



Assessing cognition in children with prenatal methamphetamine exposure in South Africa

Annerine Roos^{a,*}, Dan J. Stein^b, Kirsten A. Donald^c

^a SU/UCT MRC Unit on Risk and Resilience in Mental Disorders, Department of Psychiatry, Stellenbosch University, Cape Town, South Africa

^b SU/UCT MRC Unit on Risk and Resilience in Mental Disorders, Department of Psychiatry and Neuroscience Institute, University of Cape Town, Cape Town, South Africa

^c Division of Developmental Paediatrics and Neuroscience Institute, Red Cross War Memorial Children's Hospital and University of Cape Town, Cape Town, South Africa

We thank Jilani and Torres [1] for their interest in our paper on cognitive outcomes in prenatal methamphetamine exposed (PME) children [2]. We are grateful for their view that our data add diversity to the existing literature; indeed this is the first study assessing cognition of children with PME outside of the USA. They note a number of limitations to our work, as did we in the initial publication, and this correspondence provides the opportunity to discuss specific questions in more depth.

First, there is the question of how data were collected; in particular, the design was retrospective and not all informants were parents. As noted in our paper, we fully agree that a prospective design is ideal. That said, this requires substantive resources, which are more difficult to obtain in a LMIC context. Further, the timeline follow-back method that we employed is currently the state of the art approach in retrospective studies of substance use [3]. Restricting informants to parents in our setting, where most primary caretakers of children with PME are not biological parents [4], would lead to an underpowered and non-representative sample.

Second, there is the question of the relevance of our cognitive data; in particular, were our measures culturally relevant and comparable with normative data? The Kaufman Assessment Battery for Children version 2 (K-ABC II) and Beery Developmental Test of Visual-Motor Integration (Beery VMI) have been used widely in our setting, with evidence of validity [5–7]. As noted, we used the set of K-ABC II subtests that, with one exception, constitute the Nonverbal Scale, so permitting valid assessment of children with limited English proficiency. While we agree that local normative data are needed, in the absence of these, we compared the PME group with unexposed controls from the same environment. We took care to place test scores in light of contextual factors that may lead to lower performance on some items. Further, scaled scores for unexposed controls on the K-ABC II and the Beery VMI were comparable to normative scaled scores of the test developers, particularly in light of education level of mothers in our sample for K-ABC II scores [8,9].

Third, there is the question of whether a hypothesis of a link between PME and cognitive dysfunction should be made. Jilani and Torres [1] argue that given multiple confounders, such an hypothesis is overly simplistic.

However, given that methamphetamine has significant psychotropic effects, that animal models of PME show neuronal damage and cognitive deficits, and that studies that adjust for confounders have found adverse maternal and child outcomes, our view is that such a hypothesis is worth testing. We noted the presence of an association between PME and cognitive outcomes in our data, and indicated that PME may be a contributor to these findings. We agree with Jilani and Torres [1] that caution is required when interpreting data, and trust that the tone of our discussion was indeed cautious, and did not make overreaching causal inferences. What is certainly needed, the field agrees, is further research using best practice methods, but more importantly evidence-based policies to address methamphetamine use in vulnerable communities.

Acknowledgements

This study was supported by the National Research Foundation, Medical Research Council of South Africa, and the Harry Crossley Foundation.

References

- [1] Jilani R, Torres C. Prenatal methamphetamine exposure: overinterpretations in South Africa. *Compr Psychiatry* 2019.
- [2] Kwiatkowski MA, Donald KA, Stein DJ, Ipser J, Thomas KG, Roos A. (2018). Cognitive outcomes in prenatal methamphetamine exposed children aged six to seven years. *Compr Psychiatry* 2018;80:24–33.
- [3] Jacobson SW, Chiodo LM, Sokol RJ, Jacobson JL. Validity of maternal report of prenatal alcohol, cocaine, and smoking in relation to neurobehavioral outcome. *Pediatrics* 2002;109:815–25.
- [4] Watt MH, Meade CS, Kimani S, MacFarlane JC, Choi KW, Skinner D, et al. The impact of methamphetamine ("tik") on a peri-urban community in Cape Town, South Africa. *Int J Drug Policy* 2014;25:219–25.
- [5] Greenop K, Rice J, De Sousa D. The Kaufman Assessment Battery in South Africa. In: Laher S, Cockcroft K, editors. *Psychological assessment in South Africa*. Johannesburg: Wits. University Press; 2013. p. 86–103.
- [6] Laher S, Cockcroft K. Moving from culturally biased to culturally responsive assessment practices in low-resource, multicultural settings. *Prof Psychol Res Pract* 2017;48:115–21.
- [7] Mitchell JM, Tomlinson M, Bland RM, Houle B, Stein A, Rochat TJ. Confirmatory factor analysis of the Kaufman assessment battery in a sample of primary school-aged children in rural South Africa. *SA J Psychol* 2018;48:434–52.
- [8] Kaufman AS, Kaufman NL. *Kaufman Assessment Battery for Children*. 2nd ed. Texas: Pearson; 2004.
- [9] Beery KE. *The Beery-Buktenica Developmental Test of Visual-Motor Integration: Beery VMI, with supplemental developmental tests of Visual Perception and Motor Coordination, and Stepping Stones Age Norms from birth to age six*. NCS Pearson Incorporated; 2004.

DOI of original article: <https://doi.org/10.1016/j.comppsy.2019.07.004>.

* Corresponding author at: SU/UCT MRC Unit on Risk and Resilience in Mental Disorders, Department of Psychiatry, Stellenbosch University, PO Box 241, Cape Town 8000, South Africa.

E-mail address: aroos@sun.ac.za (A. Roos).

<https://doi.org/10.1016/j.comppsy.2019.07.005>

0010-440X/© 2019 Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).