

Chapter 6

How to Make an Experiment with EEG

The purpose of this chapter is to explain for starters, step by step, how they can create an experiment in social science area using Electroencephalogram (EEG) technology.

6.1 Type of Experiment

One of the first main decisions to be made is to choose between a controlled or an ecological experiment:

Well-Controlled Experiment: in this type of study, the researcher has the entire control of the variables supposed to support the decision-making process, because the environmental conditions are manipulated. It is the most common experimental paradigm in the literature (Blander and Schaefer, 2011; Fitzgerald *et al.*, 2010; Kuhnén and Knutson, 2005; Knutson *et al.*, 2007; Sanfey *et al.*, 2003, among several others). In this kind of experiment, a game is designed that permits the entire control of the variables of interest. The study determines how these variables are manipulated to show how brain activity is influenced by them in the decision-making process. Some of these games are very popular in the literature, such as the Ultimatum and Prisoner's Dilemma Games used to study cooperation or competition among people in decision-making (Grecucci *et al.*, 2013; Rilling *et al.*, 2004).