***eLife’s* transparent reporting form**

We encourage authors to provide detailed information *within their submission* to facilitate the interpretation and replication of experiments. Authors can upload supporting documentation to indicate the use of appropriate reporting guidelines for health-related research (see [EQUATOR Network](http://www.equator-network.org/%20)), life science research (see the [BioSharing Information Resource](https://biosharing.org/" \t "_blank)), or the [ARRIVE guidelines](http://www.plosbiology.org/article/info:doi/10.1371/journal.pbio.1000412) for reporting work involving animal research. Where applicable, authors should refer to any relevant reporting standards documents in this form.

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**Sample-size estimation**

* You should state whether an appropriate sample size was computed when the study was being designed
* You should state the statistical method of sample size computation and any required assumptions
* If no explicit power analysis was used, you should describe how you decided what sample (replicate) size (number) to use

Please outline where this information can be found within the submission (e.g., sections or figure legends), or explain why this information doesn’t apply to your submission:

In this study, we tested 9 epilepsy patients, who were implanted with several intracranial electrodes for localization of the epileptic locus before undergoing a surgery to remove the brain region that causes the seizures. Thus, we did not have a complete control over the sample size; we recruited such patients as participants when our neurosurgeon collaborators informed us that there would be such patients available and willing to participate in our study. Within the period of our collaboration with the neurosurgeons using the same electrodes, recording methods, procedures etc., we were able to test a total of 9 such patients, which provided us with the final sample size for our study.

**Replicates**

* You should report how often each experiment was performed
* You should include a definition of biological versus technical replication
* The data obtained should be provided and sufficient information should be provided to indicate the number of independent biological and/or technical replicates
* If you encountered any outliers, you should describe how these were handled
* Criteria for exclusion/inclusion of data should be clearly stated
* High-throughput sequence data should be uploaded before submission, with a private link for reviewers provided (these are available from both GEO and ArrayExpress)

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Relevant information can be found in the Materials and Methods section and in Supplementary Materials.

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* Statistical analysis methods should be described and justified
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* For each experiment, you should identify the statistical tests used, exact values of N, definitions of center, methods of multiple test correction, and dispersion and precision measures (e.g., mean, median, SD, SEM, confidence intervals; and, for the major substantive results, a measure of effect size (e.g., Pearson's r, Cohen's d)
* Report exact p-values wherever possible alongside the summary statistics and 95% confidence intervals. These should be reported for all key questions and not only when the p-value is less than 0.05.

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(For large datasets, or papers with a very large number of statistical tests, you may upload a single table file with tests, Ns, etc., with reference to sections in the manuscript.)

**Group allocation**

* Indicate how samples were allocated into experimental groups (in the case of clinical studies, please specify allocation to treatment method); if randomization was used, please also state if restricted randomization was applied
* Indicate if masking was used during group allocation, data collection and/or data analysis

Please outline where this information can be found within the submission (e.g., sections or figure legends), or explain why this information doesn’t apply to your submission:

Random allocation does not apply in our study, since we mainly tested pre-surgical epilepsy patients implanted with intracranial electrodes. For all the other control groups, the independent variables were manipulated in a within-subjects manner, thus there was no allocation of participants to different groups.

**Additional data files (“source data”)**

* We encourage you to upload relevant additional data files, such as numerical data that are represented as a graph in a figure, or as a summary table
* Where provided, these should be in the most useful format, and they can be uploaded as “Source data” files linked to a main figure or table
* Include model definition files including the full list of parameters used
* Include code used for data analysis (e.g., R, MatLab)
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Please indicate the figures or tables for which source data files have been provided:

The data presented in this work is publicly available at the Open Science Framework with the following information:

E. Soyman, R. Bruls, K. Ioumpa, L. Mueller-Pinzler, S. Gallo, C. Qin, E. C. W. van Straaten, M. W. Self, J. C. Peters, J. K. Possel, Y. Onuki, J. C. Baayen, S. Idema, C. Keysers, and V. Gazzola. (2021). Intracranial Human Recordings Reveal Intensity Coding for the Pain of Others in the Insula. https://osf.io/mcahz/