**Cover letter**

Dear editor,

We are enclosing a submission, entitled “Combining support for hypotheses over heterogeneous studies with Bayesian Evidence Synthesis: A simulation study”, to Multivariate Behavioral Research. The manuscript assesses the performance of a relatively novel method, called Bayesian Evidence Synthesis, in an extensive simulation study.

Bayesian Evidence Synthesis is a method that can be used to aggregate the support for a scientific theory over studies that are too heterogeneous to apply, for example, meta-analysis. That is, even when the studies operationalize the scientific theory differently in each study, potentially resulting in hypotheses with different numbers of constraints, or using different statistical models, Bayesian Evidence Synthesis can be used to aggregate the results over studies. As such, Bayesian Evidence Synthesis can be used to aggregate the evidence for a theory over conceptual replications. We demonstrate how between-study heterogeneity affects the performance of the method and show that having sufficient statistical power is a prerequisite for good performance, especially when the hypotheses under consideration get more specific (e.g., by placing constraints on multiple, rather than a single, parameter). Moreover, we show how the choice of alternative hypothesis (an unconstrained or complement alternative hypothesis) affects the performance of the method. Lastly, we discuss when the method can be used safely, but also under which circumstances the user should interpret the aggregated results with caution.

For the reviewers’ convenience, tables, figures and captions are included both in text, as well as separately at the end of the article, which inflates the length of the paper from 38 to 44 pages.

We confirm that neither the manuscript nor any parts of its content are currently under consideration or published in another journal. All authors have approved the manuscript and agree with its submission to Multivariate Behavioral Research.

I will be serving as the corresponding author for this manuscript ([t.b.volker@uu.nl](mailto:t.b.volker@uu.nl)).

We look forward to hearing from you regarding the disposition of this manuscript.

Kind regards,

also on behalf of my co-author,

Thom Volker