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The syntactic development in the earlier stages of children's first language acquisition

How does the process of morphemes function during the child's 12 to 24 months?

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Abstract

This essay deals with the start of children's first language acquisition and will measure the syntactic development of children through counting the MLU (mean length of utterance). A child, 12 months old, will be studied through transcripts, video and audio over the course of a year.

The material used for this essay can be found on the online corpus CHILDES which is a large database of transcripts of child language. The graphs and charts in this study will demonstrate the MLU value from 12 to 24 months of one child. It also shows the amount of different word classes being produced on a monthly basis. Further, in the results a low value of the MLU is provided which can be associated with various explanations. Cases of backsliding also occur in the graph. On the discourse of different word classes' presence, during the given time frame, the chart shows a high usage of nouns and verbs that proportionally increases with age, which is common at the given stage.

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1. Introduction

1.1 Background

People, who have a passion for languages or who love children, might be more inclined to study the child's process of learning a language. One could speculate that as a parent one will surely remember the child's first word and before one knows it the child will be speaking around the clock. One might wonder how many words children learn per week. This essay examines the syntactic and morphological development observed in L1 language acquisition.

Three different perspectives on language acquisition will be discussed: the behaviouristic, innate and interactional/developmental. In regards to these views the basic concept, strengths and weaknesses will be observed. Additionally, four different stages in the process will be presented in count for approximately the first four years; pre-language, holophrastic, two-word and telegraphic speech (Lightbown and Spada 2006). Hence, a recount of the child's aspect of different areas in language will follow; semantics, phonology and syntax.

The focus in this essay will lie within syntax and the syntactic meaning of the child's language. The aim is to observe the expansion of word usage through research in child transcripts. Additionally, the elements in these different sentences or words will be identified. One can examine this in several ways however this essay will base its analysis on the smallest unit of meaning, the morpheme (Yule 1996).

1.2 Aim

The aim of this essay is to acquire a deeper understanding in how first language acquisition develops during a predetermined time frame which in this research is one year. The area of syntax will be thoroughly reviewed and more specific morphology, where the smallest comprehensible unit, morpheme, will be calculated from 10 transcripts. The number of morphemes found will help one calculate the MLU (mean length of utterance) and acknowledge the syntactic change in the child's language from month to month.

The research question examined is the extent to which morphemes increase over a period of one year.

2. Literature review

Influences on language acquisition

The fascination of first language acquisition is a subject that has evoked a large number of people's interest. It can be astonishing to observe this process of learning. Most parents look forward to the child's random utterances turning into those first meaningful chunks from non comprehensible utterances to meaningful morphemes, words, phrases and sentences. The child subsequently develops from uttering words and phrases to interacting with its surroundings by formulating their own intended meanings to communicate (Foster-Cohen 2009).

In this extensive process the parents and especially the mother, can be considered to have a significant influence on her child's language acquisition, something that has been investigated by Lieven among many others. The conversation between the child and the mother appears differently for every child-mother pair and also the effects on each other vary. Lieven could see a difference of MLU depending on the engagement in the conversation between mother and child (1978). Others may consider that linguistic competence grow as the body's organs develop (Yule 1996).

2.1 Perspectives on first language acquisition

2.1.1 Behaviouristic perspective

There have been a number of theoretical perspectives on how children acquire their first language. One of these is the behaviouristic perspective which is highly promoted by B. F. Skinner. The behaviouristic hypothesis is that language is learnt through imitation and practice along with *positive reinforcement* from the environment. The researchers experienced that when children make an attempt to repeat other people's utterances, they often obtained responses from its surrounding through encouragement or an effort to keep the communication going. This behaviour expanded and became a habit encompassing knowledge of correct language use (Lightbown and Spada 2006).

Although, there could be considered to be a gap in this theory, the significant importance of the environment which this perspective, behaviouristic, relies highly on. Children tends to choose what they prefer to imitate or practise from the exposure of English that they are surrounded by in their everyday lives, input, (Lundahl 2009). Further, it has also been documented that children can put together combinations of words that they have not yet heard being uttered (Lightbown and Spada 2006). These two examples show a weakness in the

behaviouristic view since the child seems to have other sources of acquisition other than their environment.

The advantage of this perspective, that one should consider, is that there is a large amount of records that can be seen as proof of the effect of imitation, practice and positive response. A research by Lieven discusses the importance of the conversations between mothers and their children. She brings forward examples of different situations where the mother's interaction varies and measures the development of these children's language acquisition. The result of this study appears to point towards the caretaker (the mother in this case) having a major influence on the process. The children, whose mothers interacted with them more, exhibited more rapid progress as measured by their MLU (1978). This method, MLU, is a tool that one can use to measure the syntactic development of a language. Its basic concept is to count the comprehensible units through for example words or morphemes (Dobbinson, Griffiths &Trott 2004).

2.1.2 Innatist perspective

The second view is the innatist perspective where Chomsky is seen as the prominent figure. Its hypothesis is that language is an innate ability. It is a biological development that the child goes through and it only acquires a fair amount of communication with the environment in order to develop. There has to be some form of input from the caregiver to enable acquisition to take place. Although, the innatists would argue that there is no need for any kind of specific tutor sessions, the biological process will deal with the major parts in the process of the acquisition (Chomsky 1959 & Lightbown and Spada 2006).

This theory makes an attempt to explain the gap of the behaviouristic perspective. The fact that children develop their language beyond their input could be explained through the biological processes where they progresses through certain stages after a preliminary timeline. It has also provided a possible solution to another gap, where children take in a large amount of incorrect language and do not end up using the larger parts of this material.

The innatists believe that every child is provided with a universal grammar which encourages their ability to discover their own mistakes within time. This kind of grammar is an idea of a general set of principles which could be applied as universal to all languages. Thereby, this could provide a counter argument to the behaviouristic view which believes that children are tabula rasa, ´empty vessels´ waiting to be filled with language (Lightbown and Spada 2006).

Chomsky's theory is often associated with the critical period hypothesis (CPH) that describes that a certain skill or knowledge is learnt at a certain time according to our genetic process schedule. If these qualities are not acquired at this specific time it will be difficult or even impossible to acquire them later. However, this theory is hard to prove or disprove since the majority of children are surrounded by language. Nevertheless, there are a few cases where this theory has been able to be tested and perhaps has been proven to make a point. One also has to take into consideration the possibility that these children might have had other influences that affected their ability to learn a language such as brain damages, specific language impairment or developmental delays (Lightbown and Spada 2006).

2.1.3 Interactional/developmental perspective

The third perspective is the interactional/developmental perspective where Piaget and Vygotsky are acknowledged as prominent figures. They both put emphasis on the cognitive development as a part of the language acquisition. Therefore, the hypothesis is that children acquire their language through interaction with people and objects in their surroundings. Supporters of this theory would say that the innatists put too much emphasis on the innate heritage, although they admit that it plays its part as well, rather than the ability of learning by doing. The concept, learning by doing, goes without saying however to clarify; it implies to learn by practising, imitating, making attempts to speak etc. The two main influences for the child's processing seem to be the interplay and the environment (Lightbown & Spada 2006).

Several studies have been made as an attempt to prove the importance of interaction with the child regarding language development. Among them there is one study where a child with deaf parents had a television as its only source of input at home. This child's language skills was processing badly and not until he began interacting sessions with another person in real life, did he get back on track to the appropriate language level of his age. This could be seen as evidence for this theory, justifying the importance of interaction. Although, as a counter argument the researcher found that the child with the deaf parents appeared to be learning sign language, being a language as well, very well through observing his parents. (Sachs, Bard & Johnson 1981).

2.2 Stages in first language acquisition

Before exploring this section of the research one should bear in mind that the ages mentioned for each developmental stage is highly approximated. The language process can differ a great deal from child to child.

2.2.1 Pre-language stage

The language production begins with the pre-language stage where the child makes a lot of 'cooing' and 'babbling'. This phase often takes place between the ages of approximately three and ten months. In this stage the child goes through three steps. First is the 'cooing', around three months, where one can hear the first recognizable sounds in forms of velar consonants, such as [k] and [g], and even high vowels, such as [i] and [u], can appear. Second is the 'babbling' stage, at the age around six months when the child begins to sit up, which causes sounds in the form of consonants and vowels in the sense of nasals and fricatives. Units longer than a phoneme may start to appear, for example *mu* and *da.* The intonation pattern also starts to grow into the child's consciousness.

Further, at the age of ten and eleven months the child may begin to make its first attempts to stand up. At this stage extensive examples of 'sound play' and imitations can occur. At this point it is possible for the child to use its voice in different ways in order to show emotions or emphasis (Yule 1996).

2.2.2 The holophrastic stage

Next up is the one-word or holophrastic stage which can appear between the age of twelve and eighteen months. It is the time when comprehensible single units can be uttered such as 'milk', 'cookie' or 'cat'. The most common word classes to appear first seem to be nouns (ca.60%), verbs (ca.20%), adverbs and adjectives (Crystal 1997). Hence, a large number of these utterances are used in the sense to name objects however some are also attempts to make a statement which the child is not able to express yet. To give an example, the child could use the word *Sarah* to emphasize that Sarah's bed is empty. Although, the child is in possession of the lexical items *Sarah* and *bed* in their mental lexicon, it is not ready to produce a more complicated combination with these (Yule 1996). Even compounded words in

the form of this expression [ʌsæ:] could be interpreted as an effort to express the phrase, *what's that*.

2.2.3 Two-word stage

The two-word stage could appear at the ages between eighteen and twenty months when the child's vocabulary has grown beyond about fifty words. Now the process of paring single words together appear such as *baby chair*, *mommy eat* and *cat bad*. These utterances can still be interpreted in different ways and thereby the communication between the parent and child also increases (Yule 1996).

2.2.4 Telegraphic speech stage

Before the child turns three it is likely to pass through the telegraphic stage. This progress appears to define the increase of words that are linked together in an utterance which is similar to a sentence and uses the right order of the elements (Yule 1996). It cannot be considered as a sentence yet, depending on the omission of crucial elements which seems to be grammatical words, such as *the, is,* and also word endings, such as *–ing* (Crystal 1997). Hence, the characteristics for this stage lie within the word-forms used instead of the amount of words. Nevertheless, it should not be forgotten that during this stage the vocabulary goes through a major enlargement up until around the age of three, when the child's storage contains more than hundreds of words. The pronunciation has by then also improved with a step closer to the resemblance of adult language (Yule 1996).

Further, children begin to use more than one clause in their sentences and when they reach the age of four it is common to speed up the discovery of grammatical errors to sort them out. As the child grows older it will also advance more by using a higher level of vocabulary, an increased consciousness of the correct grammar, understanding underlying meaning etc (Yule 1996).

2.3 The different areas of language

As the child is acquiring its first language there are different areas in the language that develops at different stages and, as a researcher, one may choose to concentrate on one aspect within one area. In the following text, the areas described are semantic, phonology and syntax which will be deeper investigated in this essay.

2.3.1 Semantics

Semantics deals with the issue of using the right word/s in the right context in order for the utterance to make sense. When analysing the area of semantics the focus lies on what can be characterized with the word, phrase or sentence and not what can be associated. For example *needle* can be described with thin, sharp, steel instrument and it could also be connected with pain which is a personal association. Semantics could be said to help one in the sense of noticing oddness in the language. Sentences such as *The hamburger ate the pig* might ring a bell as odd. The syntax is perfectly fine nevertheless semantically speaking it is strange (Yule 1996).

During children's holophrastic stage they tend to overuse their rather small vocabulary referring to a greater amount of objects than are justified. They usually pick a word, for example *dog*, and then use it to talk about objects that in some way have a resembling quality. In this case *dog* could be used for furry objects with eyes made of glass, a set of cufflinks or a bath thermometer where the common denominator appeared to be "objects with shiny bits". It also appears to be common with extending these categories, an action called overextension. This can be applied judging on the basis of similarities of shape, sound and size. Movement and texture could also be possible factors although they are a bit rarer. To give a few examples of these ways of dividing up objects in categories; *sizo* (scissors) can be used for all metal objects or 'ball' for round objects. It seems to be more common in the semantic development to use this overextension strategy and then narrowing down the usage of the word from there. Nevertheless, when giving a minor view into this area it should be mentioned that even if the child would refer to an object using the wrong term/word it does not mean that the child cannot pick out an apple when presented with several round objects. The statement made is that the speech comprehension does not have to be affected by the overextension (Yule 1996).

Another remarkable aspect in semantics is the way that lexical relations in terms of hyponymy are affected. Yule defines this concept as "When the meaning of one form is included in the meaning of another [...] and some typical example pairs are daffodil – flower, dog- animal, poodle – dog, carrot – vegetable" (Yule 1996:119). Children usually choose to practise the 'middle level', in a hyponymous set, such as 'dog' in the set 'animal-dog-poodle'. A selection worthy of speculations since rationally thinking the most general term, *animal*, would be the option. A possible response to this question could be the parents' use of the

'middle level' when talking to the child, rather using flowers or other lexical items such as *plant* or *tulip* (Yule 1996).

Antonymous relations (separating words of opposite meaning) are also paid attention to as the child tends to require this function in a later stage somewhere after the age of five. This can be seen in the following example: If one were to ask the questions: which tree has more apples? And which tree has less? It is more probable for the children to give the bigger tree as their response in both questions. This could depend on that children could have a hard time to tell these two trees apart (Yule 1996).

Another common phenomenon of this area is overgeneralization which implies that a newly acquired language feature is used in too generally and to a large extent. One could provide an example as the rule of adding *–s* to create plural. Once children possess this knowledge they will express it through words such as *boys* and *cats*, they could also attach it to other words such as *foots* and *mans*. Additionally, it is common that children acknowledge some of the irregular forms of plural, during a while, at this age and hence they tend to combine these two rules in the construction of words such as *mens* and *feets*. This can be experience through the usage of the past tense as well where one can hear utterances like *walked* as well as *walkeded* (Yule 1996).

Children also tend to use words for a smaller category than it is used by the adult language, this is called underextension. Children may apply the word *dog* only for the family's dog or they could use the word *shoes* for only their own shoes. Finally, one last common feature is mismatch. This concept implies the act of using a word wrong, such as referring a *telephone* as a *tractor* (Crystal 1997).

2.3.2 Phonology

Phonology is defined as the sound pattern of languages in terms of articulation and speech organs involved which can diversify for each language. All humans are provided with different vocal tracts, hence the large variations of all sounds in a language. Note that the sound differs through physical production (meaning the body size, sex etc) and speech sound (meaning the different tones of the voice such as screaming, whispering etc). Thereby, there can be several ways of pronouncing the word 'me' nevertheless people often comprehend these versions as the same word instead of a different word (Yule 1996).

The first recognized sounds of a baby are the basic biological noises such as crying and fussing that can be expressed in the urge of food or discontent. People will also hear the baby

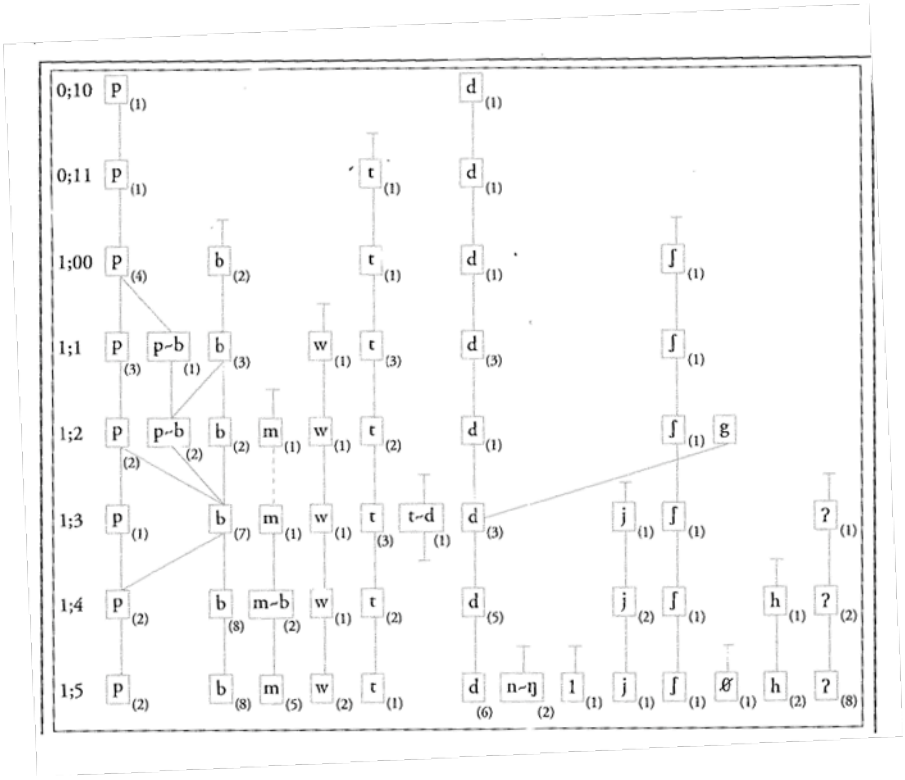
breathing, eating, excreting, swallowing, sucking, coughing and burping, which all have their characteristic sound (Crystal 1997).

Nevertheless, in the early stages of the child's language acquisition, when recognizable speech has not yet begun, the baby still recognizes several different sounds and words. The child could for example acknowledge the difference between *ba* and *pa.* This means that there is an inner process that reflects upon the different inputs of sounds that the child acquires in its environment (Lightbown and Spada 2006). With time, between weeks 8 and 20, the baby begins to produce other sounds than those mentioned above, such as laughing and cooing. With this advance children then begin to play with the different sounds in order to find the correct intelligible sounds at the ages between 20 and 30 weeks. This period is defined as the vocal play and is provided with a lot of practise for the baby along with a huge dose of laughter for the family. The last pit stop before the production of 'proper' speech is the babbling (at the ages of 25-50 weeks). When the child has learnt to speak a little there is yet one obstacle to conquer, the melodic utterance. People tend to speak in a certain melody in different language and change their tone of voice and rhythms in certain places. This process tends to be dealt with between the age of 9 and 18 months (Crystal 1997).

The English alphabet consists of a number of letters and each one of these is representatives for phonemes. A phoneme can be defined as each different sound in the phonetic alphabet or all representatives for the sounds that combine all our different words. In the child's language acquisition the first to appear are the phones and one can thereby introduce the concept of a phone and a phone tree. A phone, are all the different sounds of a phoneme. If one uses the sound [t] as an example there are the different phones such as [t^h], [D] [t̪] etc which each represent a phone (Yule 1996). Then, a phone tree is a tool that can be used in documenting the progress of numbers of phones uttered. As one might suspect, this will generally grow as the child develops, hence the symbol of a tree (Crystal 1997).

The child starts out with one or two phones and then adds to this tree until the collections of phones are complete. This view of the development shows the connections of the phones as they might occur in different time periods (Crystal 1997). It is important to be aware of the fact that a phone is each individual sound and that there might be several different phones of a phoneme (Yule 1996).

Table 1) Phone tree



(Adapted from Crystal 1997)

One can observe the example of a phone tree of the initial consonants between the ages of 10 months (0; 1) and 17 months (1; 5). Vertically the tree shows the consonants used at different ages and horizontally one can witness the set of phones being used by the child. The numbers represents how many different tokens of the phoneme that was used in the beginning of a word (Crystal 1997).

2.3.3 Grammar

Syntax

Syntax is the organization and structure of a sentence's components. The concept was found in the Greek language where the word *syntax* stands for "a setting out together" or an "arrangement" (Yule 1996:100).

The first recognition of grammatical development may not seem typical for the area nevertheless it appears through the first single words. Generally the most common word classes at this stage are the nouns (ca. 60%) and the verbs accounting for perhaps 20% of all utterances. However, it is not unusual to find other word classes such as adjectives and

adverbs although there may also exist words that are hard to categorize in a word class (for example *bye-bye*) (Crystal 1997).

The outset of the production of words is, as mentioned before, defined as the one-word stage. However, some researchers may find this concept misleading since a baby's one word utterance could be understood as a sentence. To present an example one could look at a child that used 'dada' in three different ways: as a question, statement and a demand. For example as the child heard someone outside the door it said *Dada?* Which could be interpreted, *Is that Daddy coming?* (Crystal 1997).

As the child reaches the age of 18 months it tends to put these single words together into a two-word sentence. People may consider this phase as when the 'real' grammar development begins. Certain sentences are possible to analyse grammatically or semantically while others are not (Crystal 1997). On the discourse of syntax one can analyse these utterances by splitting them into smaller units. Nevertheless, it is important to define these concepts, used in practising this analysing, in order to avoid confusions. A word could be described as the letter between the empty spaces in a text and these words can be divided into classes such as noun, verb, adverb, adjective, conjunction, interjection, numeral, pronoun and preposition. One could also put them, as Crystal suggests below, into clauses; subject, verb, adverbial, object and predicate (Estling Vannestål 2005 & 1997).

Table 2) Clause elements defined in phrases from the two-word stage

1) *Daddy kick – Subject verb*
2) *Shut door – Verb subject*
3) *There teddy – Adverbial subject*
4) *She cold – Subject adverbial*

(Adapted from Crystal 1997)

Then generally at the age around two the 'real' sentence building advances with more words and various combinations, such as *Man kick ball*, *Where daddy going?* and *Put that on there*. The clause structures keep in complexity with time and at the end of year three the child's utterances resemble more with an adult's (Crystal 1997).

As mentioned above there are several kinds of techniques one can use when dividing a language into smaller units, two additional categories are phrase and sentence. A phrase could be described as a unit of grammatical correction that can consist of one or several words that

form a phrase. It could be a noun-, verb-, prepositional phrase etc. The determination of a noun phrase means that the main word is a noun and the same concept goes for remaining phrases (Hewings & Hewings 2005). A sentence has at least one or two clauses where the first word has a capital letter and the last word finishes off with a dot, question mark or exclamation mark (Estling Vannestål 2005).

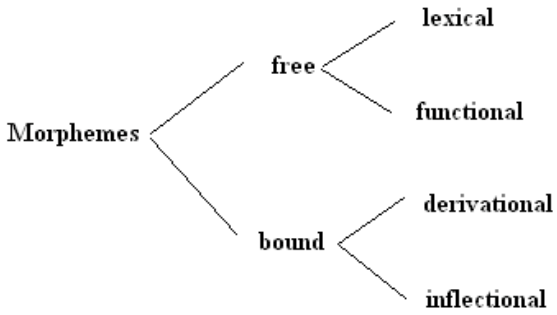
As the child develops and grows older, the language improves and the child will have to connect the right forms of words with each other in order to produce the intended utterance. This can be done through a system that Yule refers to as the traditional categories which divides sentences into different boxes for example voice, number, gender, tense and person (1996). This technique is most profitable when discussing the agreement within a sentence, for instance with: *The boy likes his dog.* In the noun phrase 'the boy' one may consider in terms of number and person that these categories affect the choice of tense and structure of the sentence. Hence, there must be an agreement of concord between *The boy* and *likes* in order for a grammatically 'correct' sentence. Next, in the category of tense there is a multiple choice to be made, choosing a verb that 'fits' the chosen noun. One could ask whether the verb should be in the present (*like*) etc. Then one also have the voice, whether to create a passive (the *liking* has been done) or active (the liking is happening right now) voice. The last category is gender which can be used as describing the possession of something. In the example sentence one has the dog which belongs to the *boy* and this relationship is symbolized in the agreement word, *his*. This choice is done through something called natural gender which could be described as determining the choice biologically. The possession state is then divided into three categories; male entities (*he, his*), female entities (*she, her*) and, also when the gender does not matter as with animals there is, genderless entities (*it, its*).

In other languages, for example Spanish and German, they use the grammatical gender which is more common. Spanish has two gender forms while German has three and both languages use different articles for each gender which differs from English where the same article is used for all genders (*the)*.This system is nevertheless not biologically based since girl is labelled to be a neuter (*das Mädchen*) and a book is labelled to be masculine in French (*le livre*) (Yule 1996).

Morphology

Morphology observes the internal structure of words on the basis of their constituent units of meaning, morphemes. The concept, morpheme, can be described as the "minimal unit of meaning or grammatical function" (Yule 1996:75). If one extracts examples found in Ella's (the child used in this research) transcripts one can find words such as *paying* and *means*[1]. Each of these two words contains a lasting element or a stem, pay and mean. Additionally, each word has a different ending, suffix, *–ing* and –s. When counting morphemes one acknowledges the stem as one morpheme and the suffix as another. Hence, these two morphemes can be divided into two types; free and bound morphemes. The free ones are elements which can stand alone while the bound on the other hand cannot (Yule 1996).

Table 4) The different types of morphemes



(Adapted from Yule 1996)

Lexical morphemes consist of word classes that are the most crucial in carrying out a message, noun, verb and adjective. These belong to the 'open' word classes where it is common that new words can be added. The example paying and means from above are a part of this group. Functional morphemes are part of the 'closed' word classes which rarely adds new words and the classes that are participants here are; conjunction, article, pronoun and preposition (Yule 1996). Examples expressed by Ella of these morphemes are; *above*, *and*, *the* etc[1].

Derivational can be used to create new words or word classes such as the transformation of *gent* to *gently* by adding *–ly*. The word has changed into a new grammatical category from noun, *gent*, to adverb, *gently*. Inflectional differs in the way that it can change the grammatical function of the word instead. This morpheme tells us whether the word is

[1] http://childes.psy.cmu.edu/browser/index.php?url=Eng-UK/Forrester/

singular or plural, the tense and the comparative or possessive form. Hence, they only consist of 8 suffix alternatives.

Table 3) The inflectional morphemes

Noun+	*-'s, -s*
Verb+	*-s, -ing, -ed, -en*
Adjective+	*-est, -er*

(Adapted from Yule 1996)

From these new terms that have been introduced one can divide a majority of utterances on these conditions, observe below.

Table 5) Examples from Ella's transcripts of different morphemes

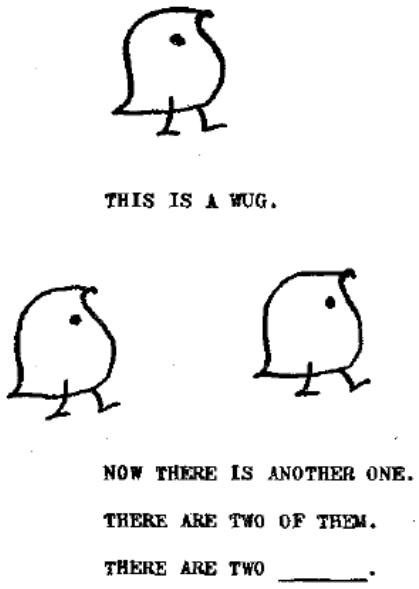
1)	*There*	*'s*	*cereal*
	Lexical	inflectional	lexical
2)	*I*	*like*	
	Functional	lexical	
3)	*Fuzz*	*-y*	
	Lexical	derivational	

(Adapted from[1])

The acquirement of the different morphemes can partly be observed in one of the most eminent early studies of children by Berko[2]. In this experiment the knowledge of plural *–s* is put to test in order to acknowledge whether it is an acquired feature of the children. Hence, various forms of grammatical features such as past tenses and plural was elicited by the experimenter through pictures[2].

[2] http://childes.psy.cmu.edu/topics/wugs/wugs.pdf

Table 6) The elicitation of plural -s



(Adapted from[1])

The picture above is one example of a picture which was observed by the children in order to see if they acknowledge the connection of *wug* in plural is equivalent with *wugs*. The reason for using the unrecognizable word *wug* is crucial for the experiment's validity. If the experimenter would have chosen a word like *cow* the children might have heard the plural form *cows* in some context. Hence, the correct answer *cows* had not been enough to justify the children's knowledge of how to use plural formula for *cow* established from *cow*+ *-s* since it might also be a random guess. Nevertheless, this obstacle is prevented with the fake word *wug*[2].

Other studies of children's morphological acquirement show that endings such as *–ing* and plural are most frequent to appear around the age of 18 months. Nevertheless, the process of how to use these correctly has only started by then and will continue to be acquired for several months additionally. The speed of the development of the endings *–ing* and plural can be observed in Berko's study[2]. The usage of plural seems to be acquired rapidly from 0 % to 100 % of level of correct use in 3 months (between the ages of 28 to 31months). Nevertheless, the *–ing* usage is a slower process which requires 16 months to get from 50 to 100 %. The occurrence of backsliding may show during this development and this concept can be defined as the child returning to an earlier stage in the development[3]. Consequentially, the two years to come will emerge other endings (Crystal 1997).

[3] http://homepage.ntlworld.com/vivian.c/SLA/L1%20and%20L2.htm

3. Methodology

3.1 Method

There are several approaches to children language research methodology. This is an empirical study which denotes that it is carried out through an experiment or an observation. This study adopts a heuristic stance rather than focusing on a specific hypothesis. This means that the researcher enters with an open mind instead of having a idea to be proven right or wrong, such as the hypothesis that children has a vocabulary of 50 words at the age of 24 months (Dobbinson, Griffiths and Trott 2004).

CHILDES

The CHILDES (Child Language Data Exchange System) database has been used in order to collect data in the sense of transcripts. It is a corpus that was established by language acquisition researchers, Brian MacWhinney and Catherine Snow, back in 1984 for the purpose of storing first language acquisition data (Crystal 1997). It contains transcripts as well as audio and video recordings of children speaking. This corpus contains data from more than 20 different languages and 130 corpora[1].

In the discourse of choosing a time period for one's study there are two alternatives, longitudinal or cross-sectional. A longitudinal study can be carried out over a longer period, six months or one year as a suggestion, is spent watching the process taking place with only one child. The cross-sectional study implies that there are several children of different ages participating. The observation of children can then be done during a shorter period of time than the previous method. However, the disadvantage of having several children is the uncertainty of the method since the individual development can appear to be different from child to child (Dobbinson, Griffiths and Trott 2004). This essay will perform a longitudinal study following the British child Ella during a year[1].

Transcripts

Transcripts has been chosen since plenty of language research is being captured on audio or video and then documented in written forms of transcripts. This technique is often used when one wants to count words, morphemes, syllables, phonemes or patterns of interaction depending on the area of research interest. In this form of data collection the concepts type and token are used to define the occurrence is being analysed. Token could be described as a

certain presence of something and type is more a distinct area of things (Dobbinson, Griffiths and Trott 2004).

Transcripts can roughly be divided in two categories within linguistic; the phonetic and the orthographic. The first one, phonetic transcript, is most profitable used in the in the context of phonological research while the second is commonly used with larger units, such as morphemes, words, sentences etc. These two categories can be documented in different ways depending on what transcript system follows. There are several different descriptions and rules of how to write a correct transcript. The process of then putting words to the recorded audio was originally done manually by pencil and paper however this process has been computerized since the beginning of the computer era[4].

Nevertheless, documenting transcripts is quite time-consuming since a recording of one hour audio can take more than ten hours to transcribe a finished transcript. Reasoning with this fact in mind, it was suggested that the data that was compiled within the area should be made freely available on an international level. This is how the CHILDES database was established and it has subsequently become a significant source. However, there is one consistent problem with this database, which is a work in progress at the moment, and that is to agree on a set of policies and standard conventions on how to collect and store the data. This is necessary to ensure that all data are coherent (Crystal 1997).

3.2 Material

The participant of this study is Ella from the United Kingdom. CHILDES contain several transcripts of her with audio at different ages. These films last from 8 to 29 minutes at the most and are recorded by her father Mike. However, Ella's mother and sister participate at times as the family tend to record in a natural environment as possible.

The time frame of the transcripts is be set between the ages of 12 and 24 months[1].The search of "comprehensible" morphemes will be the focus when analysing Ella's transcripts, how many of them that are intelligible in contrast to nonsense. One can count the morphemes in an intelligible word or phrase according to table 7.

[4] http://en.wikipedia.org/wiki/Transcription_(linguistics)

Table 7) How to count morphemes

go		**home**		**now**						
1	+	1	+	1						**= 3 morphemes**
I		**live**		**in**		**Billingham**				
1	+	1	+	1	+	1				**=4 morphemes**
mummy		**kiss**		**-ed**		**my**		**daddy**		
1	+	1	+	1	+	1	+	1		**=5 morphemes**
I		**like**		**your**		**dog**		**-s**		
1	+	1	+	1	+	1	+	1		**=5 morphemes**
						TOTAL				**=17**

(Adapted from[5])

In this essay 100 utterances, in each of the 10 transcripts, has been analysed and estimated for the number of morphemes. This number was then be divided with the total number of utterances (100) in order to get the MLU[5]. This requires that one is clear on the definitions of what a morpheme and an utterance are. It should also be mentioned that the concept of utterance in this essay will be defined as a complete unit that appears only in spoken language; it could be declared as everything that is not silence. Utterances could be represented by a written version, such as a transcript, although they do not exist in the written language. Examples of an utterance could be *ey*, *are*, *mum*, *hmm* etc[6].

Mean length of utterance (MLU)

MLU is one method of measuring the syntactic development of a language. Its basic concept is to count the comprehensible units through words, morphemes or phonemes etc (Dobbinson, Griffiths &Trott 2004). These various options can give one quite different numbers depending on the level of age. One may find several different phonemes with a child at the age of 1 however the findings of a word might be equal zero. With the MLU result one could convert it into a monthly, or other appropriate average, which can be put into a table.

[5]http://www.speech-therapy-information-and-resources.com/mean-length-of-utterance.html
[6]http://www.sil.org/linguistics/GlossaryOfLinguisticTerms/WhatIsAnUtterance.htm

The tool of measuring syntactic development by MLU was introduced to analyses of morphology and transcriptions by Roger Brown and his colleges (1973). These researchers established the MLU as a benchmark for measuring the child's language acquisition. Along with the expanding of technology, within computers and calculations, MLU has further widened its utilization[7]. CHILDES and SALT are two reference databases online with a considerable volume of material, hence transcripts that one can use to calculate the MLU at different ages and for different language backgrounds. Nevertheless, both of these well-known examples also have their limitations to take under consideration when using them[7].

The disadvantages with MLU are that different sampling methods which can segregate the outcome. Secondly, it is possible to calculate the MLU in several various ways which creates a problem if one should use another researcher's material and take the technique being used under consideration in the research. Thirdly, the key concepts used when counting the MLU, *word*, *phoneme*, *morpheme*, *utterance* etc, could be defined differently and each different definition affects the outcome. An important notion to remember is also that the result will be more reliable the more utterances one analyses[5].

The benefits of using MLU are that one receives one type of measurement on the syntactic stage of a child. MLU is for example used as a tool investigating in the area of children with language impairments. An index table of MLU is derived from comparing the child's value to the existing approximate table. If the result appears to be highly variant one could suspect the child possibly has language difficulties[5]. Compared to the methods of measuring syntactic development below (t-unit and sentence weight) the MLU could be considered most suitable for the lower stages of the language process. The other two might in fact not be appropriate for a valuable result in this essay if one considers the time frame 12 to 24 months.

Other methods

T-Unit can be referred to as an alternative method of analysing the syntactic development. The concept, t-unit, can be defined as the *minimal terminable unit* in a language. By focusing of these units one can detect the smallest word group used to form a grammatical sentence and then judging on the length of the sentence, one could determine the language progress.

[7] http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2849178/

The t-unit is explained as "a main clause plus all subordinate clauses and non-clausal structures that are attached to or embedded in it"[8].

Table 8) The counting of t-units according to Hunt's technique applied on one example from Ella's utterances

I want a bowl→4 words→1 main clause

(Adapted from[9])

Hence, one will count the t-unit in the following way by dividing the total number of words in the sentence (in the example above, 6 words) with the total number of clauses (in the example above, 1 clause). The quotient of this figure will show the average of words per clause, t-unit, which in this case are 6 t-units[9].

Yet another alternative to MLU is the method called *sentence weight*, which besides the length of a sentence also looks closer into the depth and extent of the grammatical relationship. The weight of each element is determined by a hierarchical modification invented by Christensen[10]. The first stage is defined by the number of main clause words, second is the modifiers of these words, thirdly the modifiers of the modifiers etc.

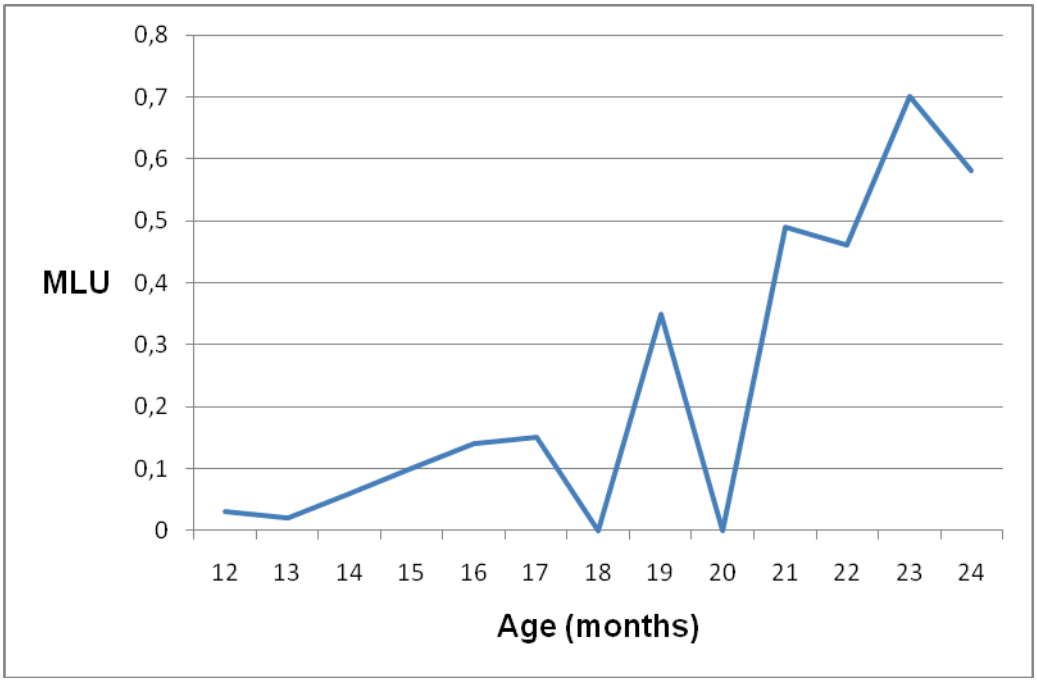
Table 9) An example of how to count the sentence weight
It contains apples and it contains bananas.

This sentence only reaches the first level of the hierarchy and thereby only receives the value 1 in sentence weight[9].

[8] http://grammar.about.com/od/tz/g/T-Unit.htm
[9] http://eric.ed.gov/PDFS/ED113735.pdf
[10] http://www.jstor.org/pss/40172354

4. Results

Table 10) Mean length of utterance



As can be observed in the graph above the MLU shows two major drops at the age of 18 and 20 months and the reason for this is that no data could be accounted for since it had no transcripts. However, up until the child is 17 months old there seems to be a steady growth and after that, ignoring the large dips, the graph's inclination increases.

Nevertheless, at the age of 22 and 24 months there is a slip back in the MLU value. This phenomena will attempted to be explained in the discussion section along with the other results.

Table 11) Examples of Ella's utterances during the ages of 12-24 months

1) *baba*
2) *how*
3) *felt*
4) *daddy's*
5) *hanging*
6) *songs*
7) *there's*
8) *fuzzy*
9) *I want a bowl*
10) *gently*

(Adapted from[1])

One can examine the way in which one can go about counting morphemes, problems that might occur and how to solve them. Beneath, one can find descriptions of how to count certain morphemes.

1. One obstacle that might appear is that one might not be ware of every single English word by heart and thereby one must verify any words up that one is even slightly doubtful about. In the search of the word in a dictionary one might also find what word class the word belongs to. Occasionally there are a few alternatives (observe example 2.) and otherwise there is only one. The word *baba* is only defined as a noun and this word class belongs to the lexical morphemes.

2. This is one of the words that were difficult to categorize in a word class hence one has to study the video and put the word in its context. Although, one can never be sure of what Ella's real intention is, one can only take as good guess as possible. This word can belong to both adverbs and conjunctions although at this earlier stage in the language process and in its context it is more likely that it is an adverb (Crystal 1997).

3. This is the irregular bending of the verb *feel* and according to the counting method that this essay is following these verbs should only be counted as one morpheme while a verb such as *walked* would be considered as two (*walk-ed*)[5]. An explanation for this way of thinking could be that the irregular verbs are sometimes considered as unable to divide (Yule 1996).

4. This example provides the lexical morpheme and noun *daddy* along with the possessive -*'s* and the inflectional morpheme which means that this utterance contains 2 morphemes.

5. The regular *ing*-verb (present participle) is built up from two morphemes; the verb *hang* and the inflectional morpheme *–ing*.

6. The word *songs* also consists of the noun *song* then a lexical morphemes is added to make it a plural, the *–s*. This word will therefore count as two morphemes.

7. This is a contraction of *there* and *is* which according to the method should be counted as two single morphemes[5].

8. The word *fuzzy* has a derivational morpheme attached, *-y*. This letter or morpheme changes the words meaning, from the noun *fuzz* to the adjective *fuzzy*, and thereby the definition is justified for this type of morpheme. Additionally, *fuzz* is a lexical morpheme which means that *fuzzy* contains two morphemes.

9. This example is a complete sentence uttered by Ella which means that one could analyse each word. One can count to one morpheme with the *I*, two morphemes with the *want*, three morphemes with the *a* and four morphemes with the *bowl*.

Table 12) Word classes and morphemes in Ella's sentence

I	*want*	*a*	*bowl*
pronoun	verb	determiner	noun
functional	lexical	functional	lexical

(Adapted from[1])

10. This word might be doubtful whether to count as one or two morphemes. Since Yule mentions the derivational ending *–ly* one could examine whether the unit *gent* is an existing word (1996). In a dictionary one might find it described as a noun which is a lexical morpheme. Hence, one has found two morphemes within the word, *gently*.

Table 13) Word classes appearing between the ages of 12 to 24 months

Age	Noun	Verb	Adjective	Adverb	Pronoun	Numeral	Preposition	Conjunction	Determiner
12	3								
13				1					
14	2						1		1
15	5	2					1		1
16	8	4			1				1
17	7	1	1	1	4				1
18	-	-	-	-	-	-	-	-	-
19	14	6	2		7		2		2
20	-	-	-	-	-	-	-	-	-
21	18	9	5		5	1	1	1	2
22	23	7	2	1	3	1	3		3
23	23	18	6	6	5		5	1	2
24	29	10	1	1	3		5	1	4

This table represents all of the free morphemes of the closed and open word classes and as one can see all of them are represented within this research during one year. Nevertheless, there are bound morphemes as well as Ella uses words such as *hands*, *means* and *paying*. The derivational category would seem to be the only one that is not appearing.

Above, one may witness the appearance of the different word classes in the child Ella's early language acquisition. The conclusion to which class that emerges first can be confirmed to be noun. Next up one might recognize adverbs, propositions and determiners.
Judging from this table people might have been most likely to hear Ella utter nouns or verbs during her second year. The category with least represent ants was the numerals and conjunctions which only appeared 2 respective 3 times during 10 conversations of a year.

5. Discussion

First and foremost it is of great importance to emphasize that the study of one child will most certainly not give any general result of children in this research question. The process can differ a great deal from child to child. However, this will provide an example of how the language acquisition could take place during a year.

As the research of the transcripts began a difficulty arose, the child was not accounted for in all twelve months. However, the decision to choose Ella was justified as she was one out of two that had video as well as audio. The solution to this problem was to just recognize the gap of data missing for these two months and continue analysing the remaining 10 months.

In the first graph (table 10) with the measurements of the MLU, two cases of backsliding where discovered as the MLU went from 0.49 to 0.46 between the ages of 21 and 22 months. This also occurred from the age of 23 to 24 months where the MLU went from 0.7 down to 0.58.In the search of an answer to this phenomenon one can look back to the very beginning of this essay where the importance of the parents' interaction with the child was brought forward. This factor could be a possible solution to the question of why there appears to be two occasions of backsliding in the MLU. It might also be as simple as the camera not catching the child's most productive minutes of the month in question. Further, the child could also be having what one might call "a slow month" where the input and production of new words are fewer than the previous. One might find several reasons nevertheless it is hard to determine a right answer for this particular child since one was not there and is not familiar with all possible affecting circumstances.

Another change was noticeable in the graph's curve as it seemed to increase faster after the age of 18 months. As a response to this action there was an investigation of eight children, one years of age, and their vocabulary learning that showed that the progress from ten to fifty words took them on an average about 4.8 months. This is the equivalent of approximately ten new words per month. After 18 months most of the children could express somewhere in the region of 50 words. Then when it came to the time between 18 and 24 months, as was the period of the increase in this experiment, the vocabulary seemed to store as many as 200 words. This data tells us that there is a growth of about 150 words in solely six months (Crystal 1997).Thereby, one could thus confirm that in this time period there is a larger production of new words compared to the time between 12 and 18 months.

A striking outcome appears when studying this graph (table 9) and that would be the low value of the MLU. Compared to other studies of various researchers the MLU would tend to be above one at the age of 18 months and at 24 the MLU will be closer to two[2]. The result however never shows a MLU higher above even one. There could be several explanations for this, as for the backsliding. The method of counting as used in this essay may differ somewhat from other researchers, the child could be a bit behind in its development and the interaction with the child could be low etc. Although, it should be noted that the use of MLU tends to be the better choice considering the other method options, t-unit and sentence weight, which are more appropriate in research involving older children.

The MLU method can be discussed on the basis of its quality. It would for instance be quite difficult to use this method if one used it on a younger child, who has not yet began to produce any words, in the view of defining what an utterance is at this early age. People may claim that an utterance is any spoken data where at least one morpheme is intelligible or it could be defined as everything except silence, as in this essay [2](Williamson 2009).

When one uses the method of MLU it is important to be consistent with one's interpretation of it. People may define morphemes and utterances, as has been used to calculate MLU in this research, very differently. It may be confusing to choose a suitable definition and the right elements to analyse nevertheless the result will show whether one chose the right alternative. That is one of the purposes of research, discovering and learning from what one has accomplished.

One could also set one's own rules of defining an utterance as long as it is explained well for others so they can use and understand it if making their own analysing. The choice of how to define an utterance also lies in the question of what age one is interested in, as different concepts work differently well with different ages. In this essay the concept most suitable was chosen in order to get a reliable result as possible.

However, a problem that emerged along analysing the transcripts was not being able to find 100 utterances in each since some only consisted of 43-79 utterances. As a solution the approximate amount of morphemes for 100 utterances was calculated. If one for example found 5 morphemes in 79 utterances. This is done by dividing the amount of morphemes with 79 to get an average of morphemes per utterance (1). Then one multiplies this quota with a 100 to get the average morphemes per 100 utterances (2).The product of the calculation then rounds of to 6 morphemes and then one has 6m per 100 utterances.

Table 13) How to count the approximate number of morphemes for transcripts with less than 100 utterances

5/79=0.0632911... 2) 0.0632911...x100=6.32911...

Another alternative to consider when using the MLU is to choose what to count; sentences, words, morphemes, phonemes etc. Once again the choice will have to be based on the aim of the research and the age of the child. In this essay the most appropriate one was considered to be morphemes as the child has not reached that far in its language acquisition yet. The choice of phonemes might have been developed into a more difficult research since it would be harder to recognize what a phoneme is. Furthermore, it would also have been an extremely time-consuming work to count all the sounds.

The result of word classes in table 13 is the researcher's own interpretation based on Vannerstål (2005) however there are other definitions of word classes. Some authors do not include articles / determiners as word classes. There is in some cases a discrepancy between whether a word is treated as pronoun or a determiner. Observing the results in the table of the word classes it is worth mentioning, as has been done above, that the definition of different word classes might be hard to determine in some cases. This statement can be applied to examples such as how, yeah, fee, no etc. In these cases one must try to understand Ella from the context of the video and make an attempt to provide the correct choice of word class that she implies to use. This extra material may be helpful to understand the child's intention at times. Nevertheless, one can never be sure to have the right answer, which only Ella can provide.

According to table 12 one can discover the appearance of different word classes during the ten months that were analysed. One may notify that the two most common are nouns and verbs. Nevertheless, nouns are also the first and only category to appear at the age of 12 months. As has been mentioned previously the most common words at the one-word stage is the noun, one is not terribly surprised by the result. Action words that turn into verbs have also been proven to occur at this level at the range of 20% of the speaking time. What one has not seen to a large extent are adverbs and adjectives which also seem to appear more at this stage between 12 and 18 months (Crystal 1997). This can be explained by the transcript only representing a maximum 30 minutes of a whole month which consists of about 43 200 minutes in total. There might be plenty of other word classes represented in the minutes off camera nevertheless to record a child's whole life around the clock would be both time

consuming and unbearable for the family. Nevertheless, one may also see the result of other word classes that appear at this level to a smaller extent such as pronouns, preposition and determiner.

The prepositions along with the numerals tend to increase at the end of the child's second year and at the age of 24 months it could be common for the child to know at least 2 prepositions and name a number. This child has uttered 5 of them which could be recognized as following the natural curve of development when it comes to each of these word classes[7].

The acquisition of conjunctions appears to be emerging as one of the last word classes, with the first conjunction appearing at the age of 21 months. In parallel one could consider the research done where the first 50 words of two children were explored, among these words there were no conjunctions (Crystal 1997). Hence, one could draw the conclusions that this word class might be developed as one of the later[11].

[11] http://www.childdevelopmentinfo.com/development/language_development.shtml

6. Conclusion

The aim of this essay has been to focus on the process of language acquisition through counting the MLU. One can recognize that the MLU proved to appear lower than the standards of other researchers which may depend on different techniques of counting the MLU as well as other factors. Nevertheless, one could observe the development of the child's language along with backsliding episodes.

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