Reviewer’s report

Title: Prenatal and postnatal bisphenol A exposure and social impairment in 4-year-old children

Version: 0 Date: 04 May 2017

Reviewer: Paola Palanza

Reviewer's report:

The paper by Lim et al. investigates possible effects of maternal exposure to the estrogenic chemical bisphenol A, on neurobehavioral development of children at 4 years of age, by evaluation of social functions through psychometric methods. The paper is of high interest in the light of the emerging evidence of long term, sex-specific, neurobehavioral effects of developmental exposure to BPA in animal models. Albeit the intrinsic limitations of correlational studies, that should be clearly outlined in the discussion, the study is well designed and carefully conducted and may contribute to the current research on endocrine disruptors' impact on children health. For this reviewer, however, a problem is the difficulty to understand the data analysis and the consequent discussion of results.

The authors should add some more explanation on data analysis and on the rationale of linear regression (see also below).

As the authors themselves recognize, an additional limitation is the lack of a direct, observational assessment of neurobehavioral functions. However, the present study offers interesting and promising inputs for future research.

I have some additional issues that I think should be addressed in the paper:

- Breast feeding vs bottle feeding (BPA releasing bottles??) vs soy-based milk were not mentioned as factors considered in the analysis. This is a potentially highly relevant exposure factor that need to be addressed.

- Did the authors consider whether children were in day-care or home - maternal, relatives, baby-sitter's care - as an environmental factor potentially affectiong social behavior?

- Nothing is mentioned about possible sources of BPA - do you have any information about mothers' and/or children's dietary habits, for instance?

- Personality traits have high hereditability - was this controlled for by evaluating parents' social functions?

- Do the authors look for any correlation between pre- and postnatal BPA level?
- Body weight could be an additional target of prenatal, sex-biased BPA effects. Was an association between maternal BPA and bw at birth and at 4yrs of age analysed?


SPECIFIC COMMENTS

- pag. 4, 2nd period:

It is not correct to say that EU has suggested that EDCs do have contributed to children neurobehavioral deficit. A more conservative approach is suggested here, such as "The European Union has EXPRESSED CONCERN on DATA INDICATING that exposure to endocrine disruptors MAY HAVE contributed to neurobehavioral deficits and disease, costing more than €150 billion per year in Europe [17]."


- pag 8-9 - The sentence: "We also estimated prenatal and postnatal BPA effects at concentrations less than, or equal to or greater than, threshold BPA concentrations using piecewise linear regression models and the threshpt function in the HEAT package.." is unclear to me - Please explain the rationale for estimating BPA concentrations for acclared non monotonic effects of BPA.
Level of interest
Please indicate how interesting you found the manuscript:

An article of importance in its field

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal