

Volition, Introspection, and Imagination

Let us define “decision” as the mental event that settles the question what to do. Let us define “conscious” as knowable directly, not through interpretation. Are there conscious decisions? Some have argued that no: we always come to know our own decisions indirectly, after the action. They have also argued that there is a neural event preceding the action — of which we have no knowledge at the time — that corresponds to the decision. Others have argued that yes: at least sometimes, we come to know our own decisions directly, before the action. They have argued either that the neural event preceding action happens at the same time as we come to know the decision, or that it does not correspond to a decision after all.

One thing that was lacking in the debate about the existence of conscious decisions was a more detailed description of what we experience at the moment of decision. Our hypothesis is that there are many broadly sensory cues at that time, such as inner speech and other mental imagery related to the action, from which you can infer that you have made a decision. We also hypothesize that the generation of such mental imagery is reflected in the neural signal preceding the action. If that turned out to be true, then mental imagery would provide us with reliable though indirect access to our own decisions before action. Whereas the neural signal would correspond to something that is at least relevant to making the decision and happens at roughly the same time as we come to know that we have decided. That would be a middle road between the two positions described above: reliable indirect access before action.

To investigate this idea, we conducted an experiment, in which participants ($N = 22$) performed a movement task, then answered questions, then performed an imagination task, and then again answered questions. In the movement task, they waited for three seconds, then spontaneously pressed a button, and then reported when they decided to press it. In the imagination task, they again waited three seconds, then spontaneously imagined moving now, then actually pressed a button three seconds later, and finally, reported when they imagined pressing it. In the questionnaire, we asked them to describe the experience of deciding, and other experiences at the time. We also asked them to rate how often they had certain kinds of experiences at the time of decision, how difficult it was for them to imagine various movements, and whether deciding and imagining felt active, surprising, and clear and vivid. Finally, we asked them if these were two separate experiences: deciding to imagine now and imagining.

Here are the main results so far. First, most participants reported that they almost always said something in inner speech at the time of decision. This means that there were enough sensory cues before action to infer a decision from. Second, on average, participants said that deciding did not feel active, although imagining did. Third, the EEG signals before movement and imagination correlated with each other, and the correlation was stronger for those participants who said that it was less difficult for them to imagine the various movements. The EEG signal before movement also correlated with how frequently participants said they imagined feeling something at the time of decision and how clear and vivid their experience of deciding was. This suggests that the EEG signal before movement at least partly reflects the generation of mental imagery.

In conclusion, our evidence is in accordance with the idea that we generate conscious mental imagery in preparation for action, that we can infer from that imagery that we have made a decision, and that the generation of such mental imagery is reflected in the neural signal that precedes the action. Does this mean there are conscious decisions? According to our definition: no. However, this suggests that we do have something that comes very close.