

Research shows that it is much more difficult to recognize an object surrounded by similar items than the same object standing alone. For instance, it is relatively more demanding to recognize the letter P in a letter string such as TRPHB than a single letter P. This phenomenon is known as **visual crowding effect**.

Dealing with crowded items seems especially difficult for people suffering from impairment of reading: developmental dyslexia. There are some theories claiming that it is **inability to cope with crowded letters** that lays the foundations for **developmental dyslexia**. According to these theories, dyslexics would read as good as other people, if only the letters surrounding the read words were not disturbing them. This theory is supported by experiments showing that **extra-large inter-letter spacing makes it easier to read**, for both dyslexic children and adults. In one of the studies, French and Italian children who suffered from developmental dyslexia were able to read as accurate and as fast as typical children, if only the inter-letter spacing was increased enough. However, it is still unknown whether this effect appears in other groups of children or in other languages.

In the current project we would like to check how **visual crowding affects reading in Polish typically developing and dyslexic children**. We assume that **increased spacing will boost reading in dyslexic children** – it will make them reading similarly to their typically developing peers. In our study, we will also register eye movements during reading, as dyslexics tend to move their eyes in other way than typical readers. We will check, if and how increased spacing affects eye movements of both dyslexic and typically developing children.

Additionally, we will check how reading performance of both typical and poor readers looks like in a condition of **decreased inter-letter spacing**. Perhaps **decreased spacing will make reading more difficult** for typically developing children and limit their performance (accuracy and reading speed) to a level of their dyslexic peers. We will also investigate eye movements during reading of texts with decreased spacing.

In the project we also plan to check whether **crowding effect appears already in pre-reading children**. In order to examine this issue, we will test a group of young children who cannot read yet and whose parents were diagnosed with dyslexia. As these children will not be able to read sentences, we will ask them to do a similar task which does not involve reading: text scanning. We will check how behavior of pre-reading children is affected by different spacing between the shown symbols.

The proposed project may have a huge impact on the situation of Polish children diagnosed with dyslexia. If a simple manipulation of letter spacing can substantially improve text reading in children, then **all textbooks should be optimized for inter-letter spacing**. It is possible, that a simple manipulation of letter-spacing in books aimed to children could solve or limit reading problems of at least a part of dyslexic children.