Response to Editor’s comments

A small minor question is your constraints for the GPCM and RSM models on p.3, namely the index of t=0 to 0. It seems strange to me that an index would start and end at the same point; and in that case, is the summation symbol necessary?

For sake of simplicity we used the same notations as in Emlbretson and Reise (2000) to describe polytomous IRT models. We checked them in the manuscript and they are correct. Let us provide some further explanations anyway. They are written for the GPCM but remain valid for the RSM instead.

For the GPCM, the response category $k$ for item $j$ has probability given by Equation (3), which is the ratio of an exponential of a sum of terms and the sum of exponentials. In the numerator, the sum is written using the summation index $t$ for convenience but this is just a convention (one can replace this symbol by any other letter, provided it was not chosen to represent another constant or quantity in the paper). For response category $k$, the sum in the numerator takes into account terms from $t=0$ to $t=k$ (that is, from first response category to the $k$-th one). In the special case where one considers the first response category (that is $k=0$), then this sum reduces to the sum from $t=0$ to $t=0$ and this sum is constrained to be equal to zero for identification reasons. In other words, with the GPCM (and also the RSM), the numerator of the probability (3) for the first response category is always $\exp(0) = 1$. This explains the surprising constraint written on the right-hand side of (3).
Can you please verify this formula? Also I don't seem to see r or t defined in any of the previous sections.

As explained above, both t and r symbols are just summation indices, required to properly define the sums in both numerators and denominators of equations (3) and (4). Therefore they do not deserve further definition in the paper.

One more pervasive issue that remains is the amount of grammatical errors inherent throughout the paper, even in this revised draft. I made an effort to incorporate as many grammatical fixes as I could directly into the PDF, but another author revision is necessary before this manuscript can be sent out for publication.

Thank you very much for your suggestions. They were taken into account in the revised version. In addition, the final version of the manuscript was edited by one colleague that is fluent in English. We hope that by this way the revised manuscript will meet the language requirements.