to several important insights. First, these findings indicated that in individuals with dyslexia, the left superior temporal gyrus, and the left inferior parietal lobule did not have the same role when words, nonwords, and texts were read. Second, an important finding is that not only were left-lateralized improvements found in individuals with dyslexia, as one would expect, but also right inferior parietal lobule involvement, suggesting that additional compensatory recruitment[57] exists in this area, were found in those individuals. For the first time, these results showed that distinctive facilitation of specific neural pathways (that were previously found to be less active in individuals with dyslexia)[57] transitorily improves the reading of words and texts, which is a fascinating finding, and could have far-reaching implications, for instance, the development of new treatments for dyslexia.[58]

CONCLUSION

The primary aim of this study was to determine the contributions that TMS has made to different reading modalities. The second goal was to investigate whether TMS might be used as a future intervention technique to overcome reading problems associated with dyslexia. We have seen that rTMS turned out to be a valuable tool for investigating questions related to reading research, both on the word and the sentence-level. Moreover, it can be applied successfully in research on dyslexia. Recently, (high-frequency) rTMS has been used as a "clinical" intervention technique for treating dyslexia by improving the reading performance by exciting underactive reading pathways in the brain. This seems to be a very promising direction for developing new and better treatments for dyslexia [Figure 2a], as long as the safety of the individuals with dyslexia can be guaranteed and strict guidelines on brain stimulation are followed.[60,61]

Moreover, a new development, the combination of brain stimulation by TMS with simultaneous electroencephalographic (EEG) imaging,[62,63] offers new prospects for research on reading and dyslexia. The integration of TMS with EEG is able to give information on the causal link between brain activity and its underlying function and cortical reactivity and its connection with other areas in the brain. More importantly, it also gives a better time window on when particular neural actions occur in the brain.[63] Therefore, this integration of TMS with EEG will give important additional neural information on reading abnormalities in individuals with dyslexia, as well as on the efficiencies and the underlying working mechanisms of future TMS dyslexia treatments [Figure 2b].

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