

AI Cover Sheet

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Research for Learning

This study will focus on the COVID-19 pandemic and its effects on children's speech and language development in the early years. According to Altvater-Mackensen & Grossmann

(2014), a child's language exposure relies on both visual speech and auditory cues. According to previous studies, speech and language delay occurs in approximately 6% of the child population (Marshall & Lewis, 2018). This suggests that speech and language are vital building blocks for a child's development. In 2020, the world was hit by the COVID-19 pandemic. There is substantial evidence that COVID-19 brought changes that immediately affected early language development. According to Peirson and Hagger (2025) 89% of teachers have seen a decline in speech and language development since the first lockdown. One study carried out by Frota *et al.* (2022) examined the effects face masks had on early word segmentation and language development. Following on from a pre-pandemic study, word segmentation was carried out on infants from 4 months old, but without a face mask being present in the study. The results showed that the infants were able to identify several segmented words that were spoken aloud at the utterance edge position. Johnson *et al.* (2014) claim that research carried out in 2014 highlighted the fact that infants 6 months old could segment words more effectively when they were positioned at the edges of utterances.

However, the pandemic sample that was carried out, including face masks, consistently underperformed in all studies compared to the pre-pandemic data. In conclusion, infants born and raised during the pandemic have poorer language development compared to pre-pandemic infants (Frota *et al.*, 2022). To illustrate this point, one might refer to Tenenbaum *et al.* (2014) who carried out a study investigating how infants rely on mouth and gaze to facilitate their language learning. The outcome suggested that infants are developing their language learning by the information they see, along with social cues. Additionally, another equally important aspect to consider that affected daily routines during the pandemic is the social restrictions that were enforced, according to Zuniga-Montanez *et al.* (2024). Having restrictions on social interactions, for example, soft play centers being shut down, visits to the playground, and social distancing being maintained, all had a detrimental effect on a child's language development.

It can be argued further that a key area of a child's development is language. Poor language development can have severe consequences across the developmental process and into adulthood. Deoni (2022) carried out a longitudinal neurodevelopment study at both pre- and post-pandemic periods. This study examined 672 children between the ages of 0 and 3 years old between 2020 and 2021, compared to the previous decade from 2011 to 2019. They were assessed using the Mullen Scale of Early Learning. This form of assessment is used in infants from birth to 5 years old and evaluates a child's intellectual development by observing both fine and gross motor skills, along with expressive and receptive language development (Holland, 2025). Deoni (2022) states that the findings from the study found that children born during the pandemic had a significant decrease in verbal, motor, and general cognitive abilities compared to pre-pandemic infants. The study also highlights that families with lower financial and social resources have been most affected. The study also shows that a reduction in brain white matter in infants born July 2020 to that of pre-pandemic infants. Kong and Guan (2015) state that within the human brain white matter makes up 50% of the brain volume. It is described as the brain's highways and subways that connect areas of the brain in to and out of the grey matter. Having a reduction in white matter can have a detrimental effect to infants from poor processing skills to cognitive impairments.

The studies above highlight the effects the pandemic has had on a child's developmental progress. However, some studies have found no differences between pre- and post-pandemic children. Feijoo *et al.* (2023) carried out a study on 41 children born in 2019–2020 compared to the same number of children born before 2012 using the MacArthur-Bates Communicative Development Inventories (MB-CDIs). This is used to monitor language development, milestones, and detect any language delays. The inventories are completed by parents, which can provide a vital insight into a child's language ability (Hutchins *et al.*, 2013). The findings from this particular study found no significant changes between pre- and post-pandemic infants, despite the use of mask-wearing. This had no effect on language development from the data that was collected. Nevertheless, it should be mentioned that because the inventory was filled out by parents, it may contain

inaccurate information and not accurately depict the situation. Other research techniques, in addition to the inventories, may have provided additional information and insight for the study to paint a more complete picture.

The above study did, however, show lower expressive vocabulary scores in infants with fewer opportunities to socially interact. According to Imboden *et al.* (2021) who carried out a study post-pandemic on infant and toddler development, more education is needed for parent/child engagement as well as continued development for free play and exploration, including social interactions with peers. One cannot ignore the fact that the pandemic has brought about “multiple environmental aspects that are known to impact language development.” Zuniga – Montanez *et al.* (2024) believe that these aspects have played a significant role in the decline of language development in infants. Zuniga – Montanez *et al.* (2024) carried out an annual research review in 2024 based on data obtained between 2020 and 2023. The study included findings from a total of 94 studies, both in home and educational settings. The review provides an early-stage summary of the effects of COVID–19 on young children, although it should be noted that early-years practitioners and caregivers can provide an equally positive, enriched environment.

Studies previously carried out by Piaget and Vygotsky have helped shape how to understand a child’s cognitive growth and language development. The work of Vygotsky (1956, cited in Kumar, 2022, p. 209) argues that we learn language through interactions and social experiences.

The annual research review above concluded that there was a decline in language development in the 4 years preceding the pandemic, and without continued research, we will never really know what lasting effects the pandemic had. While Zuniga-Montanez *et al.* (2024) may be true, nonetheless, the review did exclude studies focusing on the language development of neurodivergent children or those with special educational needs. One must admit that a wide range of special needs children are known to have suffered significantly during the pandemic because of difficulties adjusting to new routines, homeschooling, and interrupted access to clinical and community help.

In conclusion, the above studies provide substantial evidence that COVID-19 has brought detrimental effects to language development, but further longitudinal studies are required along with more in-depth study into screening families who have been affected by the pandemic, especially the delay in socioeconomic alterations. This study will focus on screening families along with speech therapists and practitioners to gauge a clearer understanding from a different perspective, as well as different socioeconomic changes. This will give a clear understanding to see if it is also environmental effects, the loss of employment and not being able to socially interact with people other than people within your home has all impacted on a child's upbringing. This needs to be highlighted and taken into consideration during this research. It is also important that during this study, the correct research methods are carried out to determine accurate data.

Section 2

Research methods are approaches used to collect and analyze data to find answers and validate hypotheses (Walliman 2021). These methods are necessary to guarantee the correctness, validity, and dependability of a study's findings. Hammond (2021) states that research methodologies give researchers a way to collect and gather data.

Bell & Waters, (2014) believe it is important that, before proceeding with any planning and investigating, consideration of intended methods is taken from the main features of well-established and well-reported styles of research.

Methods are often discussed as quantitative and qualitative. These methods deal with the measuring and collection of data in countable form (Hammond, 2021). Qualitative methods are more popular with researchers who aim to understand complicated or varied human situations than quantitative methods, which often need statistics or some form of experimental control. Nolan *et al.* (2013) believe that qualitative methods provide a more in-depth emphasis on smaller populations, enabling the researcher to document and capture the participants intimately. Cohen *et al.* (2018) also argue that qualitative research

provides a comprehensive, complex, and detailed understanding of behaviors and provides participants with a voice.

Quantitative methods assist in determining the beliefs or actions of a group of people. In contrast, a quantitative approach is considered to be more deductive and effective for evaluating concepts based on statistical analysis, which is both descriptive and inferential (Hammond, 2021). However, although institutionally guided research has been known to favor quantitative methods, qualitative reporting may additionally provide researchers with meaningful evidence. To define this further, O'Dwyer and Bernauer (2016) point out that qualitative research aims to learn new things by preserving complexities within natural settings, while quantitative research learns new things by simplifying complexity in a somewhat artificial surrounding.

This study focuses on mixed-method research, as the name suggests. This uses a combination of both quantitative and qualitative approaches (Bell and Waters, 2014). Oranga *et al.* (2025) points out that this method combines the potential advantages of both quantitative and qualitative methods, allowing the researchers to explore a variety of perspectives and find connections throughout the complex levels of intricate study.

One of the most important considerations of this study and the reason why researchers are using the mixed-method approach is that it enables researchers to understand the complex lives of the families, children, and early childhood settings by allowing for a wider understanding of different viewpoints (Roberts-Holmes *et al.*, 2023).

This study will use purposive sampling, also known as selective sampling. This is a non-probability sampling technique. Acharya *et al.* (2013) believe that the best sampling technique is to use probability samples, which also ensures that the results of the research may be applied to targeted participants. One goal of participatory research is to remove boundaries that separate the research and the study subject, producing collaborative connections that encourage cooperation (Webber *et al.*, 2024). This method is helpful, as

the study requires data from a specific set of children, parents, and speech/language therapists, providing relevant and insightful data for the study (Campbell *et al.*, 2020).

The participants in this study will be from 3 primary schools in an affluent area and 3 primary schools in a deprived area. The participants range from children aged between 3 and 5 years who require additional support with language development. The reasoning behind the different locations is to gauge an understanding of the socioeconomic limitations that some families might have experienced pre-/post-COVID. For example, a study carried out by Morgul *et al.* (2020) found that 73.8% of children reported boredom and loneliness during the pandemic.

The study will use observational methods over 6 months to ascertain progression. Hammond, (2021) suggests that a greater sample size of participants increases the study's statistical power and increases the chance that significant effects and differences will be found. The study will also collect relevant information from speech and language therapists, along with parents/caregivers. To ensure the validity of the data, the method of triangulation will be used to compare and combine various sources of evidence to reach a better understanding of the research (Roberts-Holmes *et al.*, 2023). Heale & Forbes (2013) point out that two or more methods—known as mixed methods—are often referred to as triangulation using both qualitative and quantitative approaches. The use of triangulation within this study will increase the validity of the research enabling for a richer more reliable study. This study will use the following methods to collect data. Firstly, observations will be carried out within an educational and home setting to maintain clarity. Fawcett & Watson (2016) maintain that observations provide an opportunity to discover different ways in which children communicate verbally and non-verbally. For example, the use of gestures such as smiling and eye contact is a social cue that children use to communicate. Carrying out observations is a key tool Piaget (2002, quoted in Papatheodorou, 2015, p. 8) used in understanding children's language development. However, it must be noted that although observations can provide valuable insight, researchers need to be aware of the Hawthorne effect. This is when a participant's typical

behavior changes because they are aware that they are being observed. Coombs and Smith (2003, quoted in Oswald *et al.*, 2014, p. 53) state that one of the biggest challenges that researchers have encountered when collecting data through observations is the Hawthorne effect, which has been referred to as the “Achilles heel” of participant research.

Another important research method that this study will use to obtain data is questionnaires, which are widely used in research due to their effectiveness and adaptability (Bolarinwa, 2015). This study will provide a questionnaire including quantitative and qualitative data by incorporating different questions, however it is important to note that the questions need to be easy to understand and convey one thought at a time. This will provide more breadth and depth to the study.

However, it is important to note that because this study will require information from parents and speech-language therapists, researchers will need to be aware of non-responsive participants. This is one of the disadvantages of using the questionnaire method (Patten, 2016).

As highlighted above, this study will provide observational evidence along with questionnaires. However, to carry out a more in-depth analysis, researchers believe the need for interviews would enhance the validity of data. Hammond (2021) defines an interview as being a conversation between the researcher and the participant taking part in the study. The researchers must create questions that best suit the study's requirements and conditions. Since this study will be conducting a group interview, it is crucial to note that the interview's dynamics remain unchanged and that the questions asked will remain the focus. As with any group interview, some participants will be more forthcoming than others, but it is the role of the interviewer to maintain a group discussion with all participants taking part (Newby, 2014). The researchers within this study are trained to lead interviews professionally and they will also ensure that they consider the emotional effect that these questions might entail to the participants within this study.

One important consideration of this study that needs to be observed is a bias known as the "Halo Effect" (HE) that occurs when people evaluate other qualities (like intelligence or character) more favorably when people have a favorable opinion of one area (like looks). For example, a smartly dressed person appears to be intelligent even though intelligence has little to do with physical appearance (Gabrieli *et al.*, 2021). The HE needs to be observed by researchers so that the data is not influenced by opinions and focuses on the information obtained by the participants.

Section 3

Ethical consideration needs to be maintained when researchers carry out any study. An ethic is a code of conduct or moral principle that directs people's actions (Hammond, 2021). One key ethical requirement for research is informed consent. It guarantees that participants are completely informed about the nature of the study and the advantages before consenting to participate. This is important as researchers are expected to maintain the highest ethical standards. University of Wales Trinity Saint David [hereafter UWTSD] (2022) states that researchers must foster values of honesty, rigour, openness, care, and respect. Specifically, informing participants what is expected of them, what will happen with the results, and how long the study will be so that the participants understand the timescale needed for their participation. Researchers need to acknowledge the participants' right to leave the study and how to exercise it. The British Educational Research Association [hereafter BERA] (2024) points out that if a participant wishes to withdraw from a study, then the researchers should accept this. However, a participant's employment may require them to complete certain studies to support assessment research. If this is true, the researcher might be able to get in touch with a third party and ask them to comply. Another aspect researchers need to consider is the age/ability of the participant. This study will require participants from the age range 3-5 years, as stated previously. This requires assent; this is an agreement by a person who is not competent to give legally informed consent (BERA, 2024). In line with the United Nations Convention Rights of a Child (UNCRC) [N.d.] article 3 the best interest of the child. Children who can

form opinions should be given the opportunity to do so and should have their points of view taken into account.

The researchers within this study have compiled an information sheet also known as a participant information sheet (PIS). This documentation will be presented to the individuals who have been invited to participate in this research study. The PIS should include information in relation to the study including procedures, risks and benefits, along with confidentiality and the right to withdraw. NHS (2024) suggest that PIS should be presented in clear language with no jargon or legal terminology. As this study will be inviting child participants to take part it would be beneficial to use visual aids such as diagrams and images. The participants will sign the PIS to show their consent in agreeing to participate in the study. However, it must be noted that any study that requires assent from a child for research purposes should be aware of the child's right in research (article 42, knowledge of rights UNCRC).

This study must maintain the privacy and anonymity of research participants as a basic ethical need. It promotes confidence in the research process and assists in fulfilling institutional and regulatory requirements including those under the general data protection regulation GDPR, (2018). Kang and Hwang (2023) says that a researcher's inadequate confidentiality and anonymity during a research study can cause harm to the participants along with affecting the critical evaluation of the study's findings in general. BERA (2024) states it is crucial that researchers consider the rights and interests of people who may be impacted by the research.

This study will identify participants by letters only no names will be stated within the study to protect the anonymity of the participants. Researchers will inform participants how their data will be protected and ensure their right to withdraw if necessary. It is important that the participants feel they can trust the researchers by maintaining anonymity, participants

can reduce social desirability bias, which occurs when they alter their answers to seem positive (Kang and Hwang 2023). Maintaining confidentiality in research study can encourage participation into future research. However, BERA (2024) maintains that participants must provide their consent to collect, store and share their personal information with third parties.

While confidentiality is at the heart of this study, it is important to note that when conducting research any possible risks must be identified and managed. A risk assessment assists in maintaining ethical standards, safeguarding and well-being while ensuring accuracy of the research (Hammond, 2021). However, the risk of exploitation within a research project needs to be considered along with participants being influenced by others. As this study requires information to be obtained from professionals (speech and language therapists) it is important to maintain a professional working relationship and to not fall into a situation where participants are disclosing private information in relation to their patients with other therapists within the focus group. This will be noted within the PIS and discussed with the participants in advance of any group participation. BERA (2024) points out that it is the obligation of the researcher to anticipate any possible risks and minimize them, for example any behavior that causes emotional upset to the participant (discussing their child's developmental issues) the role of the researcher is to reconsider any actions during the research process to eliminate harm.

This study will be conducted in line with UWTSD Research Ethics and Integrity Code of Practice by completing an ethical approval form along with the research being approved by the universities ethics committee.

The data from the study will be collected in line with UK GDPR (2018) which creates a legal obligation to address the data protection issues and privacy concerns at the planning stage before any data has been gathered. For instance, UWTSD (2022) points out that a Data Protection Impact Assessment (DPIA) is used to assist researchers in identifying if a study poses any potential risks to participant privacy. Once this has been established the DPIA will select suitable controls and procedures to control those risks.

The research will gain data from questionnaires, interviews, focus groups and observations. The use of online questionnaires will be used for parents to complete in relation to the developmental progress of their child's speech. The observations will be carried out in both a home and school setting to create a clear picture of the child's interactions within the two environments. The Focus groups will be carried out primarily with speech and language therapists where they will be asked a set of specific questions in relation to their professional opinions and observations, they have maintained pre/post pandemic. This information will be stored in password protected files with only researchers within the study having access to them. Any paper copies of documentation no longer required will be shredded. The participants' names will be coded to enable anonymity and all paper documentation that is requested to remain for archiving will remain in a locked storage unit. This research data will be in accordance with UWTSD obligations as a data controller under the Data Protection Act 2018 and GDPR 2018.

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