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LONGITUDINAL LANGUAGE DEVELOPMENT OF TRIPLETS: PRELIMINARY RESULTS*

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Language development in multiples, especially twins is a topic of much discussion and controversy. Twins are often stigmatized when it comes to language acquisition and are often thought of as 'at risk' for language development by the general population. Tests on twin' language development confirm this general idea (Conway, Lytton & Pysh, 1980). However, there is no consensus on how delayed twins are in comparison to singletons; the varying methodology and sample sizes make it almost impossible to come to an agreement. In terms of triplets, the population this research focuses on, there has been virtually no studies done on their language development and to the best of the author's knowledge no studies have been done on narrative development at all. This study came about as a way to fill a gap in literature and to allow for more understanding of the language development of this specific but ever growing population.

1. Introduction

Narrative competence is the ability to comprehend and produce a cohesive narrative that is well organized (Roch, Florit & Levorato, 2016). Being able to successfully sequence a story and tell it is an essential skill for children as well as a precursor to their language abilities in school (Bishop & Edmundson, 1987; Bliss, McCabe & Miranda, 1998; Gutierrez-Clellen, 2002; McCabe & Rollins, 1994). The competency of language for bilingual children is established at different ages. The relationship between L1 and L2 changes direction as children go older as well, from negative in young children to positive in older children (Roch, Florit & Levorato, 2016). That is younger bilingual children have not fully acquired the competency of both languages to be proficient in both and therefore appear to lack skills in both languages. The processing of narratives and language in general is not the same for bilingual children as it is for monolingual ones (Gutierrez-Clellen, 2002). For sequential bilinguals especially, the L1 plays a significant role in the influence of the L2 stories; although this influence diminishes as they approach either competency in both languages or school age. Within bilinguals the complexity of the story structure also increases with age, following the same pattern as is does for monolinguals (Gutierrez-Clellen, 2002).

There are differences in the language of twins and singletons outside of the narrative structure which are usually attributed to environmental factors (Conway, Lytton, Hugh, 1980; Stafford, 1987; Tomasello, Mannle, Kruger, 1986). These factors are usually described as the lack of the input from the parents such as shorter utterances and more command orientated language. Motherese is also typically orientated towards both the twins at the same time, resulting in each

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twin receiving half an input of that of a singleton. Recent research however has moved away from the 'impoverishment' thesis and adapted a more neutral stance on the subject where the parental input is not causing the language delay (Rendle-Short, Skelt & Bramley, 2015). Twins also have the child-speech input which singletons usually do not possess (outside of a daycare for example). This input sometimes results in Twin-speech where the twins are able to be understood by each other but not by other adults. It is controversial whether twin-speech is contributing to the delays of speech. There are factors at play regarding whether twins will develop this *secret language,* as it is called colloquially: whether the twins have older siblings, whether they engage in non-verbal play and whether the twins are identical; fraternal twins are less likely to develop a twin-language (Hyashi & Hayakawa, 2004). There are studies that show that twins that do develop twin-speech are more likely to be delayed in language (Bishop & Bishop, 1998; Thorpe, Greenwood, Eivers & Rutter, 2001) and those who argue against it (Thorpe, 2006).

Research on narratives in twins is scarce. The last study examining the language development of triplets was completed in 1947 (Howard, 1947) and found that the triplets examined were 1 year delayed in saying the first word and were .7 MLUm behind the singleton children during the preschool age. This research therefore is looking to bridge the gap in knowledge regarding the development of the narrative within the multiples, specifically triplet, population.

2. Methodology

2.1 Participants

The study involved one set of bilingual triplets[1]. The set of triplets consists of two girls and a boy; Anna, Bobby and Clare[2] . The triplets are raised in a bilingual home where there are 4 members of the family in addition to the triplets: the mother (bilingual: Russian and English), the father (monolingual: English) and grandmother and grandfather (monolingual: English). It should be noted that the father although does not speak Russian is able to understand basic terms and vocabulary of Russian that are high in frequency around the household. The grandparents are also able to understand and speak some English; however it is not fluent or grammatical and therefore is not employed around the children. The triplets attend an English daycare five times a week for 7 hours a day and spend the weekends (two days) with all family members. At the time of the recruitment the set of triplets was 2;3.

2.2 Survey

A survey was administered to the parents (the mother) which addressed questions regarding the children's environment and language development. In the short term goal they survey would provide details of the type of activities and language the children spoke at home and in the long term it would provide a baseline for longitudinal analysis.

[1] A second set of monolingual triplets was recruited however no data was obtained as the participants dropped out of the study.

[2] The names in this paper have been de-identified.

2.3 The Frog Story

As part of the study the frog story was used to elicit the narratives from the children. The frog story is a textless, black and white children's book that documents the exploits of 3 main characters: a boy, a frog and a dog. Due to its lack of text it is commonly used as a tool to elicit narratives from children where the children can only rely on the pictures and their imaginations to tell the story. There are 6 books in the set which allows for easy randomization of the stories, and administered every 6 months it diminishes the chance of the children remembering the books.

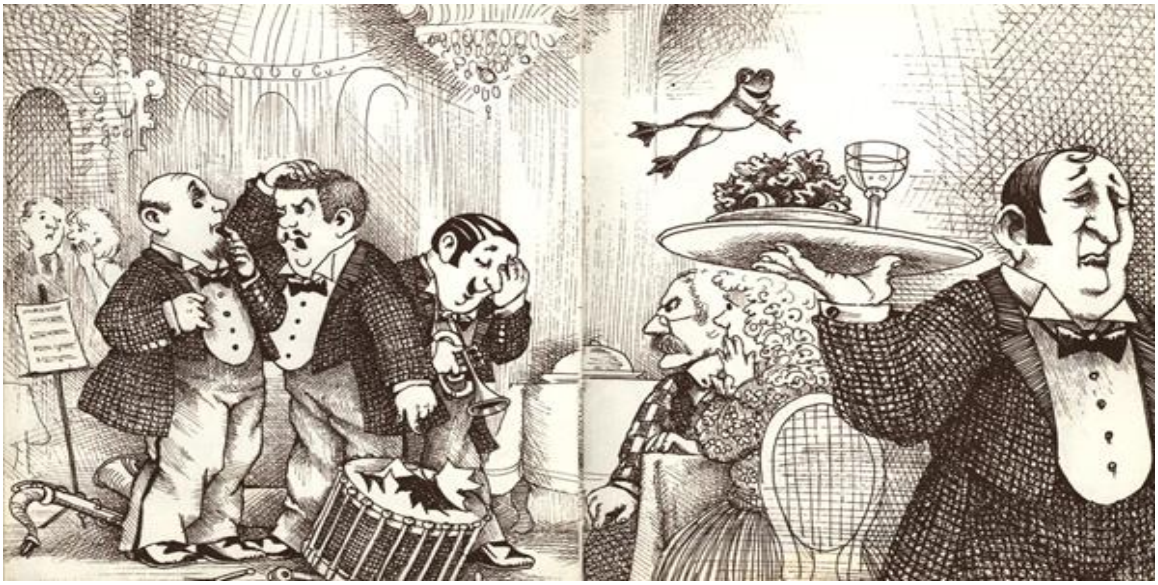

Figure 1: An example of the frog story book: *frog goes to dinner* (Mayer, 1974).

3. Procedure

The children were asked to enter their bedroom and sit with their parent on the rocking chair. The parent then sat the child in their lap and presented the frog story to the child. The parent then asked for the child to tell them a story based on the frog story book in front of them. The parent flipped the pages for the child when the child was finished with a particular page and was instructed not to prompt the child for the story unless the child had difficulties with word finding or with concluding their story on the particular page in the book.

The story was administered twice, two weeks apart: once in English and once in Russian. The Russian instruction was delivered by the grandmother while the English instruction was delivered by the father. There was a trial run done with the mother without the elicitation of the narrative but rather simply by looking at a different frog story book to determine whether the children would be comfortable with the observer and the video camera in the room. It was determined that the children did not mind the researcher in the room however the video camera caused them to be shy and therefore the subsequent video recordings were done with an iPhone discretely held by the researcher.

For the duration of the story the children were never in the same room and the two different stories were presented for the two languages, however within the language the story that was presented was the same for each child.

4. Analysis

The videos were recorded and transcribed using Systematic Analysis of Language Transcripts (SALT) software. Examples (1) and (2) show transcription examples with translations for the Russian and English stories respectively as told by Bobby.

(1) C[3] Собака
Dog
P А где собака?
Where dog? (lit.)
Where is the dog?
C Здесь собака
Here dog (lit.)
Here is the dog
C Луна
Moon
P Это луна
This moon
This is the moon
P Луна где?
Moon where? (lit.)
Where is the moon?
C Большой
Big (wrong gender morpheme)
P Большая луна, хотошо, а где она?
Big moon good, where she?
Big (proper gender morpheme), good, where is it?
C xx

(2) C MM, moose.[4]
C Moose.
C It's close.
C Fell down.
C Baby.
C And doggy he fell down.
C Yeah.
C In the water.
C See xx water.
C UH OH.
C xx water.
C See doggy water.

[3] Transcription notes: P – parent, C – child, xx – nonsense/ incomprehensible item.
[4] The parent utterances are omitted in this transcript.

5. Results

The results presented here are based on *one* data collection point and are preliminary. Further research will be discussed in the section: Summary.

5.1 Mean Length of Utterance (MLU)

One of the tools that can be used to characterize lexical development of a child is the MLU. Figure 2 shows the calculated results for the MLUw when only the real words of English and Russian were counted. Although MLU in words was used instead of the MLU in morphemes, which is the more widely used version of MLU as a tool, Parker and Brorson (2005) show that in fact MLUm and MLUw are correlated and can be both used effectively as a measure of a child's language development. The MLUw was used here due to the young age of the children when not a lot of morphemes are being produced. The appropriate MLUm have been calculated by Brown (1973) to be between 1.5 and 2.0 for children aged 15-30 months. At the time of the intake the children were 27 months. All the MLU calculations were within the appropriate child range except for Bobby's MLU for the Russian story (MLU = 1.4).

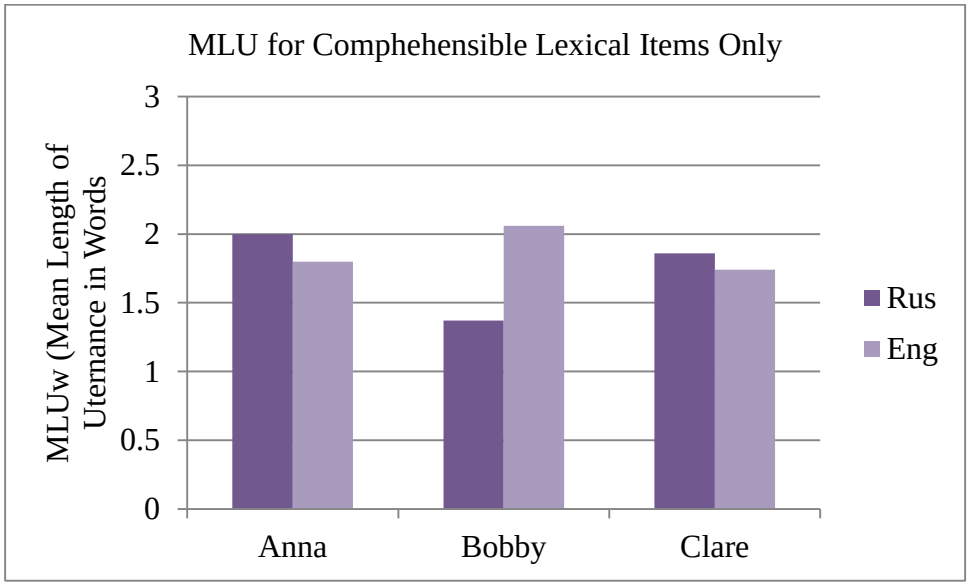

Figure 2: The MLU scores for English and Russian stories including only comprehensible words.

However, when calculating the MLU for all lexical items (real words of English and Russian as well as possible twin words) the MLU increases greatly for all children across all stories. Figure 3 shows the calculation and in this instance of MLU all children are within the appropriate range. The biggest increase in MLU is exhibited by Anna in the Russian story and the lowest change is exhibited by Bobby in the Russian story as well. These are important considerations to keep in mind as the MLU is so frequently used by professionals such as Speech-Language Pathologists to assess the language development of children (Chan, McAllister, Wilson, 1998). Although twin-language poses a problem as it is almost impossible to distinguish real twin words from nonsense words without transcribing and giving context to the words. It does however play a role in the language development of multiples and therefore should be considered when tools like MLU are used for language assessment.

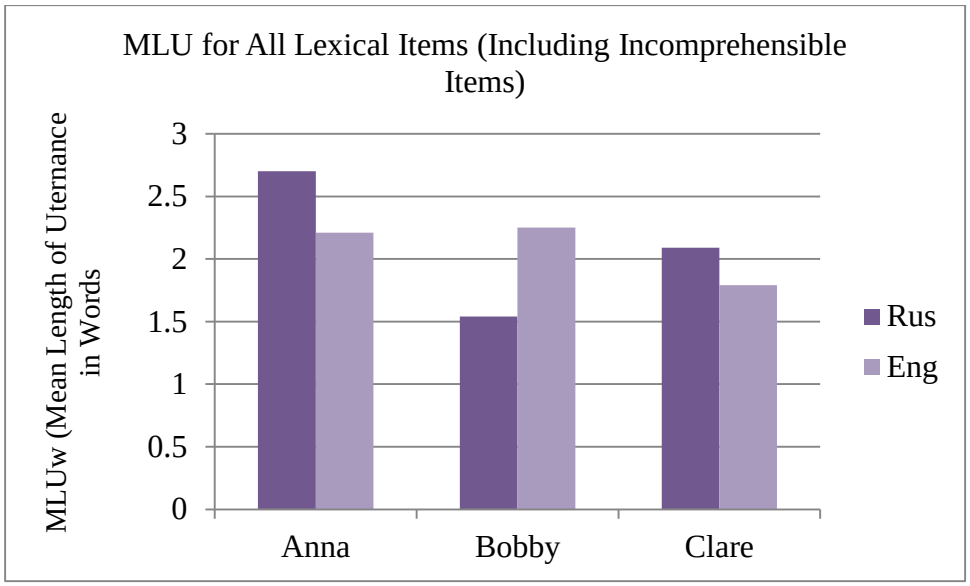

Figure 3: MLU for Russian and English stories including comprehensible items as well as incomprehensible (Twin Language) items.

As there is risk at categorizing multiples in lower categories of lexical development there is need for a more individual assessment when it comes to multiples and especially bilingual multiples.

5.2 Type-token counts

The total word count was on average 255 and 170 words for the Russian and English stories respectively. The total word count almost doubled for all children across all categories when including the incomprehensible words in calculation. The doubling in total word counts can be attributed to a mix of nonsense words and twin words. At this moment twin-words cannot be discerned from true nonsense words and therefore the unique word count for the incomprehensible items cannot be established at the time. The type –token count was 71 and 59 for the English and Russian story respectively. Overall the average type-token count was 65 words. The vocabularies for each of the stories were cross references for lexical items that persisted across all children within the same language story.

Table 1: Total word counts as well as type-token counts for both languages

	Anna	Bobby	Clare
Russian Story - All Words	302	177	288
English Story - All Words	166	205	140
Russian Story - Unique Words	76	60	78
English Story – Unique Words	62	55	62

Table 2 shows the items that were found to be present in each of the children's stories across languages. Out of the average 65 unique words present in the children's vocabulary for each story only 10 words per language were consistent. The rest of the vocabulary was unique to each child with minor overlap. These results were surprising as having the same environment and the same

caregiver/household situation daily one would expect the same vocabulary to have developed within the same set of triplets. However it is clear that each child has told the story differently with the overlap concerning only the characters in the story and major events. Out of the 10 words that persisted one word was from a different language from that of the instruction of a particular story. For the English story the word for moon, */luna/*, persisted while for the Russian story the word for dog, *doggy*, persisted. The persistence of the Russian word for moon in the English story is not surprising as the children did not seem to possess the English equivalent of the word *moon*, and the moon was part of the setting of that particular story. The persistence of the word *doggy* however, raises questions in regards to why it was mentioned as the children know the Russian equivalent for it but chose not to use. The author proposes a few explanations for this phenomena: the word /*doggy*/ is phonologically simpler than the word /*sobaka*/, it is also more salient as it is most likely repeated in songs and stories at an English daycare, it could also be not presented as the noun itself but the character name, as in the *doggy, the boy and the frog*.

Table 2: Distribution of unique words that persevered through the two stories based on language of instruction

	English Story	Russian Story
English Words	Doggy, two, bees, fall, one, down, see, baby, it, stuck	Doggy
Russian Words	/luna/(moon)	/kva-kva/ (ribbit), /on/ (he), /jeto/ (this), /v/ (in), /vot/ (it is here)

5.3 Code-Switching

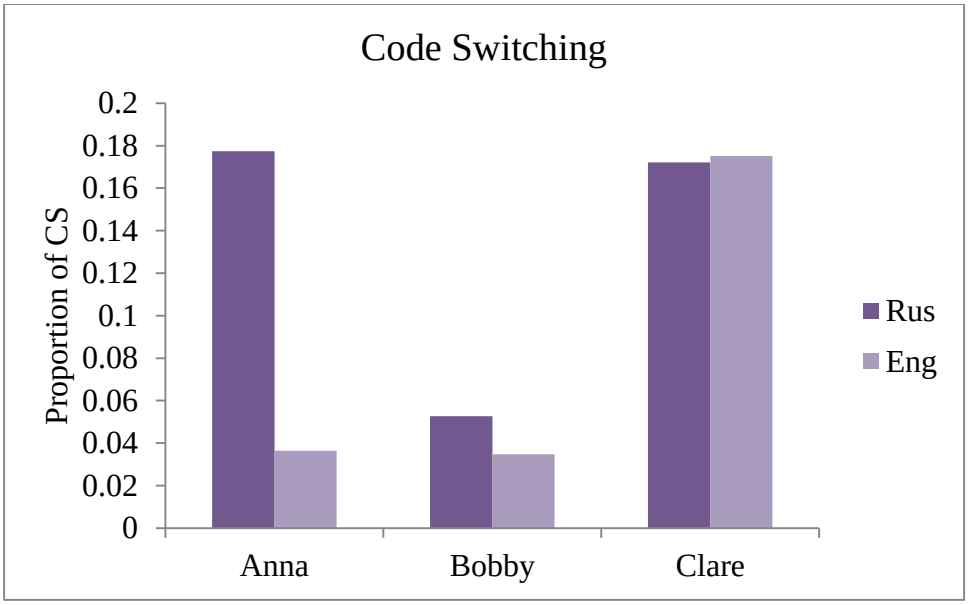

Figure 4: Proportion of code-switching within each of the children's stories.

In terms of code-switching (CS) all three of the children performed in a unique manner (Refer to Figure 4). Anna had a higher proportion of CS in her Russian story than her English story (17% and 3% respectively), which could indicate either an uncertainty in a production of that language for that child or perhaps she unsure what was expected of her in the reading exercise. Shyness also cannot be ruled out however the child was not reported to be shy on a daily basis by the mother. Bobby had the lowest proportion of CS in both languages (on average 4%). Low CS in both languages indicates a firm grasp of the languages, as firm as it can be at 2 years, and also the understanding that the instruction *administered* by either parent in different languages requires the story to be *told* in different languages. Clare had the highest proportion of CS in both languages (on average 17%). High CS in both languages is usually identified as incompetence in the language and therefore a reliance on CS between the two languages. However, it can also be interpreted as linguistic competence in the early stages of simultaneous bilingual acquisition (Genesse, 2001; Genesse, 2008).

6. Summary

Preliminary data suggests that overall the children are presenting with a language that is a mix of both of the languages they are acquiring simultaneously. There is no standardized data for comparison of the narrative at such a young age and therefore the results are presented as a case study rather than a comparison to different populations. The MLU of the children is on par with singletons of their matched age group when only counting comprehensible words (Brown, 1973) and supersedes them when counting all words (non-words and comprehensible words). Although the MLUw presented is based on all nonsense words and therefore includes possible twin-words as well as true nonsense words. Therefore the results presented on the MLU are for interest only and require more in-depth study. The author plans to analyze the nonsense words within narratives to determine which words are true twin-words and which are nonsense. The CS results are interesting as they showcase the difference within the triplets which are usually seen as a unit. The difference in CS could be attributed to several things, such as learning styles and spent time with different family members who speak different languages. It is very interesting to see each child develop on their own even though they are raised within the same environment although more analysis is needed.

The results presented are based on one data collection point (including 2 stories) and therefore are only preliminary and more data collection is needed for more concrete results.

The author aims to continue collecting data until the children are 12 years of age. At that point a longitudinal data can be presented regarding the narrative structure and its development. The author also hopes to recruit more participants in the study: bilingual and monolingual twins and triplets to further be able to generalize the results to the populations themselves.

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