Computational Literacy

Project: Are questions a major part of parent-child interactions during play?

1. Research Question and Dataset

Parents play a huge role in children’s development by introducing them to new experiences and aiding in acquisition of new skills (Rosen et.al, 2019). Communication plays a crucial role in parent-child interactions (Runcan et.al, 2012). Interrogatives or questions are a major part of communication and also play an important role in parent-child interactions (Fuertes 2022) However, there is limited research on the types of questions parents ask and the frequency of these questions during interactions. To address this gap, I aim to explore this area further. This study will serve as a pilot, as I am still refining the focus of my investigation.

My research question for this particular project is – How frequently do parents ask questions to their child during a free play interaction? What kinds of questions do they ask them? Do they ask these questions to elicit a certain type of behaviour from them?

For my Humanities project, I chose a dataset containing parent-child interactions during free play. Free play yields more authentic and naturalistic interactions between a parent and their child and hence I decided to use this dataset. The dataset I have chosen is from the TalkBank database and can be accessed online. It can be accessed via – <https://childes.talkbank.org/access/Eng-UK/Edinburgh.html>

The children in this corpus are between the ages of 9-15 months. The interviewer provided the parents with a recorded and instructed them to record all aspects of their daily life. This particular corpus however, is of free play sessions between the parents and the children. The corpus contains recordings of 47 children (24 girls and 23 boys), and consists of transcripts and audio recordings. Out of the 47 families, only 24 consented in releasing the audio recordings which are available with their transcripts. In total there are 355 recordings of free play sessions.

Additionally, because this dataset consists solely of a monolingual-speaking population, it may not fully capture language development patterns in bilingual or multilingual cultural and linguistic groups. For example, a study by Nakamura and Quay (2012) found that parental interrogative styles differ between languages: English-speaking parents tend to adopt a more authoritative style of questioning, whereas Japanese-speaking parents use more child-centred interrogative patterns. This reveals the need for further research not only within monolingual communities but also across bilingual and multilingual populations to better understand the influence of cultural and linguistic diversity on language development.

1. Data Processing

The data was in the form of transcriptions, transcribed on CLAN. The files were in the form of .cha files and all the files were available to download from a zip file. I only extracted the phrases from the transcription that were interrogative sentences. I did this by identifying all the transcriptions that had a question mark in them (“?”). Firstly, I extracted this data using python, then I removed unnecessary information from the excel files and then finally used Voyant tools to visualize what words and phrases were used by the parents the most.

Python

Since the transcriptions contained all interactions between the parents and the children spanning between multiple layers, I used python to extract only the information that I needed.

* Firstly, I used a function to determine the total number of parent utterances.
* I used regular expressions (regexes) to extract only the interrogative phrases/sentences by mentioning that my qualifier for this would be the presence of a question mark in the phrase/sentence.
* Additionally, I also made sure to only include the utterances spoken by the mother and the father (\*MOT and \*FAT utterances)
* Additionally, I wrote code to remove the prefixes (\*MOT: and \*FAT:) from these utterances, retaining only the content for easier analysis.
* Some transcription files were encoded differently, leading to Unicode errors. To address this, I added specific encoding instructions in my program to handle these variations.
* I used the package openpyxl to transfer my data into .xlsx files to facilitate data processing post-extraction.

Excel

Once my data was extracted from all the transcriptions into one excel sheet, I was left to work with raw data which included comments from the transcribers addressing the tone and any other sounds or noises present during that particular interaction.

* I removed all the additional information, such as, mentions of laughing, crying (which were in the form of ‘&=crying’, ‘&=laughing’, etc.) using the find and replace function in excel
* I also removed utterances which were predominantly sounds, such as “ba ba”, “ha ha”, etc as they can be counted as imitation and not interrogative phrases
* The transcribers had also mentioned the full forms of the words/phrases that parents tend to shorten for easy understanding of the listener (for example, “whatcha” [what are you]) and I decided to remove these as well because they cannot be considered part of the actual conversation
* Additional symbols such as ‘+/..,’ were also removed

Voyant tools

I finally used Voyant tools to help me visualize the data both in terms of words used and the phrases used. I used Voyant tools to understand what words and phrases do the parents use most commonly during these interactions to ask questions and what kind of questions are most frequently asked to the children.

Out of a total of 143,414 words uttered by the parents in interrogations with the child, the most frequently used words were:

* want – 2221
* going – 1688
* what’s – 1479
* gonna – 1154
* where’s – 1078

1. Analysis and Discussion

From the current dataset, I identified 26,990 interrogative phrases or sentences out of a total of 89,497 utterances by parents. This indicates that approximately 30% of the play interactions in this dataset consisted of interrogative phrases or sentences.

Additionally, using Voyant, I analysed the major types of questions asked during these interactions. The most frequently asked questions fell into the following categories:

1. What: For example, “What are you gonna do?” was a commonly asked question by the parents.
2. How: Questions like “How big?” were also frequently used.
3. Where: Parents also often asked, “Where are you going?” during these interactions.

From this analysis, it is evident that the majority of interrogative phrases used were ‘what,’ ‘how,’ and ‘where’ questions. These types of interrogatives are important as they help in cognitive development. While ‘what questions helps in building the child’s lexicon, ‘how’ questions on the other hand help in increasing the reasoning ability of the child. Additionally, these interactions also play a key role in both the linguistic and social development of the children.

While interrogative phrases may not constitute the predominant aspect of play interactions, they clearly play a significant role in fostering communication and encouraging responsive behaviour in children.

1. References

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