Supplementary information for the manuscript
"Naming game with learning errors in communications"

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The networks of small-world SW/40/{0.1, 0.2, 0.3} are investigated in the following. The parameter settings are shown in Table S1, followed by the simulation results and statistical analysis.

Table S1   Small-word network with number of neighborhoods $K = 40$ with different rewiring probabilities

Notation	Network Type	Number of nodes	Average degree	Average path length	Average clustering coefficient
SW/40/0.1	Small-world network with $K = 40$ and $RP = 0.1$	2,000	80.00	2.4499	0.5457
SW/40/0.2	Small-world network with $K = 40$ and $RP = 0.2$	2,000	80.00	2.2367	0.3894
SW/40/0.3	Small-world network with $K = 40$ and $RP = 0.3$	2,000	80.00	2.1291	0.2718

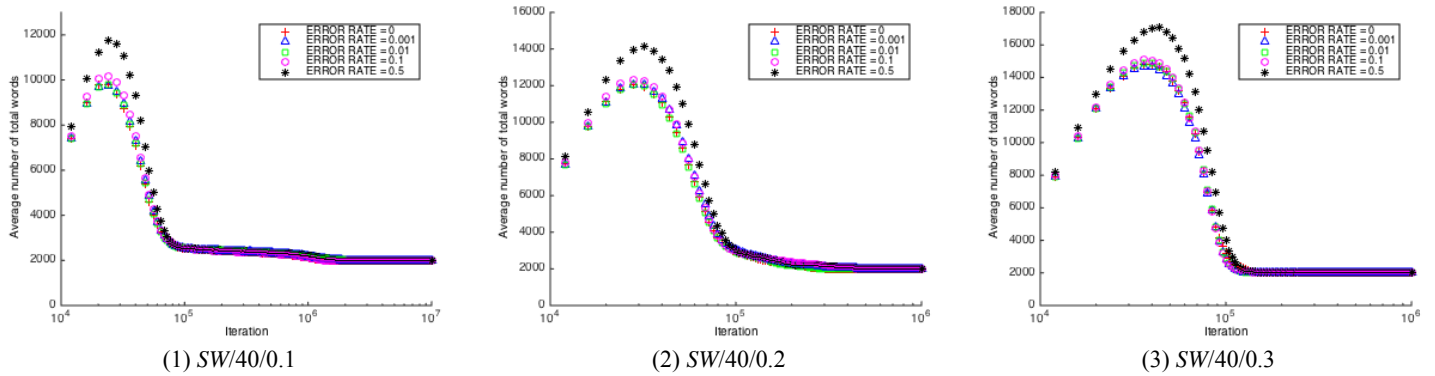(1) SW/40/0.1   (2) SW/40/0.2   (3) SW/40/0.3

Fig. S1   The convergence process in terms of the number of total words in small-world networks with the number of neighborhoods $K = 40$
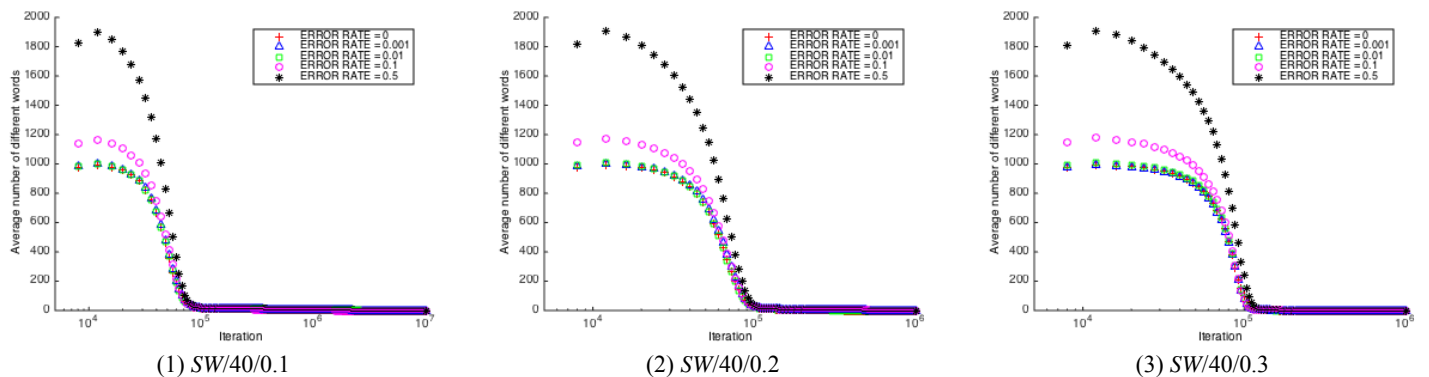

(1) SW/40/0.1   (2) SW/40/0.2   (3) SW/40/0.3

Fig. S2   The convergence process in terms of the number of different words in small-world networks with the number of neighborhoods K = 40

(1) *RG*/0.05   (2) *RG*/0.1   (3) *SW*/20/0.1

(4) *SW*/20/0.3   (5) *SW*/40/0.1   (6) *SW*/40/0.2

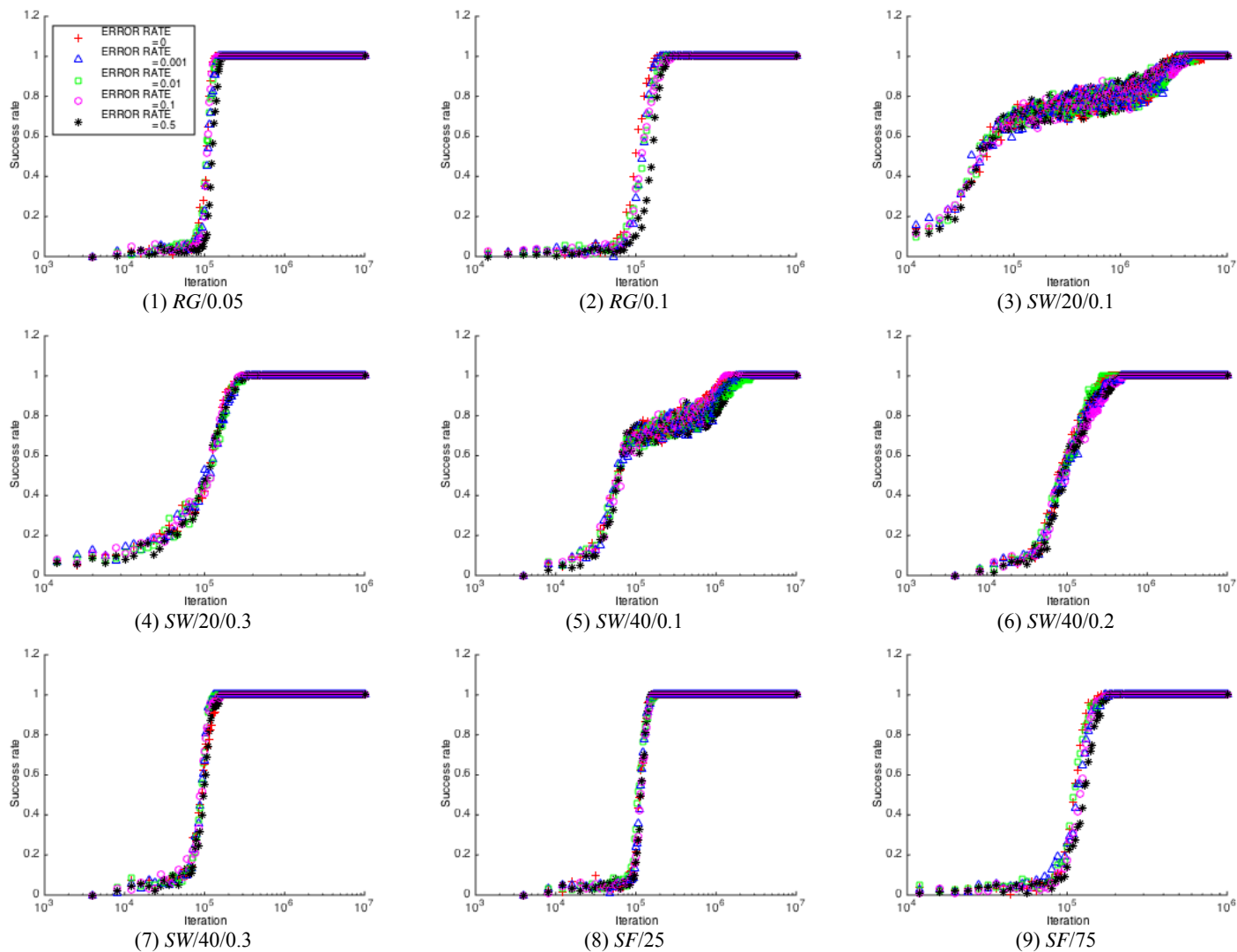(7) *SW*/40/0.3   (8) *SF*/25   (9) *SF*/75

Fig. S3   Success rate curves including two random-graphs RG/0.05 and RG/0.1, five small-worlds
SW/20/0.1, SW/20/0.3 and SW/40/{0.1, 0.2, 0.3}, and two scale-frees SF/25 and SF/75

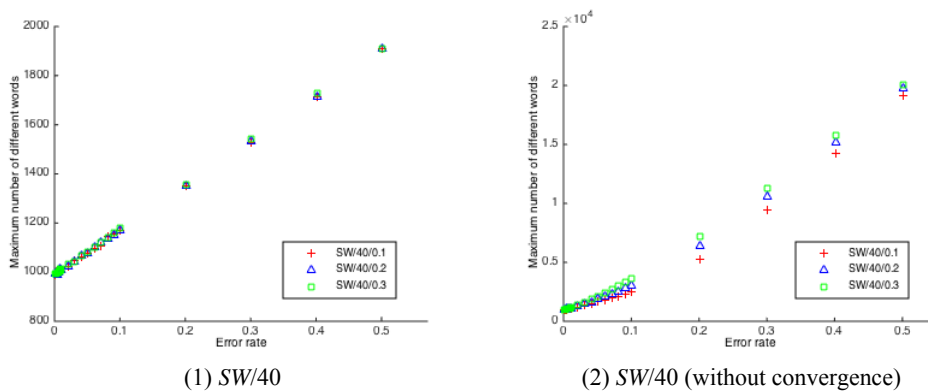(1) *SW*/40   (2) *SW*/40 (without convergence)

Fig. S4   The relationship between the error rate and the maximum number of different words, in the
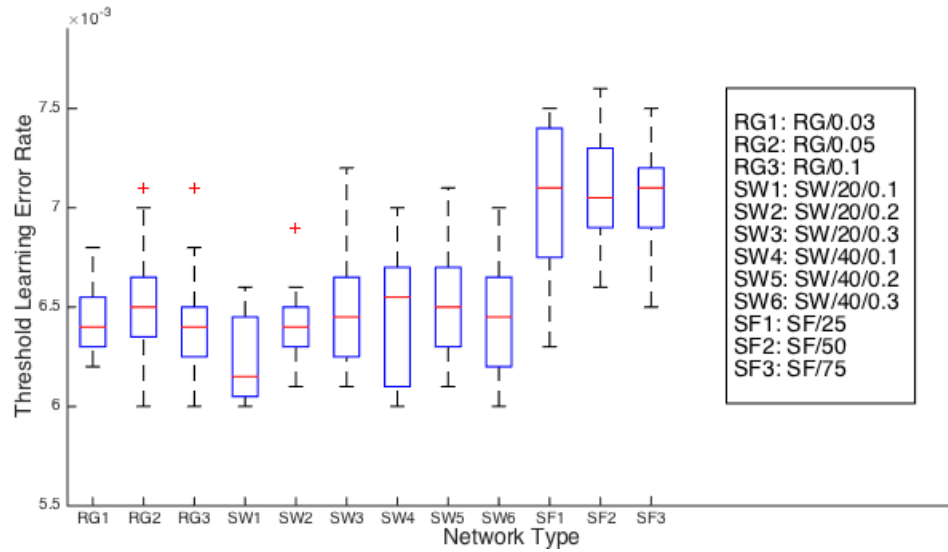topology of small-world with the number of neighborhoods K = 40

Fig. S5   The box plot of learning error rate threshold in different all twelve types of networks in this study

Table S2   The increment relationship between convergence time and different values of the error rate for small-word networks with number of neighborhoods $K = 40$ with different rewiring probabilities

Net-works Error Rate	SW/40/0.1	SW/40/0.2	SW/40/0.3
0	1.0000	1.0000	1.0000
0.001	+0.1785	+0.1560	−0.0376
0.002	+0.1827	+0.0905	+0.0004
0.003	+0.2084	+0.1946	−0.0433
0.004	+0.1518	+0.1762	−0.0077
0.005	+0.1642	+0.1546	−0.0250
0.006	+0.1485	+0.0026	−0.0189
0.007	+0.1749	+0.1534	−0.0548
0.008	+0.0888	+0.2110	−0.0370
0.009	+0.1443	**−0.0570**	−0.0636
0.01	+0.2334	−0.0381	−0.0516
0.02	+0.1067	+0.0641	−0.0073
0.03	+0.0574	+0.1501	−0.0510
0.04	+0.0925	**+0.2737**	**+0.0284**
0.05	+0.1268	+0.1548	−0.0384
0.06	+0.1356	+0.0809	**−0.0868**
0.07	+0.1527	+0.2576	−0.0611
0.08	**+0.2858**	+0.1552	0.0145
0.09	+0.1217	+0.0554	−0.0054
0.1	**−0.0002**	+0.2330	−0.0312
0.2	+0.1560	+0.1912	−0.0125
0.3	+0.1110	+0.2616	−0.0060
0.4	+0.0558	−0.0328	−0.0194
0.5	+0.2607	+0.1551	+0.0209
Summary	22+/1−	20+/3−	4+/19−

Table S3   Statistical division of the numbers of different incremental values in Table S2 into different intervals

Increment value intervals	(−∞, −0.2)	[−0.2, −0.1)	[−0.1, 0)	[0, 0.1)	[0.1, 0.2)	[0.2, +∞)
Number of data	0	0	**23**	**13**	**24**	9