

# Review of: "A Review of Prosody, Punctuation, and Dyslexia: Implications for the Use of Speech Technologies"

Ipek Pinar Uzun<sup>1</sup>

<sup>1</sup> Ankara University

**Potential competing interests:** The author(s) declared that no potential competing interests exist.

This study is a nice review investigating the gap between prosodic processing in dyslexia over punctuation and speech technologies. I believe the present review is interesting and has novel potential to contribute to the field. Even the study is reported in good and fine details, there are some points needs to be developed in the parts of background and methodology. My general opinion is positive for publication with major revisions. However, I recommend that manuscript might benefit from some editions and revisions I list below:

1) In my humble opinion, since the study highlights the neurocognitive findings on prosodic processing and dyslexia by using punctuation, I strongly recommend to the author(s) making a more detailed general introduction to relevant research topics before entering the elements of prosodic units.

2) The review includes many different topics meet with prosody; for instance, explicit prosody, implicit prosody, text-to-speech (TTS) synthesis, punctuation, and neurocognitive process of dyslexia. Even all these topics might be relevant to each other in some ways, the design of the background information makes harder to follow the main hypothesis and the purpose of the review. Therefore, I strongly recommend to the author(s) to give more detailed links in some parts in background. For instance, prosody and syntax interaction (page 2, section: "Elements of Prosody") is one such example. We know that prosody and syntax has a strong interaction, which is directly related to explicit and implicit prosody. The author(s) gives a detailed explanations on the differences between these two different and relative prosodic units; the relation between prosody and syntax falls behind the main topic. However, the basic relation comes from the idea of prosody meets syntax. So, I suggest the author(s) to give a more designed explanation on the relevance of syntax for explicit and implicit prosody just before giving details on TTS.

On the other hand, to my knowledge, the influence of silent reading processing in implicit prosody hypothesis presented in Fodor (1998) and Bader (1998) is hard to explain. I suggest to the author(s) to provide a more detailed section for explicit and implicit prosody on the relation to Fodor's and Bader's hypothesis under the basis of written prosodic information before summarizing literature on Natural Language Processing, TTS, and dyslexia. For instance, the section for "Elements of Prosody" can be converted to more detailed section but focusing on first the relevant theory for the review. I suggest the author(s) to design this section with clear information on the basic theoretical difference between prosodic and syntactic boundaries on the relation to implicit prosody hypothesis. By this way, the reader will be directed for the focus on the

theoretical points relevant to neurocognitive processing and speech technologies, i.e., TTS.

3) The section for “Punctuation and Prosody” seems well-designed in its relation to neurocognitive processing of dyslexia. I strongly suggest to author(s) to give a smooth transition to neurocognitive processing by giving more details from the experimental studies. Here I recommend some basic studies, which might the author(s) benefit. I read some of them are already cited in the present review; however, I suggest mentioning them in more organized paragraphs before interacting them with dyslexia and speech technologies. It may be helpful and easier to understand the main theme of the paper:

- Steinhauer, K. & Friederici, A.D. (2001). Prosodic boundaries, comma rules, and brain responses: the closure positive shift in ERPs as a universal marker for prosodic phrasing in listeners and readers, *J Psycholing Res*, 30, 267-295.
- Drury, J. E., Baum, S. R., Valeriotte, H., & Steinhauer, K. (2016). Punctuation and implicit prosody in silent reading: an ERP study investigating English garden-path sentences. *Frontiers in psychology*, 7, 1375.
- Steinhauer, K. (2003). Electrophysiological correlates of prosody and punctuation, *Brain Lang*, 86, 142-164.
- Ischebeck, A. K., Friederici, A. D., & Alter, K. (2008). Processing prosodic boundaries in natural and hummed speech: An fMRI study. *Cerebral Cortex*, 18(3), 541-552.

4) I suggest the author(s) to make a more comprehensive literature organization for the section of “Prosodic Processing in Dyslexia”. Even the literature is fine, it needs to be presented in a good shape. For instance, to my knowledge, a well-designed ERPs study of Honbolygó et al. (2016) is not direct relation to dyslexia; however, this study is directly relevant to previous section for prosody and syntax interaction that I mentioned above. I am unfortunately very confused to see such studies in this section. On the other hand, other studies are relevant to neurocognitive processing of dyslexia. Similar to this lack of organization, the final paragraph also seem to be not related to above paragraph. It has absolutely a common topic for dyslexia; but I suggest to author(s) to give smooth transitions. To my humble opinion, prosodic awareness and punctuation skills of dyslexic students needs to be mentioned in the next section.

5) The next section “Prosodic Training in Dyslexia” seems to be well-designed when compared to previous sections. Since this review shares many different and relevant topics for prosody, I suggest to author(s) to give a more comprehensible explanation on the basic hypothesis of this paper in the first sections of Introduction, and also give explanations on the review methodology. After I read this section, I am unfortunately little bit lost on the main topic of the paper, but I believe that the author(s) can organize this after gathering relevant topics for prosodic processing of dyslexia. To my knowledge, for now the paper seems to share two different topics, which are indirectly related to each other. They need to meet at a common point for dyslexia.

6) I give completely the same recommendations to the author(s) for the next sections of “Dyslexia and Speech Technologies” and “Teaching”. Unfortunately, I do not understand well enough their relation to neurocognitive processing of dyslexia.

7) The author(s) give a detailed explanations on the limitations and future research; however, since this study is a review. There needs to be a section in the first parts of the study, which mentions about the methodology of this review. If I missed in the paper, sorry for that; however, the reader wants to understand the relevance of papers to the main topic. In addition to these, I suggest to author(s) also put information on the classification of papers. For instance, how did the author(s) select papers, how many papers did the author(s) eliminate? Since this present shape of the paper seems to be complicated due to many different topics mentioned in the paper, I strongly suggest to eliminate the unnecessary units or give much more details for all sections with a more organized shape.

Thanks to author(s) for this interesting work and their contribution on dyslexia and its relation to different disciplines. I believe that this paper can be published after major revision necessary to bring more quality for publication.