

*In Reply:*

We thank Numan *et al.* for their interest and comments on our recent publication in *ANESTHESIOLOGY*.<sup>1</sup> The authors raise two concerns related to the methodology of our study. First, they point out that coherence, which was used to calculate functional cortical connectivity, may be affected by volume conduction. Spectral coherence is a widely used parameter-free feature in electroencephalogram studies and in brain functional connectivity analysis, and it measures the stability and reliability of phase differences between two sequences. We agree that in the analysis of a small number of electroencephalogram time samples, coherence estimates may detect spurious synchrony because of volume conduction or noise at the single subject level. However, in our study, the effect of volume conduction and noise was reduced for a number of reasons. First, we used the Welch modified periodogram averaging method to estimate the coherence from relatively long intervals of electroencephalogram recordings (88 s), followed by averaging across each frequency band. This procedure translates to an increased reliability and stability in coherence estimates, which reduces the effect of noise and random synchrony. More importantly, our analysis and conclusions were not based on an absolute value of localized coherence for each subject; rather, we used a baseline-corrected crossover design and performed a groupwise comparison between the two conditions (placebo *vs.* remifentanyl) with subjectwise averaging. If we assume that for each subject, the effect of volume conduction holds between two consecutive experimental conditions, doing an analysis of differences between conditions would eliminate the effect of volume conduction. In our study, this approach resulted in a number of differences between baseline and remifentanyl treatment, whereas there were no differences in the placebo arm. Taken together, we consider our findings to reflect significant changes in functional cortical connectivity specific to remifentanyl administration, whereas the effect of spurious electroencephalogram fluctuations and volume conduction were cancelled out.

Besides coherence, a number of measures of functional connectivity have been proposed, including the phase lag index as suggested by Numan and coworkers.<sup>2,3</sup> We agree that each of these measures have their own properties and therefore provide complimentary information on the brain networks and could be considered in future studies.<sup>4</sup>

Second, Numan *et al.* suggest normalizing the network measures obtained from graph theoretical analysis (using the corresponding graph measures on a simulated random matched graph with the same number of nodes and edges as the original graph). We disagree with this suggestion because the functional connectivity graph we constructed using coherence was a fully connected undirected graph. Therefore, when performing a comparison of differences between two conditions (based on the same graph structure), such normalization will have no effect on the final result and conclusions.

**Competing Interests**

The authors declare no competing interests.

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## 49 Mathoura Road: To Grow Up, You Have to Leave Home

*To the Editor:*

I would like to congratulate Edwards and Waisel<sup>1</sup> on their excellent article about the failed experiment at 49 Mathoura Road and to comment on the editorial by Schwartz and Schroeder,<sup>2</sup> which accompanies it. I cannot attest to Geoffrey Kaye's character or to his affability, but there are other factors to be considered. Earlier in his career, Kaye had enough charisma to edit the first textbook on anesthesia in Australia. Published in 1932, this was a collaboration between seven physicians, with an interest in anesthesia, and one surgeon.<sup>3</sup> It was an amazing achievement for the 29-year-old Kaye. Equally admirable is his role in the founding of the Australian Society of Anaesthetists (ASA); he was one of the seven founding members, its first treasurer, and the person largely responsible for the organization in its fledgling years.

Unfortunately, the commencement of the war coincided with those early years of the ASA and brought the developments to a sudden halt. Kaye returned from the war re-energized and determined to make the ASA a success; 49 Mathoura Road was a part of his new vision for the organization. But time and geography were against him. Those who had returned fell into two groups: (1) those who discovered that too much had changed in their absence and felt their skills were insufficient to continue in anesthetic practice and (2) those who were just starting out and had families and careers to consider. Neither of these groups

This letter was sent to the author of the Special Article referenced above, who declined to respond.

were in a position to contribute to Kaye's experiment; it was simply too soon. Also, Australia was a young nation; very few people were engaged solely in the practice of anesthesia, and the population was spread thinly over enormous distances.

But probably Kaye's most important error was to retain ownership of the building, and to a large extent, the project. Successful leaders know that to engage the team, you need to give them some ownership of your vision. Kaye invested his private wealth in the building; he lived there and provided the facilities, which he maintained. Australian anesthesia was in its adolescence in the 1950s. Kaye had no children, so he did not know how to deal with teenagers—on the cusp of adulthood but still happy to let someone else do everything for them if that person is foolish enough to offer. He gave them too much, foisted his own expectations on them, and, like a frustrated parent, ultimately threw them out of home. He failed to engage them at the outset, did not provide consequences early on, and, so when the rift came, it was irreparable. Maybe that is the real reason he failed as a leader in this project, and the important lesson of history provided by Edwards and Waisel is that good leaders need the same skills as good parents—setting clear boundaries, providing immediate consequences and rewards, but stepping back to allow others to make and learn from their mistakes.

The good news is that after the failure of 49 Mathoura Road, the museum collection was handed over to the Faculty of Anaesthetists at the Royal Australasian College of Surgeons. In September 2014, the now independent Australian and New Zealand College of Anaesthetists opened a new learning facility at its headquarters in Melbourne. This facility includes a renovated library and study area for the Fellows of the College, but importantly, a newly developed display area for the Geoffrey Kaye Museum of Anaesthetic History. This state-of-the-art museum stands with the wonderful Wood Library-Museum as an enduring legacy of both Geoffrey Kaye and Paul Wood.

### Competing Interests

Dr. Ball has been the honorary curator of the Geoffrey Kaye Museum of Anaesthetic History for 25 yr.

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### In Reply:

Thank you Dr. Ball for offering your perspective on our editorial, "Be Able, Available, and Especially *Affable* if You Want Team Success"<sup>1</sup> that accompanied Edwards and Waisel's detailed account<sup>2</sup> of Geoffrey Kaye's efforts on behalf of anesthesiology in Australia.

Christine Ball is eminently qualified to discuss Geoffrey Kaye in that she has served as the honorary curator of the Geoffrey Kaye Museum of Anaesthetic History for the past 25 yr. What insights has Dr. Ball provided us in her letter? She has insight about the value of history and about Kaye's success.

In recasting the story of Kaye's 49 Mathoura Road experiment, Dr. Ball demonstrates for us the richness of history. History may be viewed from many vantage points and through many lenses, all teaching different lessons. Dr. Ball's emphasis on Kaye's contributions to the growth and development of anesthesiology in Australia properly place his role as central to the success of our specialty in his homeland.

Our editorial described successful anesthesiologists with 3-As: *able, available, and affable*. Dr. Ball's letter describes several other As to characterize Geoffrey Kaye success: *achieving, acknowledging, and allowing*.

Dr. Ball makes sure we *acknowledge* Kaye for his *achievements* including editing (at the young age of 29 yr) the first textbook on anesthesiology written in Australia and being one of the seven founding members of the Australian Society of Anaesthetists (ASA).

Dr. Ball also describes Kaye's difficulty being successful because he lacked an ability to *acknowledge* his colleagues and *allow* them to become engaged with and gain ownership of ASA's growth and development. Although Dr. Ball's analysis of Kaye's activities places a different spin on the story, her lesson and ours are quite compatible. Anesthesiology is a "team sport"! Being such, leaders in our midst must be *able, available, affable, achieving, acknowledging, and allowing*. Although we agree with Dr. Ball that Kaye may not have personified all of these characteristics, his contribution, in total, to anesthesiology in Australia and the World was huge. His legacy, the "other" ASA (American Society of Anesthesiologists) and the Geoffrey Kaye Museum of Anaesthetic History, is testimony to that.

Studying and having differing interpretations of history has enabled Edwards, Waisel, Ball, and us to engage our readers in contemplating what will make us, individually and collectively, successful anesthesiologists.

### Competing Interests

The authors declare no competing interests.

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