Author’s response to reviews

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

Version: 1 Date: 26 May 2019

Reviewer: Monica Lopez-Vicente

Reviewer's report:

Comment 12:
I think this paragraph should be included after SES and before home environment measures.

Comment 16:
SES: spell out in abstract too.
Page 6, line 44: use "SES" instead of "socio-economic status".

Comment 19:
Specify the executive functions measured by these instruments.

Comment 32:
Why these variables and not others? How were they chosen?

Comment 33:
Please, provide the score ranges, we don't know if 5 points is little or big change.
Comment 38:
"A significant difference among the SES levels resulted for WMI, for which we found a null effect of BPb at the medium (β 0.6; 95% CI -1.9, 3.1) and high SES levels (β 1.0; 95% CI -2.6, 4.6) when modifying the contrast matrix".

Different values in table.
Clarify the meaning of "when modifying the contrast matrix".

Comment 39:
"This study revealed a marked reduction of about 15 IQ points…"
"The IQ total score and all sub-scores, except PSI, were inversely related to the distance from the point source which may indicate a potential role of the exposure to industrial emissions."
Is this based on descriptive analyses? Not main result, I think this should be removed.

"When considering metal exposure and subjects SES we found that subjects with higher SES showed to have better neurocognitive scores and the effect of metal exposure was enhanced when subjects had a lower SES, in particular a higher BPb exposure for subjects in the lower SES was associated with a statistically significant lower WMI".
This part should be rewritten, from my point of view, it's not clear.

Comment 41:
"Significant associations resulted instead between some of the CANTAB scores and BPb and HMn, with BPb lower the proportion of successful stops and higher the stop signal reaction time in the SST tests, and HMn higher the between errors in the SWM tests".
This sentence is not correct, use lower and higher properly.
Comment 42:

"The CANTAB tests are designed to target more specific executive functions, whereas the WISC-IV examines more general composite scores of neuro-cognitive abilities.

This may explain why associations with the exposure biomarkers were more evident for the CANTAB tests than for the IQ total and sub-scores, for which the effect of metal exposure may be mitigated by other factors."

Specify other factors.

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