

## Wider letter spacing helps dyslexics read: study

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European researchers said Monday that offering reading materials with wider spacing between the letters can help dyslexic children read faster and better.

In a sample of dyslexic children age eight to 14, extra-wide letter spacing doubled accuracy and increased reading speed by more than 20 percent, according to the study in the [Proceedings of the National Academy of Sciences](#).

Scientists believe the approach worked because people with [dyslexia](#) are more affected than normal readers by a phenomenon known as "crowding," which makes a letter harder to identify when it is close to other letters.

"Our findings offer a practical way to ameliorate dyslexics' [reading achievement](#) without any training," said the study led by Marco Zorzi of the department of general psychology at Italy's University of Padova.

Researchers studied 54 Italian and 40 French dyslexic children, giving them a text made up of 24 short sentences to read in either standard or expanded letter spacing.

In the standard text, the words were printed in Times-Roman font with a 14 point print size (1 point = 0.353 mm in typesetting standards).

In the expanded text, the space between letter was increased by 2.5

points, so the "space between i and l in the Italian word il (the) was 2.7 pt in normal text vs. 5.2 pt in spaced text," said the study.

The space between lines of text was also increased to show a proportional amount of [white space](#) on the page.

The children were given either French or Italian texts according to their native language, and the regular and extra-space sessions were scheduled two weeks apart to minimize the effect that [memorization](#) might have on reading speed.

Not only did dyslexic children read faster, but the greatest benefits were observed in children who had the most problem identifying letters.

Children without reading challenges showed no increase in reading speed when given materials in which letters were more widely spaced, suggesting that the benefit was unique to children with dyslexia.

"Practitioners only know too well that getting dyslexic children to read more is a key component in achieving long-lasting improvements in reading skills," said the study.

"Extra large letter spacing, which could even be optimized adaptively on an individual basis, can certainly contribute to achieving this goal."

Dyslexia is a developmental disorder that is linked to a problem in the part of the brain that interprets language, and can run in families. Extra tutoring and an intense focus on reading are the most frequently advocated treatments.

The disorder, which has no cure, is estimated to affect about 15 percent of Americans.

Co-authors on the study came from Aix-Marseille University and France's Centre National de la Recherche Scientifique.

The research was funded by grants from the Institute for Maternal and Child Health in Italy, the European Research Council Grant and the University of Padova.

**More information:** “Extra-large letter spacing improves reading in dyslexia,” by Marco Zorzi et al. *PNAS*, 2012.

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