

Introduction

Humans seek information for instrumental, hedonic or cognitive motives and choose to approach or avoid information depending on the uncertainties they wish to clarify. It is still unclear, however, how individuals use their beliefs to infer others' preferences towards information and what neurocomputational bases underlie such process.

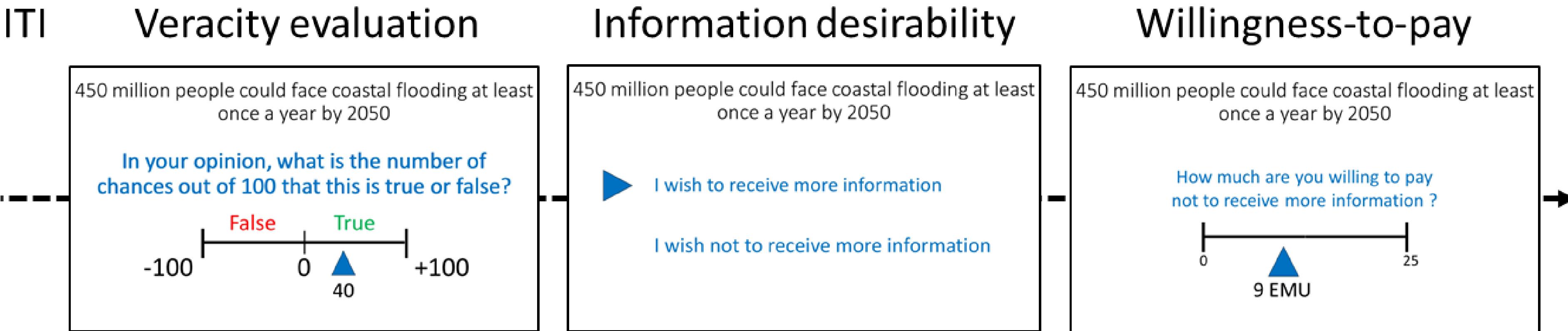
We elicited participants' beliefs about news truthfulness and their beliefs about receivers' beliefs. Participants' behavior was best accounted for by a Bayesian model in which participants computed the probability that receivers choose to receive by weighing beliefs as probability distributions. More specifically, participants weighed subjective probabilities of choices to receive based on their estimation of news truthfulness probability; probabilities based on the estimated probability of receivers' social distance to organizations congruent with news themes; and probabilities based on the estimated probability of the 20 receivers' preferences.

Model-based fMRI results showed that beliefs associated with truthfulness probability correlated with the Ventral Medial Prefrontal Cortex, bilateral Striatum and Dorsolateral Prefrontal Cortex. Beliefs associated with the receivers' social distance correlated with bilateral Temporo-Parietal Junction. The Frontopolar cortex correlated with the integration of the three probability distributions as one estimated probability of receivers to receive.

Methods

We created games for two experiments in which information have a cognitive utility. Prior to experiments, participants rated various political organizations from which we computed a social distance to each organization.

In a first behavioural experiment ($n=258$, 127M, age= 21.9 ± 2.78), we elicited participants' beliefs regarding randomized true and fake news via probability elicitation. We then asked them to disclose their desirability (Willingness-to-Pay) for each stimulus.



In a second experiment ($n=32$, 16M, age= 24.67 ± 4.07), we used fMRI and elicited participants' beliefs for the same stimuli. We then asked participants to match the desirability of one receiver from a pool of 20 receivers who did the first experiment. In a first Control condition, participants were provided no information about the receivers. In a second Cue condition, beliefs were elicited in participants about the receivers' beliefs. Each cue consisted in the receivers' social distance to an organization congruent with the stimulus.

