We thank the authors of the letters to the editor (1–3) for their interest in our study (4). All letters have some comments and questions about interpretation of the data. Most of the issues raised have already been discussed in detail in the Discussion section of our paper, including possible explanations for the findings of odds ratios below unity.

All authors seem to interpret the finding for ipsilateral mobile phone use and glioma risk (odds ratio = 1.8, 95 percent confidence interval: 0.8, 3.9) as evidence of a causal association. They do not, however, offer any interpretation of the decreased risk of glioma found for the contralateral side of the head (odds ratio = 0.6, 95 percent confidence interval: 0.3, 1.4). These two findings need to be interpreted in concert because these analyses are dependent on each other. Furthermore, the authors do not comment upon the fact that no increased risk was associated with ipsilateral mobile phone use and gliomas occurring at locations in the head where mobile phone exposure is the highest—the temporal and parietal lobes. Restriction to the temporal lobe alone did not materially change our results. As long as there is no biologically plausible mechanism to explain how mobile phone use can protect against glioma on the opposite side of the head as the phone is held, it is our view that the most likely explanation for these findings is recall bias when reporting at which side of the head the phone was usually held.

As far as we are aware, there are no empirical data suggesting that a postal questionnaire would be a better data collection method than personal interviews in a study of brain tumors. All contacts and personal interviews in our study were performed by trained nurses and a psychologist, ensuring professional and standardized treatment of cases and controls. The use of computer-assisted interviews ensured a highly structured and standardized interview, minimizing the risk of interviewer bias. All interviews were conducted at a time chosen by the participants themselves. The average time needed to complete the interview was the same for cases and controls, indicating that the interview was not more difficult for cases than for controls.

Hardell et al. (3) present numbers of brain tumor cases from the Swedish Cancer Registry and compare them with our data. These numbers are not comparable, however; the Cancer Registry often uses the date of histologic verification as the date of diagnosis, whereas we used the date of first clinical examination leading to the diagnosis (4). Therefore, these numbers will not be the same but are within the range expected considering the year-to-year variability in the occurrence of brain tumors. Medical records were used to confirm the diagnosis. The grading of tumors was based mainly on information from histologic reports, but, for a few cases, information from the medical records was sufficient to classify tumors as low grade and high grade. Hardell et al. (3) also note the higher nonresponse for high-grade astrocytoma cases. The severity of the disease and short survival time are always a problem in studies of brain tumors. To minimize nonparticipation among subjects with high-grade tumors, we used a rapid case ascertainment system in close collaboration with the clinics. As a result, the proportion of high-grade astrocytomas that we could successfully include in our study was far higher than in some previous studies (5, 6), where less than 40 percent of the high-grade astrocytomas were included compared with the numbers in the Swedish Cancer Registry.

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REFERENCES