

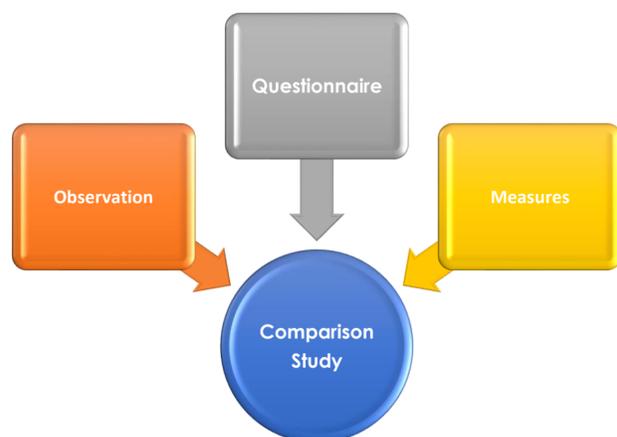
Mathematics in Pre-term Pre-schoolers

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Introduction

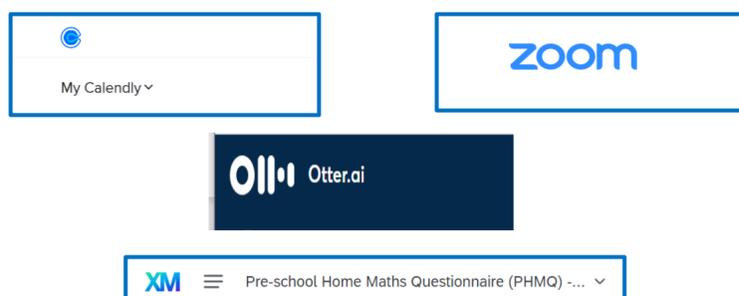
Harding et al. (2012) "Skills for Life" survey concluded that people who achieved higher scores in numeracy assessments were more economically active, working in higher occupations full-time compared to the rest of the population. There are numerous reasons why a child may struggle with mathematics one of which is being considered in an "at-risk" group of children for educational underachievement, such as very preterm (<32 weeks VP) born children (Simms et al., 2015). VP children are at a markedly higher risk for mathematics learning difficulties later in life. By the age of 8 years-old, 42% of VP children have special educational needs compared with just 18% of children born at term (Simms et al., 2015).

To date, many studies have focused on cognitive factors that may underlie these difficulties (Guarini et al., 2014; Hasler & Akshoomoff, 2019). Therefore, this current study aims to explore environmental factors that may influence VP children's early mathematical learning. Understanding these interactions may contribute to potential intervention design with the aim of improving mathematical outcomes of VP children.



Project elements that will be used in the main comparison study to achieve the project objective to observe the interactions between very pre-term pre-schoolers and their parents compared to full-term pre-schoolers and their parents in the home environment whilst playing mathematical games.

Online Tools



These online tools helped to streamline the recruitment and administration of the study as well as simplifying the analysis of data collected

Methods

This current project will be utilizing an online methodology to collect observational data of parents and their child within the home environment playing mathematical games. Currently this project is carrying out the 3rd objective of the pilot study to test the methodology for the main comparison study later this year.

This pilot study will assess if an online parent-child observation paradigm is appropriate, feasible and produces data with sufficient variation.

- Participants were full-term born pre-schoolers (n=7) recruited from an existing database within the UU school of psychology.
- Once parents agreed to take part in the study, they received an email with a link to Calendly to choose a time and date from the available slots (set by the researcher). This then issues a Zoom link, and a notification is sent to the researcher and the participant. Participants also received a link to Qualtrics to give consent.
- Parents were sent a pack containing resources for the observation this included: 3 bags numbered 1-3, games for each bag, instructions and a reward for the child (certificate and stickers).
- On the day of the observation the researcher record assent from the child to carry out the observation. Once recording resumes parents present bag number 1 and is instructed to play the game for 5 minutes. During this time, the researcher turns off their audio and camera. After 5 minutes the researcher returns to stop play. This is then repeated for bags 2 and 3.
- Once all games have been completed the parent is then advised that they will receive a follow up email containing a link to Qualtrics for a home numeracy environment questionnaire that takes approximately 15 minutes to complete in their own time.
- Verbal data from the observations were transcribed using an online tool Otter. An adapted coding system (Neitzel & Stright, 2004; Stright et al., 2001) will be used to code the parent and child's behaviour.
- The main comparison study will also include measures for mathematical skills and a control cognition measure.

Preliminary observations

- Online method will streamline administration and cost for the larger study
- The task is generating varied data that may have the potential to generate further research questions.
- The task is generating good conversations between parent and child.
- Online observation method will help greatly in the recruitment of more participants in the larger study.
- The 15-minute observation is enough time to generate sufficient data and given both parents and children enjoyment.

References

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