Computational Skills for Cognitive Science – Assignment2

This experiment aim at investigating how negation is processed compared to affirmation in a multimodal memory task. Similar experimental designs have been used to investigate negation (Carpenter & Just, 1975; Kaup, Zwaan, & Lüdtke, 2006). The experiment consist in two different phases. During the 'Encoding phase', for each trial, participants see two vertically arranged images, then they are presented with a sentence of the type "There is (not) a X above/below a Y", describing the spatial relation between the two images. During the 'Retrieval stage' participants have to judge as quickly as possible whether the depicted objects mentioned in the utterances were spatially arranged in the same or in a different way. Firstly, I would expect a response-slowing impact of the negation operator. Secondly, in line with the literature on this research domain (Clark, H.H., & Chase, W.G. , 1972; Kaup, B., & Zwaan, R.A. , 2003) I would expect to find a negation-by-truth-value interaction. While true affirmative sentences ('taffabove'/'taffbelow' e.g. There is a towel above a vase [t]) are easier to evaluate than false affirmative sentences ('faffabove'/'faffbelow' e.g. There is a pill above a syringe [f]), the opposite holds for negative sentences; in that case, true sentences ('tnegabove'/'tnegbelow' e.g. There is not a vase above a towel [t]) are more difficult than false ones ('fnegabove'/'fnegbelow' e.g. There is not a syringe above a pill [f]).

Hypotheses:

1. Response times : negative > affirmative sentences (i.e. response-slowing impact of the negation operator)
2. Accuracy : true affirmative > false affirmative
   true negative < false negative (i.e. negation-by-truth-value interaction)

Francesco Mantegna
188824