

# Language change: parameter exploration

Homework | Agent-based modelling, Konstanz, 2024

Henri Kauhanen

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Following the example set in the [lecture](#), simulate a population of variational learners, obtaining the evolution (=history) of the average value of  $p$ . Explore how variation in the following **model parameters** affects the population's evolution. Use the *Plots* package to visualize your findings.

1.  $N$ : population size, i.e. the number of agents
2.  $p$ : the initial value of  $p$ . Set this to the same value for each learner.
3.  $P_1$ : probability of a string that only  $G_1$  can parse. Set this to the same value for each learner.
4.  $P_2$ : probability of a string that only  $G_2$  can parse. Set this to the same value for each learner.
5.  $\gamma$ : learning rate.

For the learning rate parameter, do both of the following:

1. First, set  $\gamma$  to the same value for each learner.
2. In a second set of simulations, initialize your population so that each learner gets a randomly chosen  $\gamma$  from the interval between 0 and 1.