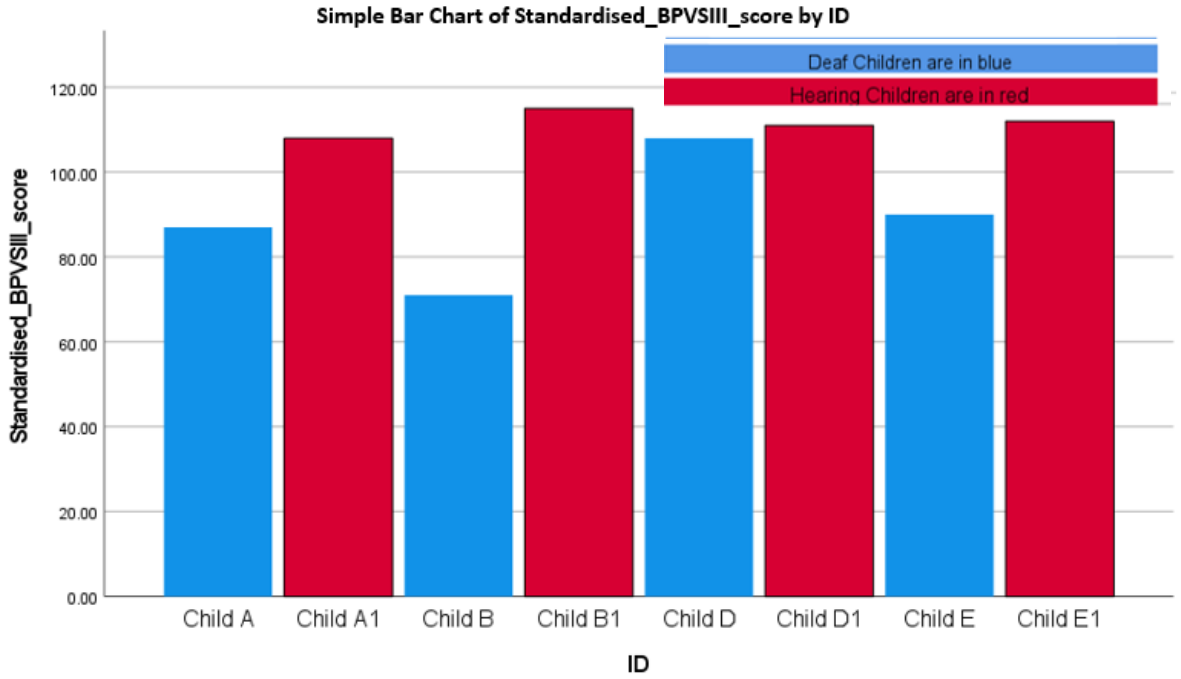


Figure 2 shows that although each dyad was matched for variables, their Standardised BPVS III scores were different, with HC (Child A1, B1, D1, E1) scoring higher than their counterpart DC dyad (Child A, B, D, E). Further analysis of this data is presented in section 4.5.

4.4 Descriptive Statistics and Statistical Analysis between groups

To analyse the differences between groups, the children's results were grouped into two categories (DC and HC). Other conversational turn variables were counted to allow for a greater depth of understanding of the conversational experiences of DC in comparison to HC. The following sections will 1) present the descriptive statistics for each variable and 2) discover if the differences in the means between the two groups were statistically significant.

The Mann Witney U Test provided a probability value (p-value) to determine if the differences reached significance. Prasad (2019: 1086) highlights the important of determining the p-value in analysing data by simply stating 'Are the observed results likely to have occurred by chance or design?'. Where the resulting p-value is less than 5% ($p < 0.05$) the results are considered sufficiently unlikely to have occurred by chance (Neyman & Pearson, 1933). With a result of $p<0.05\%$ the null hypothesis (that assumes there is no difference between the two groups) can then be rejected.

4.4.1 Total Conversational Turn Count Descriptive Statistics

Table 7 shows the descriptive statistics for the CTC data for the groups - further analysis of this data can be found in 4.4.1.2.

Table 7 Descriptive Statistics for 'Total CTC' for each group

Total CTC	Deaf Children	Hearing Children	All Children
Number of children	4	4	8
Minimum	24	73	24
Maximum	59	92	92
Mean	36.000	77.5000	56.7500
Standard Deviation	16.9115	11.2694	25.866

Figure 3 shows a bar chart that depicts the numerical values of the variables CTC. This illustration highlights that overall DC had a lower mean CTC in comparison with their hearing peers.

Figure 3 Mean 'Total Conversational Turn Count' for each group

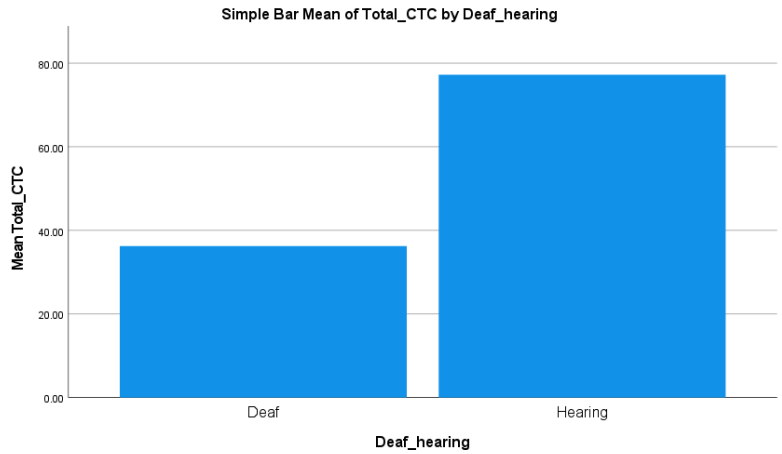
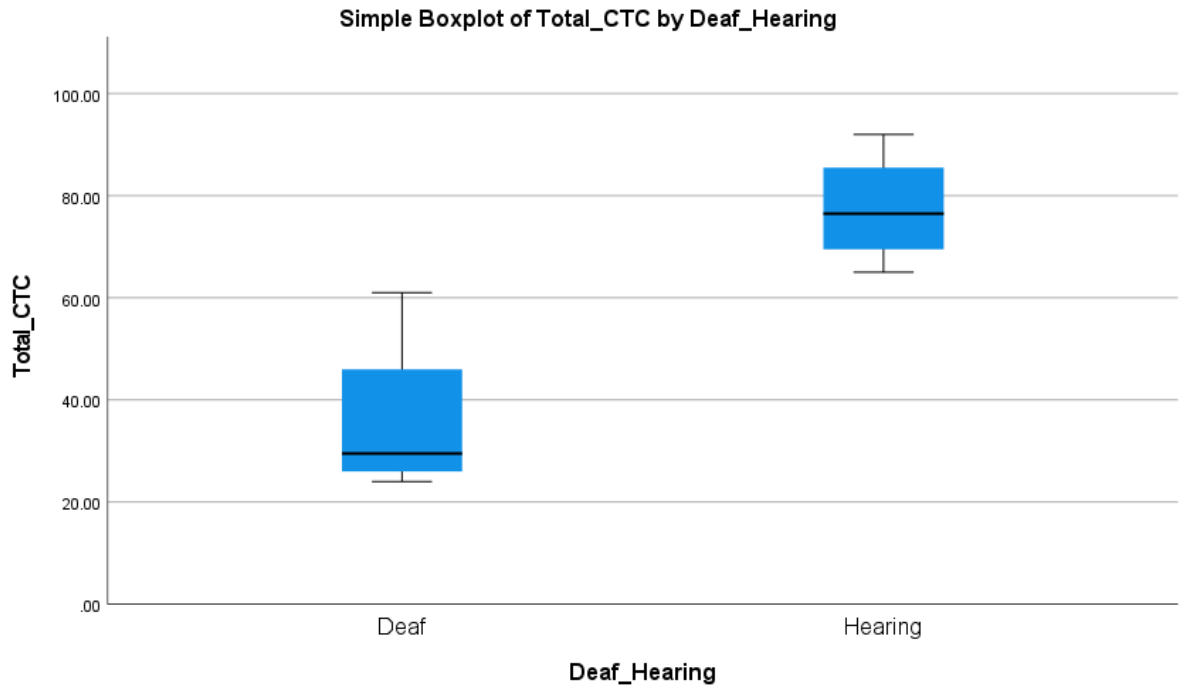


Figure 4 shows the median and interquartile range of Total CTCs for DC and HC.

Figure 4 Mean and Interquartile range of 'Total Conversational Turn Count' for each group



This data shows that the mean total CTC for DC is lower (36 across 2 hours of observations) than the mean for HC (77.5 across 2 hours of observations). HC in this study had a greater level of participation in CTs- in this case over double the amount- thus allowing them greater access to language, social skills, incidental learning and the development of cognition skills relating to CTs as referenced in the Literature Review.

4.4.1.2 'Total Conversational Turn Count' Statistical Analysis

A Mann-Witney U test revealed a significant difference in the 'Total Conversational Turn Count' variable for DC (md = 29.5, n =4) and HC (md = 76.5, n=4), U=16, z=2.309, p=0.029. The difference suggests that the results did not happen by chance and the difference between the groups has reached statistical significance.

4.4.2 'Total Failed Attempts by Others' Descriptive Statistics

Observations were made over the 2 hours to record the frequency that children failed to engage with attempts at a CT made by others (other children or other adults in the setting).

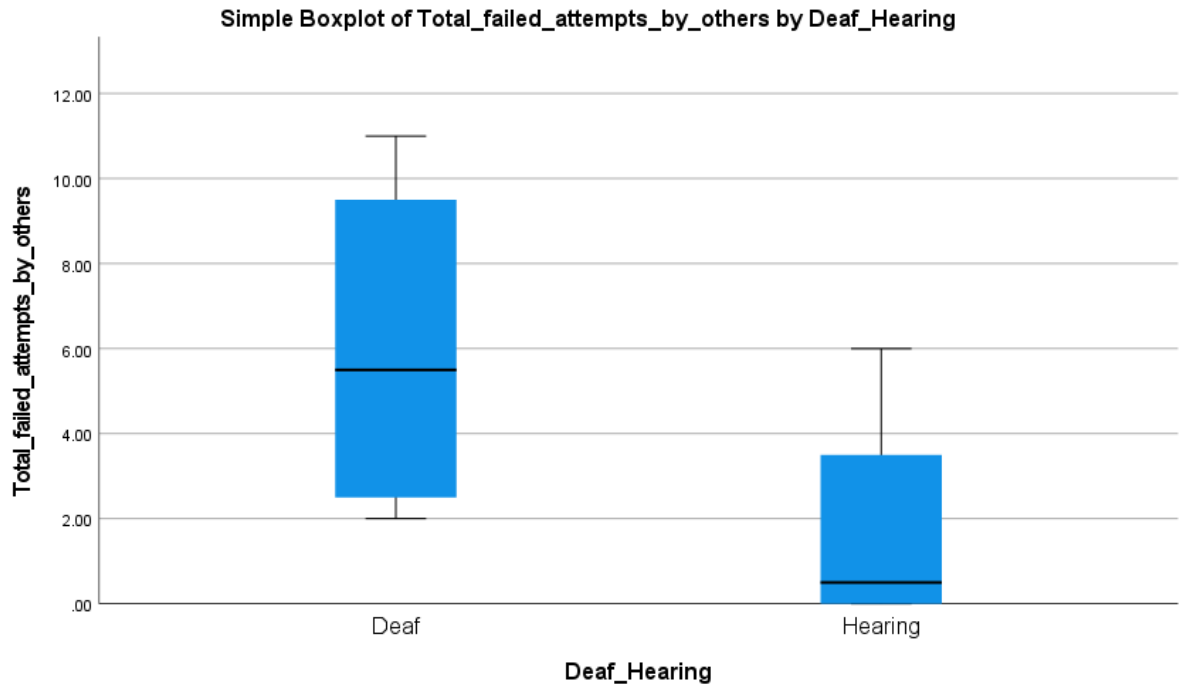
Table 8 shows the descriptive statistics for the variable of 'Failed Attempts by Others' for each group- further analysis of this data can be found in 4.4.2.1.

Table 8 Descriptive Statistics for 'Failed Attempts by Others' for each group

Failed Attempts by Others	Deaf Children	Hearing Children	All Children
Number of children	4	4	8
Minimum	2	0	0
Maximum	11	6	11
Mean	6.000	1.7500	3.8750
Standard Deviation	4.2426	2.8722	4.051

Figure 5 demonstrates the mean and interquartile range of the number of failed attempts at CT from others. DC failed to engage with these attempts on average 6 times across the 2 hours of observation - HC failed at these attempts an average of 1.75 times across the 2 hours.

Figure 5 Mean and interquartile range of 'Failed Attempts by Others' for each group



4.4.2.1 'Total Failed Attempts by Others' Statistical Analysis

A Mann-Witney U test revealed no statistically significant difference in the 'Total Failed Attempts by Others' variable for DC (md = 5.5, n =4) and HC (md = 0.5, n=4), U=2, z=-1.742, p=0.114.

However, it is worth noting that the DC did experience more failures overall- in this case over three times higher and consideration should be given to how this impacts their overall CTC levels, language access and emotional wellbeing.

4.4.3 'Total Failed Attempts by Participant' Descriptive Statistics

Observations were made to record the frequency that children failed in attempts to start a CT with another child or other adult in the setting.

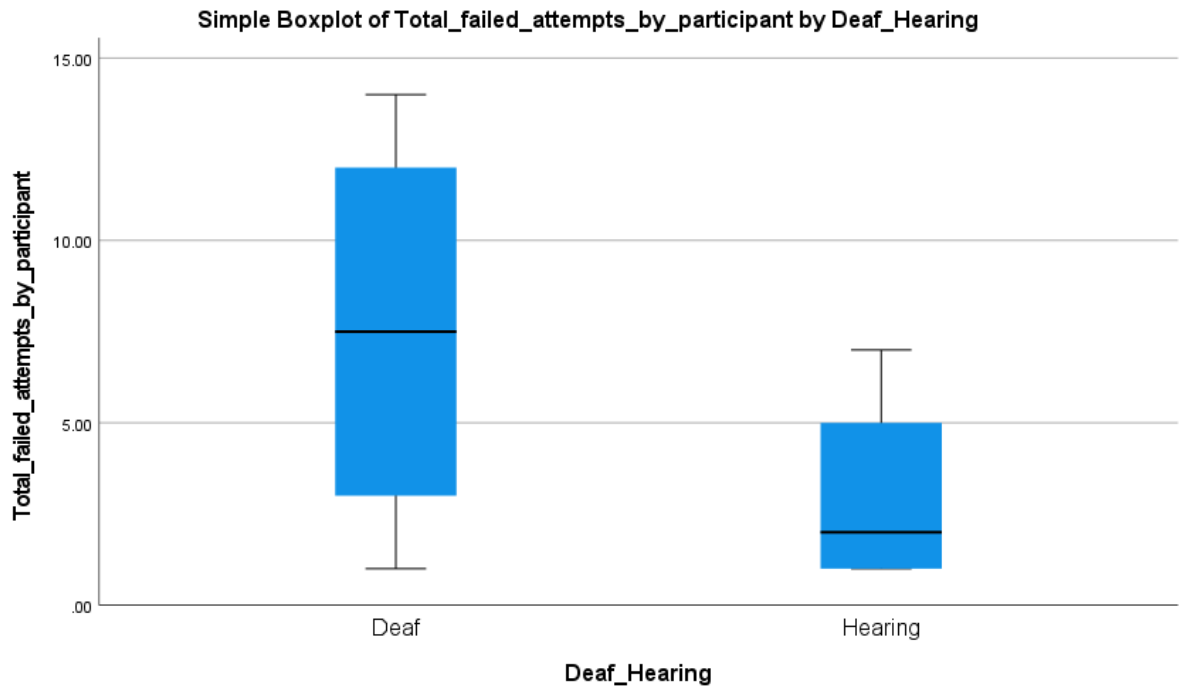
Table 9 shows the descriptive statistics for the variable of 'Total Failed Attempts by Participant' for each group- further analysis of this data can be found in 4.4.3.1

Table 9 Descriptive Statistics for 'Total Failed Attempts by Participant' for each group

Total Failed Attempts by Participant	Deaf Children	Hearing Children	All Children
Number of children	4	4	8
Minimum	1	1	1
Maximum	14	7	14
Mean	7.500	3.000	5.2500
Standard Deviation	5.6862	2.824	4.8032

Figure 6 demonstrates the mean and interquartile range of the number of 'Total Failed Attempts by Participant'.

Figure 6 Mean and interquartile range of 'Failed Attempts by Participant' for each group



DC failed at these attempts on average 7.5 times across the 2 hours of observation- HC failed at these attempts an average of 3 times across the 2 hours.

Of interest is the wider range for DC (range of 1 - 14) compared with HC (range of 1 – 7). This would suggest there is a wider range in behaviours in DC than in HC.

4.4.3.1 'Total Failed Attempts by Participant' Statistical Analysis

A Mann-Witney U test revealed no statistically significant difference in the 'Total Failed Attempts by Participant' variable for DC (md = 5.5, n =4) and HC (md = 0.5, n=4), U=2, z=-1.742, p=0.237.

However, it is worth noting that the DC did experience more failures overall- in this case over three times higher and consideration should be given to how this impacts their overall CTC levels, language access as well as their emotional wellbeing.

4.4.4 Total failed CTC Descriptive Statistics

The results from the 'Total Failed Attempt by Others' and 'Total Failed Attempts by Participant' were combined to give an overall 'Total Failed CTC' number over the 2 hours of observations. This was done to gain a better understanding of how

frequently DC are experiencing failure. These results are presented in Table 10 with further statistical analysis presented in 4.4.4.1.

Table 10 Descriptive Statistics for 'Total Failed CTC' for each group

Total Failed CTC	Deaf Children	Hearing Children	All Children
Number of children	4	4	8
Minimum	9	1	1
Maximum	16	8	116
Mean	13.5000	4.7500	9.1250
Standard Deviation	3.6968	3.3040	5.6930

Figure 7 Mean and Interquartile range of 'Total Failed Conversational Turn Count' for each group

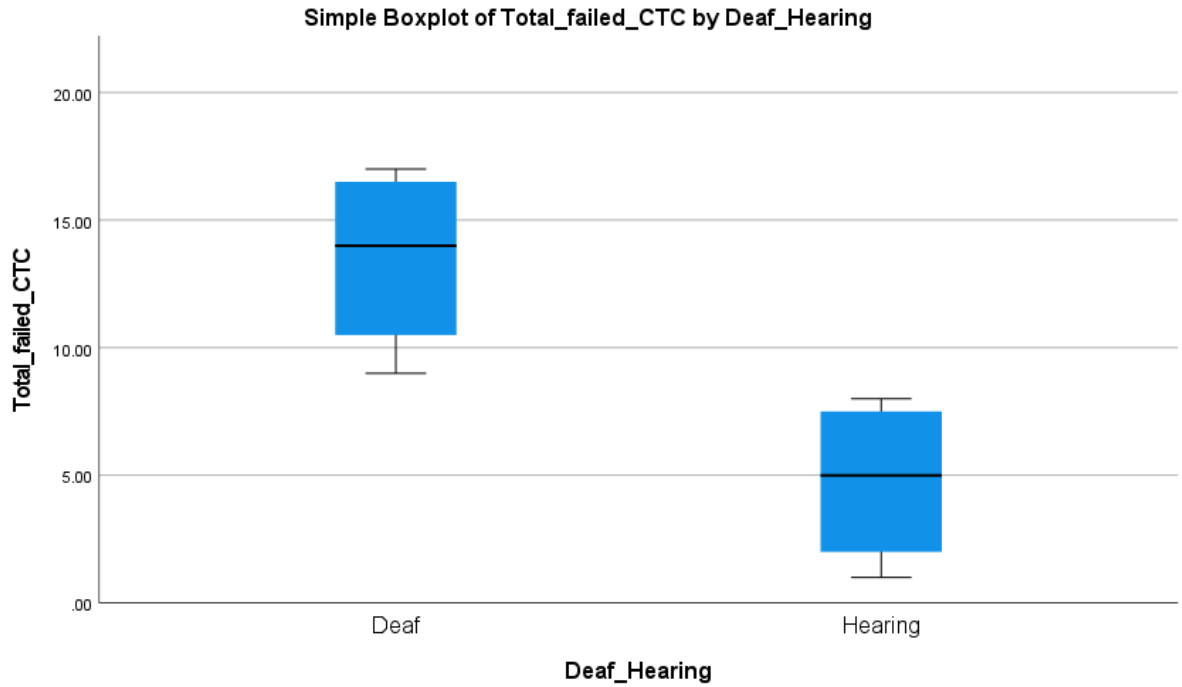


Figure 7 illustrates the mean and interquartile range total failed CTC for each group. For DC the mean was 13.50 across 2 hours of observations, in this study that was almost three times higher than the mean for HC which was 4.75. Of note is that the range of failed CTC for DC (range of 9 -17: 8) in comparison to CWND (range of 1-8: 7) was not that dissimilar.

However, although the range was similar, DC were likely to experience more ‘Total Failed CTC’ and the impact of this on access to language, social skills practise and emotional well-being should be considered.

4.4.4.1 ‘Total Failed CTC’ Statistical Analysis

A Mann-Witney U test revealed a significant difference in the ''Total Failed CTC’ variable for DC (md = 14, n =4) and HC (md = 5, n=4), U=0, z=-2.309, p=0.029. The difference suggests that the results did not happen by chance and the difference between the groups has reached statistical significance.

4.4.5 ‘Participant/Adult/Child initiations of Conversational Turns’ Descriptive Statistics

For all successful CTs recorded in the 2 hours, an observation was made to analyse who had made the successful initiation- this was either the Participant, an Adult in the setting or another Child in the setting.

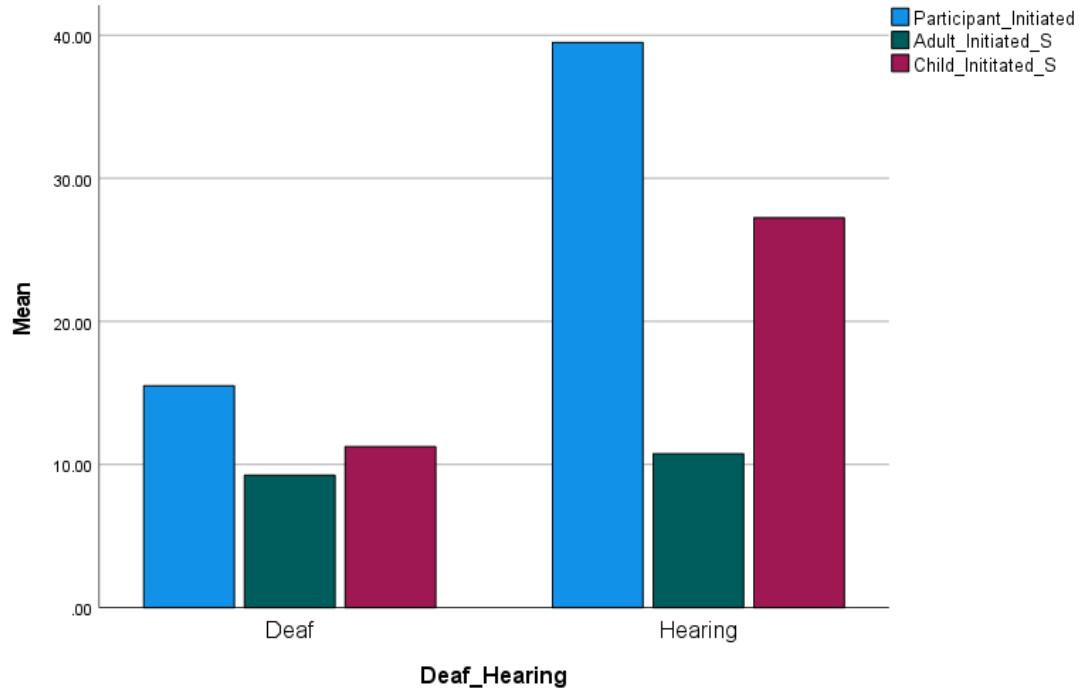
These results are presented in Table 11 (below) with further statistical analysis presented in 4.4.5.1.

Table 11 Descriptive Statistics for 'Participant/Adult/Child Initiated' Descriptive Statistics for each group

	Deaf Children	Hearing Children	All Children
Total CTC Participant initiated			
Number of children	4	4	8
Minimum	7	31	7
Maximum	28	53	53
Mean	5.5000	39.5000	27.5000
Standard Deviation	9.3273	9.5742	15.5287
Total CTC adult initiated			
Number of children	4	4	8
Minimum	3	6	3
Maximum	13	18	18
Mean	9.2500	10.7500	10.000
Standard Deviation	4.3493	5.1234	4.4721
Total CTC child initiated			
Number of children	4	4	8
Minimum	4	21	4
Maximum	30	34	34
Mean	11.2500	27.2500	19.2500
Standard Deviation	12.5797	5.5602	12.4183

Figure 8 is a bar chart depicting the observations that captured who was initiating the successful CT the Participant was involved in- it was either the Participant themselves (Participant initiated), an adult in the setting (Adult initiated) or a different child in the setting (Child initiated).

Figure 8 Mean totals of 'Participant/Adult/Child initiations of Conversational Turns' for each group



DC initiated conversations a mean of 15.5 times across the 2 hours of observations in comparison with HC who initiated almost three times as frequently, with a mean total of 39.5 times across the 2 hours.

Other children in the setting initiated interactions more frequently with HC (mean 27.25 times across 2 hours of observations) than they did to DC (mean 11.25 times across 2 hours of observation). This shows that in this study children were more likely to initiate a CT with a hearing child, than a deaf child. If this pattern was repeated over a school week HC would experience approximately 443 CTs with peers, whereas DC would experience 183 CTs. This is a significantly reduced opportunity for incidental learning from peers.

Of interest is that Child D who is deaf, experienced the highest successful interactions from other children and adults, had the highest BPVS III scores and also achieved his ELG.

The mean for adult interactions was similar for both groups (9.25 for DC and 10.75 times for HC) across the 2 hours of observation. However, if this pattern was repeated over a school week DC would experience approximately 150 CTs with adults, whereas HC would experience 175 CTs which would allow a more opportunities for access to language within the 'zone of proximal development'.

4.4.5.1 'Participant/Adult/Child initiations of Conversational Turns' Statistical Analysis

For the 'Adult Initiated' variable there was no statistical significance in difference between groups: for DC (md = 9.25, n =4) and HC (md = 10.75, n=4), U=7.5, z=-145, p=0.886.

For the 'Child Initiated' variable there was no statistical significance in difference between groups: for DC (md = 11.25, n =4) and HC (md = 27.25, n=4), U=13, z=1.452, p=0.200.

Of note were the results for 'Participant Initiated Total' variable, which reached statistical significance in the difference between groups: for DC (md = 15.5, n =4) and HC (md = 39.5, n=4), U=16, z=2.309, p=0.029. The difference suggests that the results did not happen by chance.

This implies that whether a child is deaf or hearing plays a significant role in their frequency of attempts to initiate CTs.

4.5 BPVS III scores Descriptive Statistics

To gain an assessment of receptive language the BPVS III was administered to each child in a one-to-one setting by the researcher (who is qualified to deliver these assessments). The subject must select from a choice of four pictures after the target word has been spoken- this allows a non-verbal response and prevents any confusion created due to poor articulation of speech.

Prior to the assessment all DC had their hearing aids / cochlear implants checked to ensure optimum listening environments.

The average result for the BPVS III is a standardised score of 100 with the following descriptors for results (these will be referenced in the Section 4.5.1): 40-70 is an extremely low score, 70-85 is a moderately low score, 85-100 is a low average, 100-

115 is a high average score, 115-130 is a moderately high score and 130 and above is an extremely high score (BPVS III Manual, 2009, p.12).

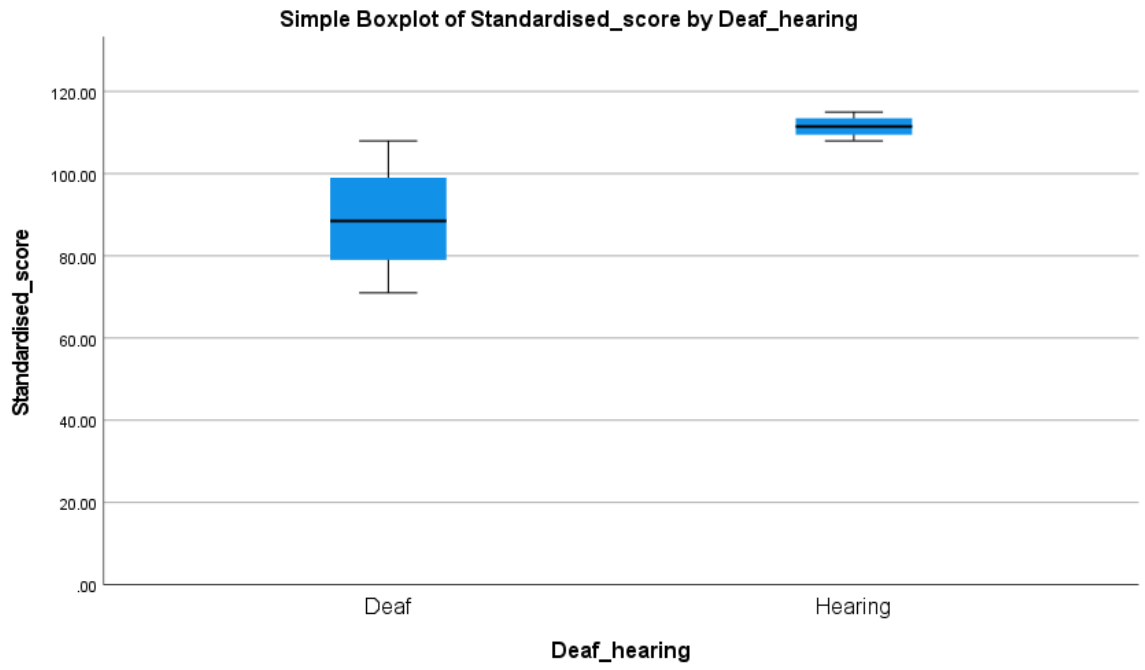
Table 12 Descriptive Statistics for 'BPVS III Score' for each group

BPVS III Score	Deaf Children	Hearing Children	All Children
Number of children	4	4	8
Minimum	71	108	71
Maximum	108	115	115
Mean	89.0000	111.5000	100.2500
Standard Deviation	15.16575	2.88675	15.70941

Figure 9 shows the mean and interquartile range for DC and HC for their BPVS III Score. Along with the results in Table 12 this shows that HC as a group obtained a higher BPVS III Score that the DC.

Of note in Figure 9 is the wider score range for DC (range 87-108: 21) in comparison to HC (range 108-115: 7). Upon closer inspection, the child who is deaf that scored the highest standardised score, was also the child with the highest CTC (Child D).

Figure 9 Mean and Interquartile Range of 'BPVS III scores' for each group



The mean standardised score for DC was 89 whilst the mean standardised score for HC was 112 (rounded to the nearest whole number). This shows that HC in this study had higher receptive language levels than DC. Given that the previous data in

Figure 9 shows HC are experiencing more CTs, it would follow that this has potentially allowed them to learn more words through these interactions.

4.5.1 Score range descriptions of BPVS III scores by groups

Figure 10 Group comparison of score range descriptions for each group

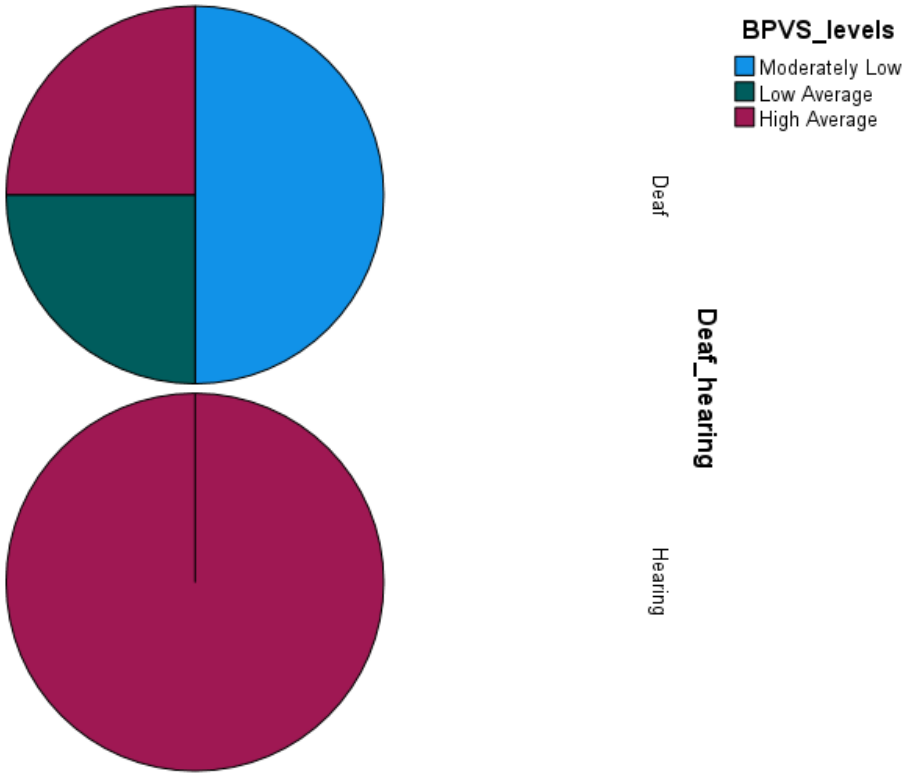


Figure 10 illustrates the comparison between DC and HC and their score range descriptions on the BPVS III. The child's standardised score on the BPVS is plotted into a range description: Extremely low/ moderately low/ low average/ high average/ moderately high score/extremely high score.

Two DC had a standardised score that was moderately low (Child A and B), one DC had a standardised score that was low average (Child C) and one had a standardised score that was high average (Child D).

Child A had the lowest CTC and the lowest language score, and again it was Child D that had a higher CTC and the highest standardised score.

In comparison all four HC had a standardised score that fell within the high average. For DC, 75% of children were below the mean of 100 standardised score, for HC 100% were above the mean of 100 standardised score.

4.5.2 BPVS III scores Statistical Analysis

A Mann-Witney U test revealed a statistically significant difference in the 'BPVS III Scores' for DC (md=89.00, n=4) and HC (md =111.50 , n= 4), U=15.5, z= 2.178, p=0.029.

These results suggests that whether a child is deaf or not plays a significant role in their receptive language, with deafness being related to lower language levels than hearing children of the same age.

4.6 SEN impact Descriptive Statistics

To determine if the differences between groups could be linked to other variables the data was analysed using SEN as a variable instead of deafness. Table 13 provides descriptive statistics with further analysis in section 4.6.1.

Table 13 Descriptive Statistics of CTC and BPVS III Score across SEN variable

	SEN	No-SEN	All Children
Total CTC			
Number of children	4	4	8
Minimum	24	31	24
Maximum	92	79	79
Mean	54.5000	59.0000	56.7500
Standard Deviation	33.7589	20.1990	25.8664
BPVS III Score			
Number of children	4	4	8
Minimum	87	71	71
Maximum	112	115	115
Mean	99.2500	101.2500	100.2500
Standard Deviation	12.5797	20.3695	15.70941

The bar chart in Figure 11 shows the results for each group (SEN and No SEN) for BPVS III Scores and in Figure 12 shows the results for the same groups for CTC.

Figure 11 Bar chart of BPVS III Score by SEN variable

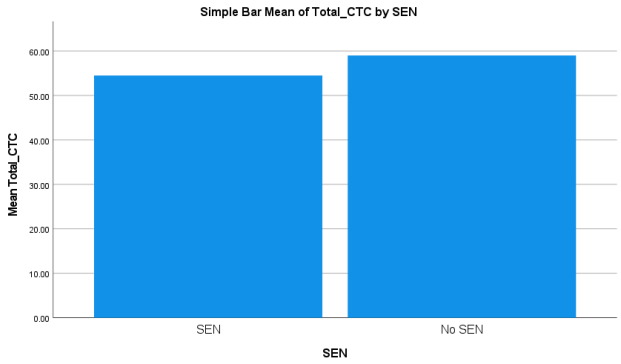
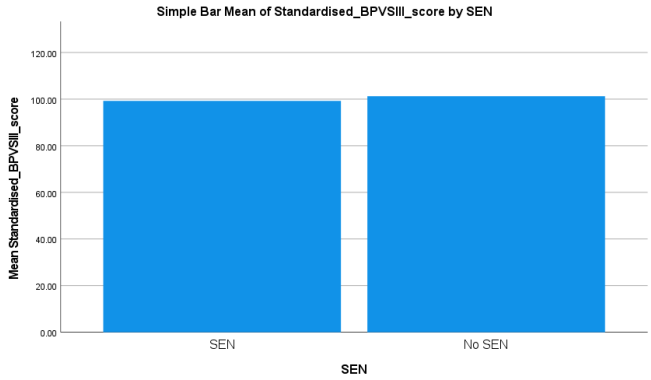


Figure 12 Bar chart of Total Conversational Turn Count by SEN variable



These charts suggest that SEN did not have a significant impact on how frequently children were initiating and engaging in CTs in this study or on the BPVS III scores as the results for each group are similar.

4.6.1 SEN impact Statistical Analysis

To further analyse the differences between the results for children with SEN or No SEN, A Mann-Witney U test was used with the results presented in Table 14 below.

Table 14 Statistical Analysis of CTC and BPVS III Score for SEN variable

SEN/No SEN	U	z	p
CTC	9	.289	0.773
BPVS III Score	9.5	.436	0.686

When comparing the results by SEN, the difference in mean total CTC between groups was only 4.5 and did not reach statistical significance.

The difference in mean of the BPVS Score was 2 when comparing results by SEN and did not reach statistical significance.

In contrast, both results did reach statistical significance when compared by DC and HC.

These results back up the suggestion from Figure 11 and 12 that SEN did not play a role in Total CTC or BPVS III Score and that whether or not a child is deaf is the most significant factor in this study.

However, it should be noted that the type of SEN in this study may account for this- the additional SEN types were SEMH (Social, Emotional and Mental Health) and Physical Difficulties (PD) rather than a Communication and Language need.

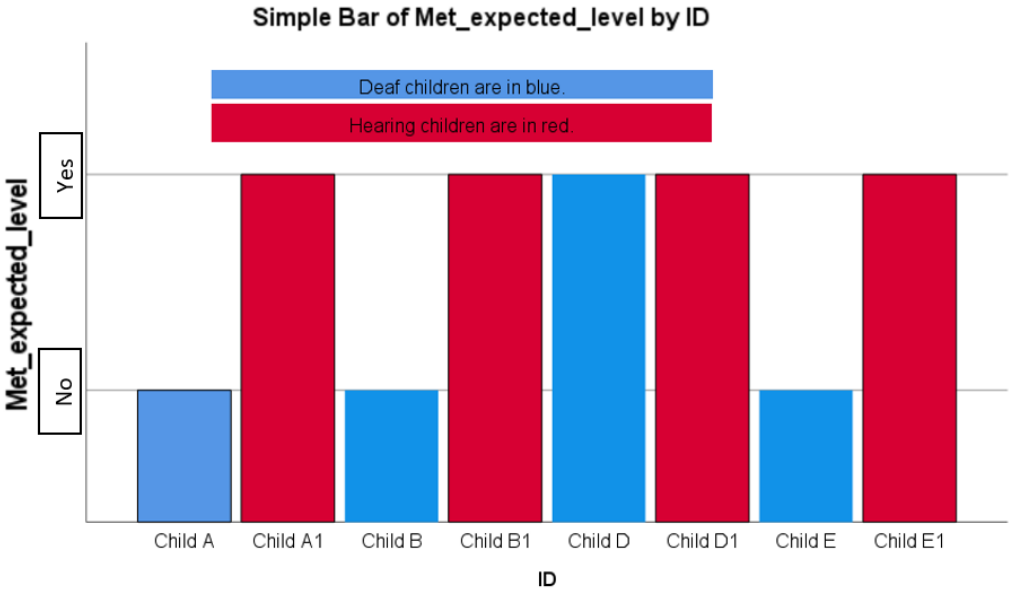
4.7 Attainment Levels

End of year data was collected for all children, to determine if they had met the Expected Level of Development in Communication and Language within their phase of the EYFS. The data is presented below in Table 15 and in Figure 13.

Table 15 Attainment levels for Communication and Language in the EYFS for each child

Child	Communication and Language	
	Not yet met the expected standard	Has met the expected standard
A	•	
A1		•
B	•	
B1		•
D		•
D1		•
E	•	
E1		•

Figure 13 Bar chart of children who met the expected level of development



The bar chart in Figure 13 shows that for all DC, it was only Child D who reached the expected level- as per previous findings Child D had the highest CTC and the highest BPVS III score.

The data also showed that 100% of HC, both with and without additional SEND, met the expected standard. However, for DC only 25% met the expected standard.

4.8 Correlations

This study sought to determine the strength of correlation between two sets of variables for DC and HC:

1) Total CTC and BPVS III Scores (language levels)
2) Total CTC and Attainment levels

The bar chart in Figure 14 (below) depicts the Total CTC for children who did/did not meet the expected standard and Figure 15 depicts the BPVS III Score for the same groups.

Figure 14 Bar Chart of Children who met Expected Level and their total CTC

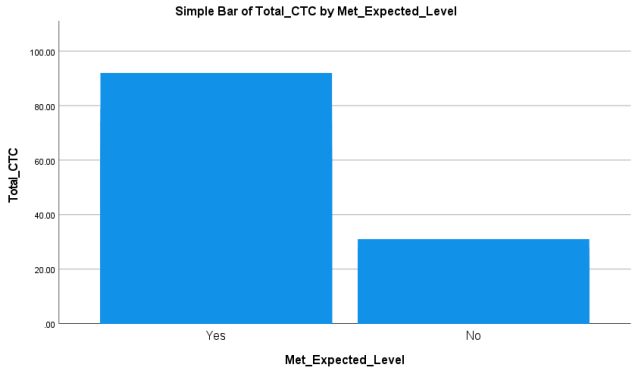
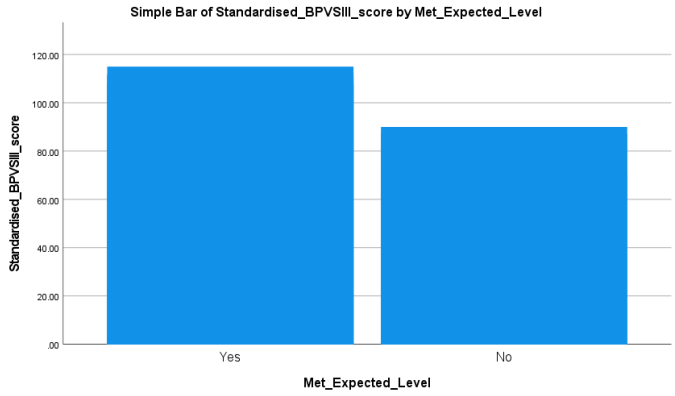


Figure 15 Bar Chart of Children who met Expected Level and their BPVS III scores



The bar chart shows that children who had the highest total CTC and BPVS III scores also reached the expected level (Yes) and that a potential correlation between these variables exist. To identify any correlations, the Spearman's Rank (rho) was used and a correlation co-efficient was calculated to determine the strength and direction of the associations between variables.

4.8.1 Correlations between Total Conversation Turn Counts and BPVS III Scores

Figure 16 Spearman's Rank Scatterplot Graph Total CTC and Standardised BPVS III Score

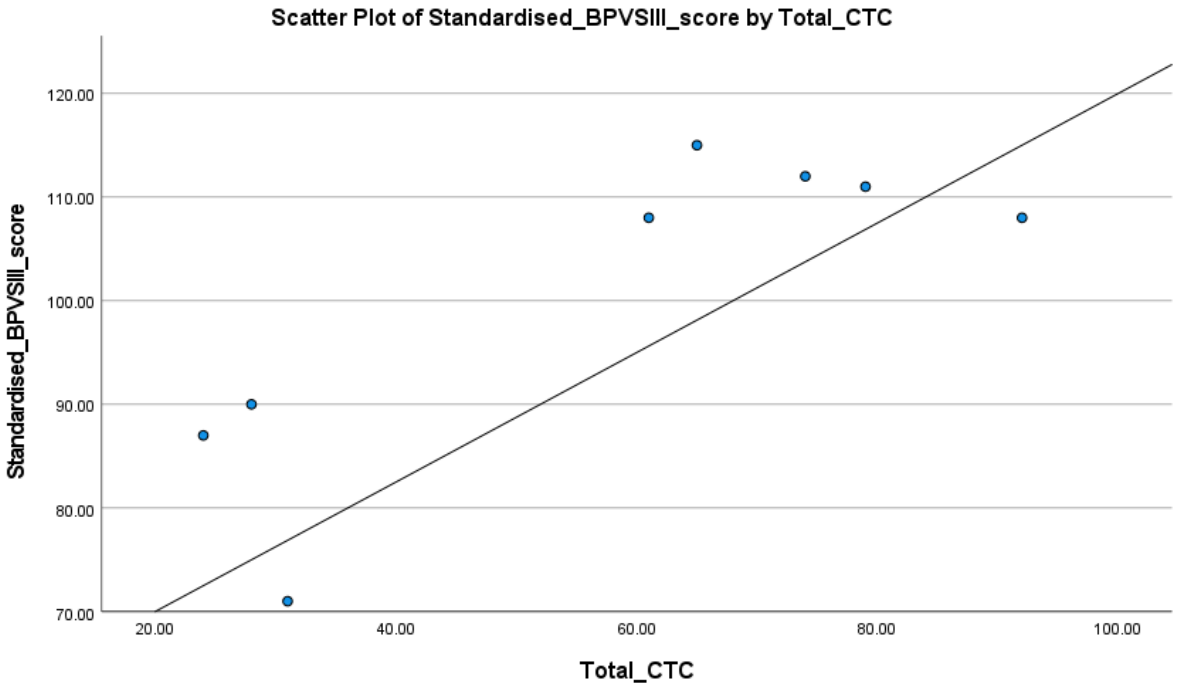


Figure 16 shows a scatterplot of the relationship between CTC and BPVS III score- the upward trend indicating a positive relationship.

As per Pallant (2020), in small sample sizes there may be a moderate correlation that does not reach significance at the p = <0.5 level - the p value in this study would be strongly influenced with such a small sample size (n = 10) and so the non-parametric Spearman's Rank was used to obtain a correlation co-efficient and the *r* number.

To determine the strength of the relation the *r* number can provide a good interpretation as suggested by Cohen (1988):

small	*r* = .10 to .29
medium	*r* = .30 to .49
large	*r* = .50 to 1.00

In this instance the *r* = .647 indicating that there is a large strength in the relationship between CTC and BPVS scores. This would back up the findings of the HC and Child D, who all had higher CTC and were within the High Average BPVS III Scores.

4.8.2 Relationship between Total CTC and Attainment

Due to the nature of the data, a Mann-Witney U test was used to determine the relationship between CTC and attainment. It revealed a statistically significant difference in the 'Total CTC' for children who met the expected standard (md=74.20, n=5) and children who didn't meet the expected standard (md=27.66, n=3), U=0.000, z=-2.249, p=0.024.

This suggests a clear link between children with the highest CTC and being able to achieve the expected level of development. These results also back up the findings of the HC and Child D, who had the top 5 highest CTCs and were the only children to obtain the expected level of development.

4.9 Summary

This study showed that DC are experiencing a lower 'Total CTC' and experiencing more failed CTs - analysis showed a statistical difference between the 'Total CTC' DC and HC experience in their Early Years setting - it also evidenced a statistical difference in the resulting BPVS III scores and attainment levels. It highlighted that in this study DC have lower language levels and lower attainment levels than HC.

It showed that DC are less frequently interacted with than HC by other children, with a small difference in how frequently adults were interacting with DC in comparison with HC (although as previously discussed the difference may have a larger impact on the quantity of language for DC long term).

The study evidenced that HC are initiating successful CTs more frequently and experiencing a higher level of CTs – the difference in the frequency between groups reached statistical difference suggesting that deafness is playing a role in this.

The next chapter will discuss these findings within the context of what is known about DC in education - however given the small sample size in this study, this data does have its limitations. These will be explored in the discussion chapter. Further research involving a wider range of DC would provide further validation of this study.

5. Discussion

Research has shown that for HC a correlation between CTs and early language acquisition including receptive language levels exists (Donnelly & Kid, 2021; Romeo et al., 2018; 2021).

In order to build on existing research this study's main questions were;

- Do DC successfully initiate and engage in CTs as frequently as HC?
- Is there is a correlation between the frequency, receptive vocabulary and attainment levels?

This study is timely given that 77% of DC attend a mainstream Early Years Setting (CRIDE, 2022) and follow the same curriculum as HC with the same attainment targets.

This discussion will initially present the key findings from the data analysis within the context of existing literature, reflect on limitations and discuss future implications of this research.

5.1 Key findings

This study captured the following key findings:

- DC have lower receptive language levels than HC
- DC have lower attainment levels in the EYFS than HC
- DC experience less and initiate less CTCs than HC
- DC experience more failed CT attempts than HC
- A correlation exists between CTC and language/attainment levels for DC

5.1.1 Explanation of findings

To explain the findings, it is necessary to review the literature around DC's experiences in education, social interactions and language levels. Research from the Literature Review will be reflected upon in the context of the findings.

5.2 Barriers for Deaf Children

To draw conclusions around the key findings of this research, the established barriers for DC in education in previous research will be referenced.

5.2.1 Language Delay

In this study DC had statistically lower receptive vocabulary levels than HC in their Early Years. This study builds on other research on reduced language levels for DC in pre-school: Heather et al. (2009) assessed children up to 60 months whereas this study used participants up to 68 months; Tomblin et al. (2015) only assessed hearing aid users whereas this study assessed both hearing aid users and cochlear implants users. As per the literature review, it is known that DC of all ages are vulnerable to language delay (Moog & Geers, 1985; Swanwick & Watson, 2005; Marschark & Spencer, 2010; Lieberman et al., 2014). A systematic literature review by Batten et al. (2014) highlighted that reduced language levels impact on a range of communication skills including: understanding the thoughts and feelings of others; ability to self-regulate especially in relation to attention; impulsivity and emotions; rate of understanding of social rules and overall social functioning. Given that in this study, 75% of the DC were discovered to have lower than average receptive vocabulary - it may be assumed they experienced difficulty with the communication skills above, and this may have caused the lower rate of initiation and engagement in CTs than HC. Interestingly in this study, the only child who is deaf and had average language levels also had the highest number of total CTs out of all the DC.

Stinson and Foster (2000) mused that DC with delayed language skills may have fewer opportunities to engage in extended conversations when compared to their hearing peers, this study provides evidence that corroborates this theory.

Deaf children's lower than average vocabulary levels in this study may create a barrier to them being able to engage in the type of conversations that occur in pre-schools, for example having the required vocabulary to label items being played with, take part in role play and make topic related comments (Craig-Unkefer & Kaiser, 2002).

Multiple recent studies have found evidence of delayed language skills in DC compared with HC (Lund, 2016; Werfel, 2017; Walker et, al. 2019) however what this studied has achieved is to put these language delays into a real life context for DC in the Early Years and link it to the negative impact it has on their educational attainment and social interaction opportunities.

5.2.2 Challenges within conversations

This study evidenced that on average DC are taking part in statistically significant less CTC than HC (mean CTC= 35.75 DC, mean = 78.5 HC). Existing literature provides a variety of reasons why CTs are challenging for DC.

During observations in classrooms, research on DC by Saur et, al. (1986) and Stinson et, al. (1996) highlighted that rapid changes in topics, rapid rates of discussion, changes in speaker, turn taking and more than one student talking at the same time were barriers for DC.

Levinson (2016) highlights that CTs occur within a narrow window of time and require significant speech planning whilst a conversational partner is still completing their turn which may prove particularly difficulty for DC. Research has established that DC are at increased risk for reduced or even clinically significant impairments in Executive Functioning (EF) skills (Botting et al., 2017; Hintermair, 2013; Jones et al., 2019). There is a potential link between slower EF skills and the ability to plan language and responses while still listening and predicting what the rest of the incoming turn will contain.

In the Literature Review, Fedorenko et al. (2012) was referenced to establish the link between CTs, the development of the Broca's area of the brain and well-developed EF ability. The results of this study cannot state which challenge comes first - underdeveloped EF leading to lack of CT, or a lack of CT leading to underdeveloped EF. However the results may suggest that CTs are too difficult for some DC and subsequently may explain why, in this study, DC were less able to respond to others' initiations and made statistically significant fewer initiations themselves.

5.2.3 Speech intelligibility

Balow & Brill (1975) suggest that poor oral skills may discourage social interaction. Stinson & Antia (1999) also reflect that children with clearer speech may participate more actively in class that those whose speech is less intelligible, as it allows for more direct and effective communication. Levinson (2016) evidenced that the conversational response time (gaps between turns) is around 200 milliseconds. If a child has poor speech clarity, tends to stammer or stutter, or speak slower than average, this natural pace for CTs are disrupted and the interaction fails. A Speech

Intelligibility Rating (SIR) was not assessed in this study, however on reflection, a SIR may have provided a reason that DC had a statistically significant increased amount of failed attempts at CTs than HC.

The real-life implications for DC who attend mainstream classrooms is noted by Most (2007); low speech intelligibility increases feelings of loneliness for DC. Nunes et al. (2001) state that if DC are rejected or feel isolated in mainstream schools, their education may ultimately suffer. In this study DC did not reach the same attainment level- future research may benefit from capturing DC's emotional well-being and determining if a correlation exists with attainment levels.

5.2.4 Acoustics

Although standard regulations for noise and reverberation levels exist in education, specified in the Department for Education's Acoustic Design of Schools: Performance Standards (2014) it is well established that within Early Years setting, where children play and learn through Continuous Provision, background levels of noise can be on average up to 80dB (Buch & Fielding, 2001; Kemp, et al*.,* 2013). This means that the Signal to Noise Ratio (SNR) may have been insufficient for DC to hear voices of the peers or teachers attempting to interact with them over the background noise during some of the observations. Future research may benefit from capturing levels of noise during the observations.

DeLuzio and Girolametto (2011) highlight that the most successful strategy for peer interactions is for children to approach and join in on going play- if DC cannot hear the on-going play due to high levels of background noise, this puts them at an immediate disadvantage. Paatsh and Toe (2013) highlight that although technology has advanced in both hearing aids and cochlear implants, it is not yet sophisticated enough to allow DC to overhear conversations as HC do.

The challenges of being unable to hear ongoing play or overhear conversations may play a part in explaining the statistically significant lower rates of initiation by DC in the study.

Cruz et al. (2012) highlighted that DC are at risk for difficulties with language due to being unable to access auditory linguistic input- the increased failed attempts by

others that DC experienced in this study may be attributed to their auditory deprivation with the subsequent consequences being language delay.

5.2.5 Interaction Opportunities

In this study other children initiated interactions with DC less than HC (mean = 11.25 DC, mean = 27.75 CWNHD). In their pre-school study, DeLuzio & Girolametto (2010) found similar results - they compared initiation and response skills of children with Severe to Profound Hearing Loss (SPHL) with HC during group play in integrated preschool programs. Two groups of 12 children were matched on a number of variables and all initiations, responses, and resulting interactions during 20 minutes of group play were transcribed and coded. This current study shares some similarities - dyads were matched on variables, observations took place over a 20-minute time frame and interactions were coded. The difference with this study is that it included mild to profound deafness (not just SPHL) and observations occurred within a non-formal environment (in comparison to DeLuzio & Girolametto who did not include children who were not participating in the environment). However, both studies reached one similar conclusion in particular - that DC were excluded from CTs by their hearing peers.

A potential cause for HC not initiating CTs with DC could be a lack of appropriate feedback from DC - a fundamental challenge for DC may be knowing what to say and how to respond appropriately - as per Hagoort (2014) in the Literature Review an established Broca's Region is essential for ToM and creating meaningful interactions with an awareness of the listener. If less CTs lead to a less established Broca's Region then DC may not have developed the ToM needed to take part in these meaningful conversations. Work by Schick et al. (2007) evidences that DC do have delayed ToM skills and this may provide one reason for the finding. Implications regarding this finding will be presented in Section 9.

Although the rate at which adults initiated CTs with DC was similar to HC (mean = 9.25 DC, mean = 10.75 HC), over a school year this would equate to a difference of 1,000 less CTs for DC with an adult. The Literature Review highlighted the importance of children being within the 'Zone of Proximal Development' for language development (Taumoepeau and Ruffman, 2008) and access to quality language (Cruz et al.,2012). Deaf children are therefore spending less time in this feedback

loop process which may account for their reduced language levels. Implications of this finding on future practise will be discussed in section 9.

Lieberman et al. (2014) was referenced in the Literature Review to highlight the difficulties DC have with joint attention- a conversational exchange is an episode of joint attention which uses language back and forth in turn. If DC are not establishing a shared interest due to a lack of joint attention- there is then no subject for others to build communication around. Implications of this finding on future practise will be discussed in section 9.

5.3 Relationship between Conversational Turns and Receptive Vocabulary

This study has evidenced that a strong correlation exists for DC between total CTC and receptive vocabulary levels. Work has been undertaken on this topic before by Ambrose et al. (2014) which showed that frequency of CTs were correlated with DC's communication outcomes- however the children in Ambrose's study were aged 2 and 3. This study has evidenced that this correlation continues beyond the toddler years.

5.4 Key Findings on Communication and Language Attainment Levels

The NDCS 'Right From the Start Campaign' (2016) highlighted that 72% of pre-school DC failed to achieve a Good Level of Development (GLD)- this study had a similar pattern with 75% of DC failing to achieve the expected level of development in Communication and Language although the sample size was very small. Of the three DC in this study who were at the end of the EYFS, only one obtained an overall GLD (meaning 67% failed to achieve GLD).

A child's overall CTC had a correlation with this achievement, with higher CTC being related to achieving the expected level or not. In this study, DC had lower total CTCs and were less likely to attain the expected level.

5.4.1 Pragmatic language skills and Early Learning Goals

Calderdale & Huddersfield NHS Trust (2012) define pragmatic language skills as: the use and understanding of body language, taking turns in conversation, listening and speaking, use of appropriate volume, speed, intonation and body distance, talking about a topic of interest, introducing a topic, being able to maintain and end conversations, matching the emotion of the other person, repairing conversations,

remembering what the listener already knows, interpreting what the speaker intended, and being concise and getting to the point.

Yoshinaga-Itano (2015) assessed the expressive pragmatic skills of young DC and HC using a 45-item *Pragmatics Checklist.* She found that HC had mastered most of the 45 pragmatics behaviours by 4 years of age- however for DC, they had only mastered 3 of the 45 items by the age of 6 years.

The ELG descriptors in the EYFS (DFE, 2021: page 11) are largely pragmatic skills including:

> Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions.
>
> Make comments about what they have heard and ask questions to clarify their understanding.
>
> Hold conversation when engaged in back-and-forth exchanges with their teacher and peers.
>
> Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.
>
> Offer explanations for why things might happen.
>
> Express their ideas and feelings about their experiences using full sentences.

Of the three DC at the end of the EYFS in this current study, only two reached the required level to obtain their ELG (67%). This may be related to the difficulties DC have with their pragmatic language skills (Yoshinaga-Itano, 2015) and challenges around DC's number and type of requests for clarifications, conversational balance and CT types (Ibertson et al., 2009a, 2009b, Jeans et al., 2000 & Lloyd et al.,2001). Future studies of DC's pragmatic skills in the Early Years would be beneficial to determine the impact they may have.

5.5 Limitations

Although existing research has been used to draw conclusions around the findings, further investigation is needed to determine if these are accurate factors. For

example, acoustics were not recorded during observations and so it is unknown if the SNR was a barrier; SIR data for DC were not assessed or analysed to determine if this was a specific barrier; pragmatic language/ToM was also not formally assessed. Future research should consider adding these variables as well as considering type of deafness and age of identification and amplification.

The observations took place during the Covid-19 Pandemic meaning this study is a small-scale research project limited to one Early Years setting- as such the sample size was very small meaning it is difficult for any statistical result to reach significance and limits how generalisable the results are.

5.6 Implications for Future Practise

One implication of this study is for teachers to consider their current learning environment and what targeted support is given to DC. The first level of support for all DC is the 'Quality First Teaching' (DCSF, 2008) they experience in schools. 'Quality First Teaching' is a practise developed from 'Personalised Learning – A practical guide' (DCSF, 2008) and is the expected approach teachers' adopt to respond to the diversity of children's learning needs including DC. Many local authorities now publish their own 'Quality First Teaching for children with a 'hearing impairment' guidance documents for schools.

A search of 'Quality First teaching recommendation hearing impairment' found only four recommendations to do with language and interactions, out of the thirteen Local Authority guidance's that were read:

- A language programme such as 'Time to Talk' or 'Talking Partners' may support language development for a pupil with a hearing impairment by offering a quiet, small group forum (Wigan Council, 2016)
- Creating opportunities to develop social language in individual and group settings and including time to process and respond (Kent County Council, 2022)
- Partnered play opportunities to improve social skills, interaction, communication skills and self-esteem. Careful monitoring of communication and language programme implementation by qualified Teacher of the Deaf. (West Sussex, 2017)

- Share a book – talking about the pictures, following your child's interest (Bradford, 2022)

Given that evidence continues to show DC are not accessing interactions as frequently as HC and this is impacting directly on both their language levels and attainment levels, the researcher feels more emphasis should be placed on promoting interactions and CTs within Quality First Teaching guidelines to raise awareness that this is a significant barrier for DC.

As other children are initiating contact less frequently, Quality First Teaching guidance should recommend a range of social interventions, Deaf Awareness for peers and the explicit teaching of social skills and interaction strategies for DC - these may include turn taking, sharing, initiating and verbal responses during structured and unstructured activity (Bortoli & Brown, 2000). A focus should also be developing the ToM of DC, through targeted interventions and including strategies in day-to-day practise such as those recommended by Sperandio (2015).

Quality First Teaching should also reflect that given DC experience less CTs with their peers, adults need to play a much more significant role in providing those language rich opportunities and ensure DC are having *more* opportunities to interact with adults, accessing the 'Zone of Proximal Development' and not less as per this study.

5.7 Implications for Future Research

This research has investigated the successful and failed CTs of DC in comparison to HC and the impact of these on language and attainment levels.

Further research on a wider number of DC is necessary to generalise these findings- across different Early Years settings, larger sample sizes, a more balanced gender distribution and different communication modes to determine if this study reflects a wider picture of DC's experience in Early Years. Potentially further research could be carried out in other Key Stages too.

Additional data collection could include age of identification, age of amplification, type of hearing loss, parental interactions and quality of Early Intervention to determine if these play a role in how frequently a Deaf child is taking part in successful CTs.

Wider language assessments to include expressive language and SIR would be beneficial.

Given the higher levels of failed interactions for DC, further research on the impact this has on their emotional well-being would be useful and an important way of capturing the child's voice within this area.

Additionally, to ensure educational practise is established that narrows the gap between DC and HC, it would be beneficial to determine what environments allow DC to have the most successful CT and ensure these are provided.

6. Conclusion

The specific impact of CTs on language and attainment for DC in Early Years settings is an area with very limited research in the UK. Potentially 77% of DC are in mainstream Early Years settings and the ‘Quality First Teaching’ advice given to mainstream teachers on how to best support and develop them has little emphasis on their engagement in CTs with peers or adults.

This study has shown that DC are at risk of experiencing fewer CTs and increased levels of failed CTs, which appears to be impacting on their receptive vocabulary levels and attainment within the EYFS.

Targeted, explicit instruction on language teaching, social and pragmatic skills, Theory of Mind and ensuring frequent opportunities for DC to interact with HC as well as school staff will help to overcome this.

Further research is urgently needed to corroborate the results from this small study and work needs to be undertaken to develop the ‘Quality First Teaching’ advice to ensure it reflects how best to support these essential Early Years interactions between DC and HC including strategies and advice for mainstream teachers.

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Appendices:

Appendix A: Observation Schedule

Type of Activity	Failed attempts by others	Failed attempts by participant	Failed total CTs	Participant initiated total	Adult initiated total	Child initiated total	Total Conversational Turn Count
Continuous Provision (morning)							
Continuous Provision (morning)							
Lunch							
Lunch							
Continuous Provision (afternoon)							
Continuous Provision (afternoon)							
Total overall:							

Appendix B1: Ethics Approval Notification

University of Hertfordshire UH

SOCIAL SCIENCES, ARTS AND HUMANITIES ECDA

ETHICS APPROVAL NOTIFICATION

TO	**Victoria Lowther**
CC	**Lorna Gravenstede; Joy Rosenburg**
FROM	**Dr Ian Willcock, Social Sciences, Arts and Humanities ECDA Chairman**
DATE	**23/11/21**

Protocol number:	EDU/PGT/CP/05292
Title of study:	How frequently do deaf children initiate and engage in conversational turns in early years settings in comparison to hearing peers?

Your application for ethics approval has been accepted and approved with the following conditions by the ECDA for your School and includes work undertaken for this study by the named additional workers below:

no additional workers named

General conditions of approval:

Ethics approval has been granted subject to the standard conditions below:

Permissions: Any necessary permissions for the use of premises/location and accessing participants for your study must be obtained in writing prior to any data collection commencing. Failure to obtain adequate permissions may be considered a breach of this protocol.

External communications: Ensure you quote the UH protocol number and the name of the approving Committee on all paperwork, including recruitment advertisements/online requests, for this study.

Invasive procedures: If your research involves invasive procedures you are required to complete and submit an EC7 Protocol Monitoring Form, and copies of your completed consent paperwork to this ECDA once your study is complete.

Submission: Students must include this Approval Notification with their submission.

Validity:

This approval is valid:

From: 23/11/2021

To: 28/02/2022

Please note:

Failure to comply with the conditions of approval will be considered a breach of protocol and may result in disciplinary action which could include academic penalties.
Additional documentation requested as a condition of this approval protocol may be submitted via your supervisor to the Ethics Clerks as it becomes available. All documentation relating to this study, including the information/documents noted in the conditions above, must be available for your supervisor at the time of submitting your work so that they are able to confirm that you have complied with this protocol.

Should you amend any aspect of your research or wish to apply for an extension to your study you will need your supervisor's approval (if you are a student) and must complete and submit form EC2.
Approval applies specifically to the research study/methodology and timings as detailed in your Form EC1A. In cases where the amendments to the original study are deemed to be substantial, a new Form EC1A may need to be completed prior to the study being undertaken.

Failure to report adverse circumstance/s may be considered misconduct.
Should adverse circumstances arise during this study such as physical reaction/harm, mental/emotional harm, intrusion of privacy or breach of confidentiality this must be reported to the approving Committee immediately.

Appendix B2: Ethics - Employer Permission 7FHE1108

Eggbuckland Vale Primary School,
Charfield Drive, Plymouth, PL6 5PS
Tel: 01752 703656

11th October 2021

Employer Confirmation of Job Role Activity in relation to individual Dissertation Study as part of MA/MSc Deaf Education Studies Programme

This form should accompany Ethics approval applications for any dissertation student researcher who is applying for ethics approval to access records of any activity that is part of their job role. The form should be signed by the Head Teacher/Head of Service or relevant member of the Senior Management of the school/service.*

**The term researcher relates to a student enrolled in 7FHE1108 Research Methods and Dissertation Module.*

- I confirm that *Victoria Lowther* is undertaking a dissertation study related to their agreed job role activity in their workplace *Eggbucklandvale Primary School.*
- I understand that the student is applying for ethics approval to access the data of individual pupils related to their agreed job role activity, which they will normally have access to as part of their role as a Teacher of the Deaf.
- I confirm that all data will be accessed and stored in compliance with the GDPR arrangements in place within the workplace at *Eggbucklandvale Primary School.*
- I confirm that the researcher will be operating within the current workplace-based risk assessments which relate to their role.
- I confirm that the researcher requires an Enhanced DBS check as she will be working with minors. I confirm that the researcher currently has an Enhanced DBS check.
- I am aware that if I have any queries I should contact the Module Leader Imran Mulla i.mulla@maryhare.org.uk or Programme Leader Joy Rosenberg (j.rosenberg@maryhare.org.uk) for further information.

Signed:

Name: Wendy Cording

Role: Headteacher

Appendix B3: Ethics Consent Form EC4

University of Hertfordshire UH Ethics Committee

UNIVERSITY OF HERTFORDSHIRE
ETHICS COMMITTEE FOR STUDIES INVOLVING THE USE OF HUMAN PARTICIPANTS
('ETHICS COMMITTEE')

FORM EC4
CONSENT FORM FOR STUDIES INVOLVING HUMAN PARTICIPANTS
FOR USE WHERE THE PROPOSED PARTICIPANTS ARE MINORS, OR ARE OTHERWISE UNABLE TO GIVE INFORMED CONSENT ON THEIR OWN BEHALF

I, the undersigned *[please give your name here, in BLOCK CAPITALS]*

.....
of *[please give contact details here, sufficient to enable the investigator to get in touch with you, such as a postal or email address]*

.....
hereby freely give approval for *[please give name of participant here, in BLOCK CAPITALS]*

.....
to take part in the study entitled

How frequently do deaf children initiate and engage in conversational turns in Early Years settings in comparison to hearing peers?

(UH Protocol number .....)

1 I confirm that I have been given a Participant Information Sheet (a copy of which is attached to this form) giving particulars of the study, including its aim(s), methods and design, the names and contact details of key people and, as appropriate, the risks and potential benefits, how the information collected will be stored and for how long, and any plans for follow-up studies that might involve further approaches to participants. I have also been informed of how my personal information on this form will be stored and for how long. I have been given details of his/her involvement in the study. I have been told that in the event of any significant change to the aim(s) or design of the study I will be informed, and asked to renew my consent for him/her to participate in it.

2 I have been assured that he/she may withdraw from the study, and that I may withdraw my permission for him/her to continue to be involved in the study, at any time without disadvantage to him/her or to myself, or having to give a reason.

3 I have been told how information relating to him/her (data obtained in the course of the study, and data provided by me, or by him/her, about him/herself) will be handled: how it will be kept secure, who will have access to it, and how it will or may be used.

4 I understand that his/her participation in this study may reveal findings that could indicate that he/she may require medical advice. In that event, I will be informed and advised to consult a GP and I acknowledge that, following discussion, he/she may be required by the University to withdraw from the study. If, during the study, evidence comes to light that he/she may have a pre-existing medical condition that may put others at risk, I understand that the University will refer him/her to the appropriate authorities and that he/she will not be allowed to take any further part in the study.

5 I understand that if there is any revelation of unlawful activity or any indication of non-medical circumstances that would or has put others at risk, the University may refer the matter to the appropriate authorities.

University of Hertfordshire UH Ethics Committee

6 I have been told that I may at some time in the future be contacted again in connection with this or another study.

7 I declare that I am an appropriate person to give consent on his/her behalf, and that I am aware of my responsibility for protecting his/her interests.

Signature of person giving consent

.....Date.....

Relationship to participant

.....

Signature of (principal) investigator

.....Date.....

Name of (principal) investigaror *[in BLOCK CAPITALS please]*

VICTORIA LOWTHER

Appendix B4: Participant Information Sheet EC6

University of Hertfordshire UH Ethics Committee

UNIVERSITY OF HERTFORDSHIRE

ETHICS COMMITTEE FOR STUDIES INVOLVING THE USE OF HUMAN PARTICIPANTS ('ETHICS COMMITTEE')

FORM EC6: PARTICIPANT INFORMATION SHEET

1 **Title of study**

How frequently do deaf children initiate and engage in conversational turns in Early Years settings in comparison to hearing peers?

2 **Introduction**

Your child is being invited to take part in a study. Before you decide whether to do so, it is important that you understand the study that is being undertaken and what your child's involvement will include. Please take the time to read the following information carefully and discuss it with others if you wish. Do not hesitate to ask us anything that is not clear or for any further information you would like to help you make your decision. Please do take your time to decide whether or not you wish your child to take part. The University's regulation, UPR RE01, 'Studies Involving the Use of Human Participants' can be accessed via this link:

https://www.herts.ac.uk/about-us/governance/university-policies-and-regulations-uprs/uprs
(after accessing this website, scroll down to Letter S where you will find the regulation)

Thank you for reading this.

3 **What is the purpose of this study?**

The purpose of this study is to determine whether or not deaf children are initiating and engaging in conversational turn taking as often as their hearing peers- research shows that taking part in conversational turns is beneficial for learning, language and social outcomes.
I will assess if there is a link between the number of conversational turns a deaf or hearing child takes part in and their receptive vocabulary.
This study is expected to evidence that deaf children continue to need support to develop their skills in conversational turn taking and will suggest future ways of working to support this.

4 **Do I have to take part?**

It is completely up to you whether or not you decide to take part in this study. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. Agreeing to join the study does not mean that you have to complete it. You are free to withdraw at any stage without giving a reason. A decision to withdraw at any time, or a decision not to take part at all, will not affect any treatment/care that you may receive (should this be relevant).

5 **Are there any age or other restrictions that may prevent me from participating?**

Children who will be observed and assessed will need to be attending an early years setting.

6 **How long will my part in the study take?**

If you decide to take part in this study, you will be involved in it for *approximately 5 weeks.*

7 **What will happen to me if I take part?**

The first thing to happen will be *an observation of your child interacting with others on 6 different occasions, for 20 minutes on each occasion.*
Within 30 days of the observations it will also involve a direct face to face assessment of your child's receptive language skills, through the use of a standardized assessment called the British Picture Vocabulary Scales (III)

8 **What are the possible disadvantages, risks or side effects of taking part?**

(Please also note that circumstances may arise that could result in the need for you to withdraw from the study; should such circumstances occur, the investigator will discuss the matter with you.)

The following risks have been taken into consideration and accounted for:
a) Informed consent: to ensure all parents of children involved have been informed and understand the project, face to face discussions have taken place and written information provided
b) Do not harm or distress: if at any point a child shows distress during either observations or assessment, they will be ceased immediately with full disclosure to parents. Assessments will be presented in a child friendly way with opportunities for rest if required.
c) Anonymity and confidentiality: to ensure GDPR compliance, all data collected will be stored according to the Connect Academy GDPR standards and all data will be published within the study anonymously.

9 **What are the possible benefits of taking part?**

The benefits may include:
- Identification of areas of support (if any) required for your child
- Identification of strategies that will support your child in their early years setting
- The study may influence a wider national agenda on how to support conversational turns in early years settings
-

10 **How will my taking part in this study be kept confidential?**

- Your name and your child's name will not be included in any recording sheets or working documents. Apart from the consent form there will be no use of full names. On the recording sheets and in the study your child will be known as Child 1 for example.

- The data collected will be stored electronically, in a password-protected environment, for 12 months, after which time it will be destroyed under secure conditions;

- The consent forms will be stored in hard copy by me and in a locked cupboard for 12 months, after which time it will be destroyed under secure conditions;

11 **Audio-visual material**

No Audio/visual materials will be used

12 **What will happen to the data collected within this study?**

- The data collected will be stored electronically, in a password-protected environment within in a work-place secure cloud storage for 12 months, after which time it will be destroyed under secure conditions;
- The data collected will be stored in hard copy by me in a locked cupboard for 12 months, after which time it will be destroyed under secure conditions;
- The data will be anonymised prior to storage.
- The data will be displayed within the research paper; however no names will be used and children will only be identified as Child 1 for example

13 **Will the data be required for use in further studies?**

- The data will not be used in any further studies.

14 **Who has reviewed this study?**

This study has been reviewed by:

- The University of Hertfordshire Social Sciences, Arts and Humanities Ethics Committee with Delegated Authority

The UH protocol number is *<enter>*

15 **Factors that might put others at risk**

Please note that if, during the study, any medical conditions or non-medical circumstances such as unlawful activity become apparent that might or had put others at risk, the University may refer the matter to the appropriate authorities and, under such circumstances, you will be withdrawn from the study.

16 **Who can I contact if I have any questions?**

If you would like further information or would like to discuss any details personally, please get in touch with me, in writing, by phone or by email: *vlowther@eggbucklandvale.com*

Although we hope it is not the case, if you have any complaints or concerns about any aspect of the way you have been approached or treated during the course of this study, please write to the University's Secretary and Registrar at the following address:

University of Hertfordshire UH Ethics Committee

Secretary and Registrar
University of Hertfordshire
College Lane
Hatfield
Herts
AL10 9AB

Thank you very much for reading this information and giving consideration to taking part in this study.

Appendix C: Raw Data Appendix

Participant	Failed attempts by others	Failed attempts by participant	Failed total CTs	Percentage failed out of total attempts	Participant initiated total	Adult initiated total	Child initiated total	Total Conversational Turns	Standardised BPVS score	Met Expected Level	Gender	SEN
Child A	5	1	6	14	7	14	6	24	87	No	Male	Yes
Child A1	1	2	3	4	53	13	17	94	108	Yes	Male	Yes
Child B	2	10	12	59	17	10	4	31	71	No	Male	No
Child B1	0	0	0	0	33	9	31	65	115	Yes	Male	No
Child D	2	8	10	29	28	3	28	60	108	Yes	Male	No
Child D1	5	1	6	3	35	10	34	79	111	Yes	Male	No
Child E	10	5	15	50	10	11	7	28	90	No	Female	Yes
Child E1	0	3	3	7	39	6	29	76	112	Yes	Female	Yes