

Electronic Supplementary Material:

The evolution of punishment through reputation

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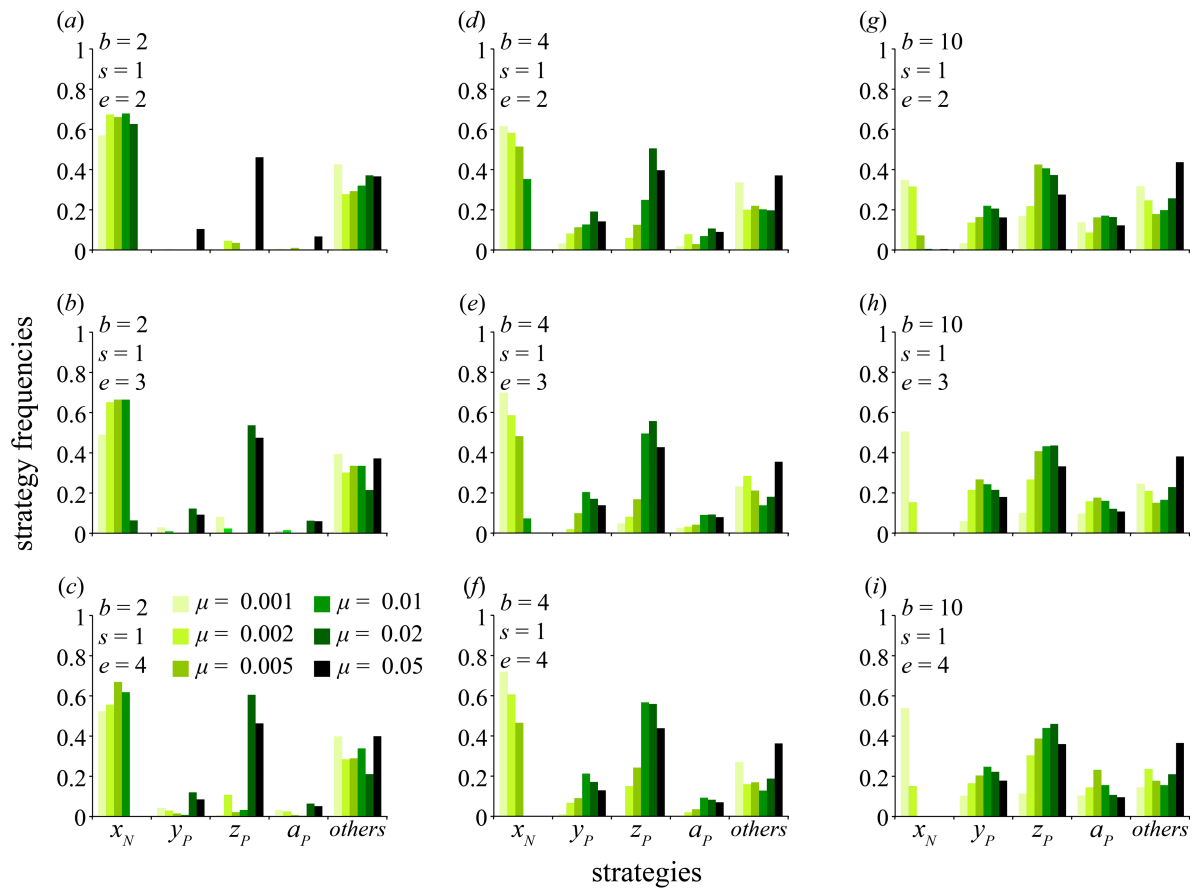


Figure S1. Effect of changing the mutation rate (μ) of the helping and the punishing strategy on the evolution of punishment for different parameter values. The average frequencies of the most successful strategies *non-punishing Defectors* (x_N), *punishing Cooperators* (y_P), *punishing Discriminators* (z_P), *punishing Image scorers* (a_P) are calculated across 20 replicates for generations 18'000-20'000 and for $c = 1$, different values of benefit b , cost to the punisher s , and cost of being punished e (standard errors always < 0.1).

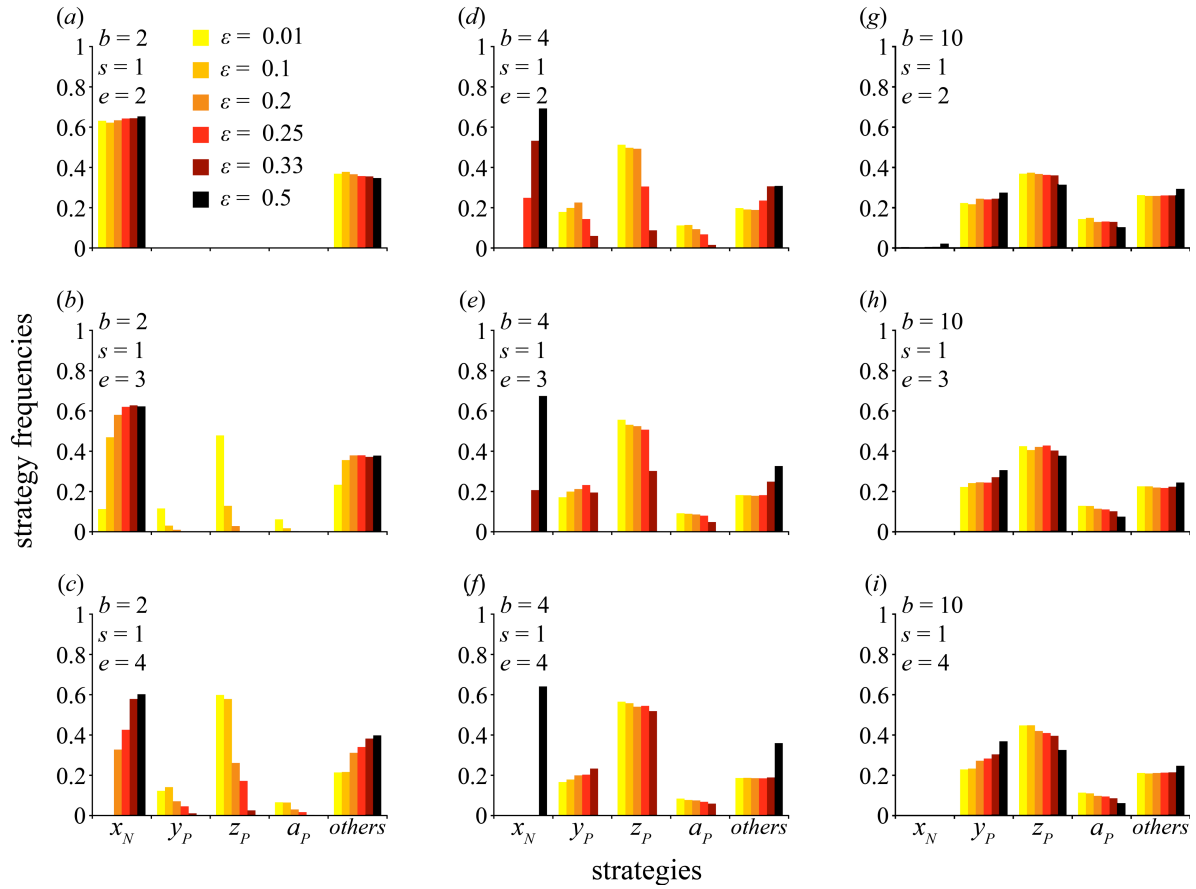


Figure S2. Effect of introducing an error probability (ϵ) in the perception of the punishment or helping score. The average frequencies of the most successful strategies *non-punishing Defectors* (x_N), *punishing Cooperators* (y_P), *punishing Discriminators* (z_P), *punishing Image scorers* (a_P) are calculated across 20 replicates for generations 18'000-20'000 and for $c = 1$, different values of benefit b , cost to the punisher s , and cost of being punished e (standard errors always < 0.1).