Children learn language at different rates and the fact that a child starts to speak later than others does not have to be disturbing. However children should start to communicate with more than single words before they turn two. Those children who fail to do this (don't put words into first two-word combinations, like "More milk", "Give water", "Tom sleep") are called late talkers and may need some special attention. Most of those children will catch up with their peers and by the end of the preschool they will speak and understand spoken language well enough not to be diagnosed with language delay. As a group, however, late talkers have lower language skills than children that started to speak on time. This is true not only for preschool children, but also seems to occur throughout the elementary school and even in adolescence. What is more some research shows that late talkers are at risk of reading disorders (dyslexia). Furthermore children with a familial risk for dyslexia (children whose parents or siblings have dyslexia) often turn out to be late talkers. The reading outcome in late talkers is not so clear though because there are also studies showing that since the beginning of learning to read they are as good at it as their peers that started to speak on time.

This is why we want to learn what are the language and reading abilities in late talkers if we take into account also the fact if the child turned out to be dyslectic. We wonder if there are some language or reading manifestations of being late talker in elementary school that are independent of the fact whether a child is dyslectic or not. Our preliminary results suggests that elementary school late talkers still have some problems with producing grammatically correct sentences, but they know comparable amount of words and understand the text heard as well as children who started to speak on time. They also read just as fast, but they do more mistakes during reading. Those effects are independent from dyslexia occurrence.

We want to explore not only language and reading outcomes but also the brain characteristics. We plan to investigate if there are some anatomical differences between elementary school children who are late talkers and those who started to speak on time and if those differences are independent on the fact whether child turned out to be dyslectic. We want to check various brain structure characteristics such as gray matter volume, cortical thickness and cortical surface area. Last but not least we want to find out how late talkers' brains respond to spoken or written words. Our aim is to check whether there are any brain structures (especially some of those that are known to be involved in speech or print processing) that show different responses than in children who started to speak on time. We want to know if those differences are independent from the fact whether the child is dyslectic or not. This kind of research has never been done before.

We plan to use the neuroimaging data collected before, for the purposes of different studies that were not interested in time of speech emergence. The children were tested with a wide battery of language, writing and reading tests and their brains were scanned both anatomically and functionally during hearing and reading words. This approach would let us answer our questions without generating high costs of brain imaging.

Since the brain anatomy and activation is strongly connected with how we function the results of our study may be of great importance. Our study will have an influence on the state of knowledge about functioning of late talkers and their brain characteristics. We also hope that our findings will help to answer the question to what extend late talkers need an early intervention and in a longer perspective they can have an impact on improving the standards of diagnosis and therapy.