Reviewer’s report

Title: Using the Ages and Stages Questionnaire in the general population as a measure for identifying children not at risk of a neurodevelopmental disorder

Version: 0 Date: 25 Dec 2017

Reviewer: Jeffrey Roth

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This study reports the sensitivity, specificity, positive and negative predictive values of the Ages and Stages Questionnaire (ASQ) administered at six intervals (24, 27, 30, 33, 36, 42, months) to 17,746 Canadian parents who had rated their child's developmental progress and whose children were later assessed for neurodevelopmental disorders (NDD) as part of the National Longitudinal Survey of Children and Youth (cycles 5 through 8, data collection ending in 2009). The authors estimated the sensitivity of the ASQ to identify a NDD of 2SD below the age mean for 24 months at 0.32 and the specificity to rule out a NDD of 2SD below the age mean for 24 months at 0.90. The authors conclude that "the high negative predictive value and specificity of the ASQ supports its potential use in identifying children who will not develop a NDD" [P13, L37-43].

This paper is clearly written and easy to understand. The authors make several inferences about the results of their analysis that did not persuade me the ASQ is a valuable screening instrument "for identifying unmet needs and facilitating early intervention" [P2, L28]. My hesitations are outlined below:

* Given the low sensitivity of the ASQ to identify children with a NDD (sole exception being 0.83 for 1SD below the age mean at 24 months across the six intervals), the current title of the paper, "Early identification of neurodevelopmental disorders using the Ages and Stages," is perhaps misleading. Since one of the authors' main finding is that "ASQ specificity was high with 1SD or 2SD cut-offs, showing good accuracy in detecting children who will not develop a NDD" [italics added], a more accurate title might be "ASQ, an accurate measure to identify children not at risk of NDD" [P11, L7-9]

* The authors frequently acknowledge ASQ's low sensitivity [e.g., P11, L21-22]. In the present study, the ASQ correctly identified just 16% of children at 42 months who were later diagnosed with a NDD. Since an avowed purpose of screening is to facilitate referral for early intervention, the fact that more than 80% of children who later exhibit NDD were not identified by the final administration of the ASQ, it would seem prudent to employ a more precise assessment instrument.

situate NDD prevalence rate found in National Longitudinal Survey of Children and Youth with other Canadian and international surveys.

* Please provide some context/commentary about two important sociodemographic findings: "boys (65.75%) were twice as likely to have a NDD compared to girls" (34.25%) [P8, L60] and "25.12 % of children with NDD were from low-income households compared to15.37 % of children without a NDD" [P9, L7-9].

* I do not understand how mean age of diagnosing NDD was 15 months [P9, L54]. One year, 3 months is well before full acquisition of language and hence prior to comprehensive assessment of neurodevelopment.

* Please explain counterintuitive finding that one measure of physical development declined as children grew: "scores for fine motor had a negative relationship with the age of children i.e. scores decreased with age of children" [P10, L25-27].

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
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