Author’s response to reviews

Title: Neurocognitive impact of metal exposure and social stressors among schoolchildren in Taranto, Italy.

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Version: 3 Date: 28 Jun 2019

Author’s response to reviews:
Dear Reviewers,

Thank you for your valuable feedback on our manuscript. We sincerely appreciate your contributions towards the improvement of our article. In this letter, we respond to your suggestions and comments with the goal of fully addressing each of them.

Reviewer #2:

Comment 33:
In the text, the reference category used is high SES, while the reference category is low SES when the results are quantitatively presented, please be consistent. Also, why you only show the percentages of change and ranges of 3 of the 4 outcomes?

Amended: “The SES resulted associated with the IQ score, with highest levels showing IQ, GAI and WMI of about 5 points higher than the lowest SES level, and VCI around 7 points higher than the lowest SES level (IQ: βhigh SES 4.8; GAI: βhigh SES 5.6; WMI: βhigh SES 5.3; VCI: βhigh SES 7.1) which means a relative percentage change of about 6%, 7% and 9% respectively, considering the ranges of the three cognitive outcomes ((64, 143), (61, 139), (64, 144) respectively)”

Comment 38:
"Further analysis was performed adding in the model the interaction term between the SES and each biomarker, and adjusting for all the covariates age, sex, maternal SPM, HOME total score, and distance from the point source (table 6)." Table 6 only shows the results of one biomarker.

"BPb showed a negative significant association with GAI, CPI and WMI in the lowest SES level." Again, not consistent with the reference category used in table 6, and also, the association with GAI was not observed.

Amended: “Further analysis was performed adding in the model the interaction term between the SES and each biomarker, and adjusting for all the covariates age, sex, maternal SPM, HOME total score, and distance from the point source. The relationship between the SES and the neurocognitive score remained similar, while we observed different relations between the BPb concentration and the IQ scores, depending on the SES levels: BPb showed a negative significant association with WMI in the lowest SES level (table 6, results only showed for BPb)”
We moved “(table 6)” at the end of the paragraph and added “results only showed for BPb”. We have also amended what we wrote in the last part highlighting the fact that for WMI we found a significant interaction between BPb concentration and SES. We state that the association is significant only for the lower level of SES since the parameter associated to the BPb variable is significant and it refers to the lower SES level while to find the effect on the other levels we need to sum the BPb coefficient with the respective betas of the interaction: from table 6 the effect of BPb in the lower SES level is -4.0, in the medium SES level is -4.0+4.5=0.5 and in the high SES level is -4.0+4.9=0.9.

Abstract:

"The lowest socio-economic status showed about five points intellectual quotient less than the highest level on average (β 4.8; 95% CI 0.3, 9.6)” Direction of the association not consistently presented. The authors should check the entire manuscript and fix these inconsistencies.

Amended: “The highest socio-economic status showed about five points intellectual quotient more than the lowest level on average (β 4.8; 95% CI 0.3, 9.6)”

We have also checked the entire manuscript and now it is consistent.

Comment 41:

"Significant associations resulted between some of the CANTAB scores and BPb and HMn, with a lower proportion of successful stops and higher stop signal reaction time in the SST tests at increasing BPb, and higher between errors in the SWM tests at increasing HMn." Add "levels" after the name of the biomarkers.

Amended: “Significant associations resulted between some of the CANTAB scores and BPb and HMn levels, with a lower proportion of successful stops and higher stop signal reaction time in the SST tests at increasing BPb levels, and higher between errors in the SWM tests at increasing HMn levels.”
We have also updated the acknowledgements and one of the affiliations:

“We would like to thank all the participating children and their families, the teachers and school authorities of Taranto, for their outstanding contribution to this study”.

“Department of Public Health, ASL, Taranto, Italy”.

Best regards,

Stefano Renzetti and co-authors