**Supplamentary material**

**Supplamentary Table 1: Patient’s description of events associated with guilt episodes**

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| --- | --- |
| **No.** | **Patient’s description** |
| 1 | "Maybe I’ve offended someone […] something that happened in class […] maybe fighting with someone" |
| 2 | "I didn’t like the person I talked to […] I didn’t really listen" |
| 3 | "I was taking a photograph of a large group, and felt I am at a place I am not supposed to be" |
| 4 | "After I argued with my mother"  |
| 5 | "I was supposed to meet somebody but did not" |
| 6 | "I said goodbye to my brother before a long journey" |
| 7 | "I felt I was getting punsihed for lying, usually in the context of "white lies""  |

**Supplamentary Table 2: Guilt and detachment responses elicited by electrical brain stimulation**

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| --- | --- | --- |
| **Stimulation Target Site** | **Current (Am)** | **Patient Resopnse** |
| **Electrodes RMH 1 & 2 (right hippocampus)** |  |
|  | 2 | “Distress, nausea, the distress causes the nausea” |
|  | 4 | “Nausea” |
|  | 6 | “I felt distress and nausea” |
|  | 8 | “Distress, guilt, nausea” |
|  | 10 | “Distress, guilt, much stronger” |
| **Electrodes RMH 2 & 3 (lateral to right hippocampus)** |
|  | 2 | “Beginning of detachment, without other sensations” |
|  | 4 | “Beginning of distress, I begin to detach” |
|  | 6 | “Detachment without other feelings”; “I feel I’m not here” |
|  | 8 | “I feel I’m not here, suddenly there’s a world, and there’s me inside something closed, like an aquarium, and I’m looking out” |
|  | 10 | “Feeling of detachment, nausea, distress” |
| **Electrodes RMH 3 & 4 (lateral to right hippocampus)** |
|  | 8 | “Detachment” |
|  | 10 | “Detachment” |
| **Electrodes RA 1 & 2 (right amygdala)** |
|  | 4 | “I begin to feel separated, I suddenly feel left out, and it makes me nauseated” |
|  | 8 | “Detachment, distress, a light nausea” |
|  | 10 | “Really strong distress, guilt, nausea, long detachment” |
| **Electrodes RA 2 & 3 (white matter lateral to right amygdala)** |
|  | 8 | “Regular detachment” |
|  | 10 | “It’s like I can’t talk, something separates me from the world”; “Suddenly I feel detached, there’s a difference between me and the surroundings, it’s not natural for me to speak” |
| **Electrodes RA 3 & 4 (white matter lateral to right amygdala)** |
|  | 6 | “It’s not natural for me to speak, it was better for me to be silent, I didn’t feel detached” |
|  | 8 | “It’s like I’m not here”; “Separated” |
|  | 10 | “It’s not related to speech, it’s more related to the surrounding, the situation is strange”; “It’s like I’m not supposed to be here” |
| **Electrodes RA 4 & 5 (white matter lateral to right amygdala)** |
|  | 4 | “I’m a single unit, and you are you”; “I feel separated, seeing people makes me feel this way more than when I’m alone” |
|  | 6 | “Maybe a bit of detachment” |
|  | 8 | “I feel something is separated”; “Seeing things makes me nauseated” |
|  | 10 | “There’s no difference from the feeling of before, both are stronger” |
| **Electrodes RA 5&6 (white matter near right amygdala)** |
|  | 6 | “I think I feel a light detachment, without other things” |
|  | 10 | “Just detachment, without guilt nor distress, there’s a separation between us” |



**Supplamentary Figure 1.**  **Laser probe in tumor during laser ablation.**

Sagittal MRI obtained during the first laser ablation surgery showing laser optical fiber inserted into the tumor (white arrow).