

## Reply to Letter to the Editor

## In reply to the letter to the editor regarding “Cognitive outcomes in meningioma patients undergoing surgery: individual changes over time and predictors of late cognitive functioning”

We appreciate the thoughtful comments by Prof Dr de Vries<sup>1</sup> regarding our published article,<sup>2</sup> as well as the invitation to reply to these comments.

De Vries raised two methodological comments about medication use and the validity of the presurgical neuropsychological measurement.

First, the author<sup>1</sup> suggests that the study protocol states that patients had to be free of medications that interfere with cognitive functioning to be included in the study. Yet, the protocol states that “subjects for the *control* group (recruited from the general population) (. . .) should (. . .) be free of medication use that interfere with cognitive function.”<sup>3</sup> This does, however, not apply to the patients, for whom the exclusion criteria as described in our published manuscript correspond to the criteria as described in the study protocol.<sup>2,3</sup> Therefore, patients who used medications that are known to affect cognitive function were included in the analyses.

Additionally, the author raises the question as to why all drugs were combined into one category, regardless of the various effects of different substances on cognition. Our manuscript concerns one of the few studies examining cognitive functioning in a large sample of patients with meningioma, individual as well as group changes in performance over time, and is to our knowledge the first study that examines a plethora of possible predictors of cognitive functioning after surgery.<sup>2</sup> It was beyond the scope of this study to examine the effects of the types and timing of medication in detail as well. Yet, we agree on the importance of monitoring the effects of different types and timing of medication on cognitive performance in more detail in future studies, as we recognize the various effects that substances can have on cognition.

Furthermore, a clarification was requested with regard to the percentage of patients (ie, 43%) who were non-users of psychotropic drugs on the day prior to surgery, since

dexamethasone is usually initiated before meningioma surgery. The neuropsychological screening (NPS) was taken on the day before surgery in all patients; however, the NPS was scheduled either in the morning (ie, before hospital admission) or in the afternoon (ie, after admission to the neurosurgical department). Therefore, dexamethasone was not yet started in all meningioma patients at the time of presurgical NPS.

As a second methodological comment, the author brings up the validity of the presurgical NPS, as psychological stress of patients on the day before meningioma surgery might have affected neuropsychological test outcomes. In the present study, we did not investigate the link between symptoms of anxiety and depression and cognition. Yet, in our former study in meningioma patients we found negative correlations between depression and cognitive performance (but not for anxiety) prior to surgery, and negative correlations between depression as well as anxiety and performance after surgery.<sup>4,5</sup> Although this suggests that psychological stress may indeed affect test outcomes, levels of symptoms of anxiety and depression in our sample are very comparable between pre and postsurgery (ie, with negligible changes in mean scores over time, see Table 2 of the manuscript).<sup>2</sup> Taken together, we do not rule out the effects of psychological distress on cognitive performance in meningioma patients, however, such effects may play a role throughout the pre and postoperative trajectory.

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Nothing to declare.

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