**Supplementary Information for**

Peripheral members create and core members integrate: cooperation pattern of members in networks during co-creations

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Supplementary Information Text

**S1. Statistical information about the regression models of the quality of content**

Table S1 shows the statistics of all variables in the three regression models of the quality of content (in Tables 1–3 in the manuscript). The distribution of every variable and the correlations between them are provided in Figs. S1–S3.

-----Table S1 about here-----

-----Fig. S1 about here-----

-----Fig. S2 about here-----

-----Fig. S3 about here-----

**S2. Statistical information about the regression model of revision behaviours in SCP-Wiki**

The statistical information for every variable in the regression model of revision behaviours in SCP-Wiki (in Table 4 in the manuscript) is shown in Table S2. The distribution of every variable and the correlations between them are provided in Fig. S4.

-----Table S2 about here-----

-----Fig. S4 about here-----

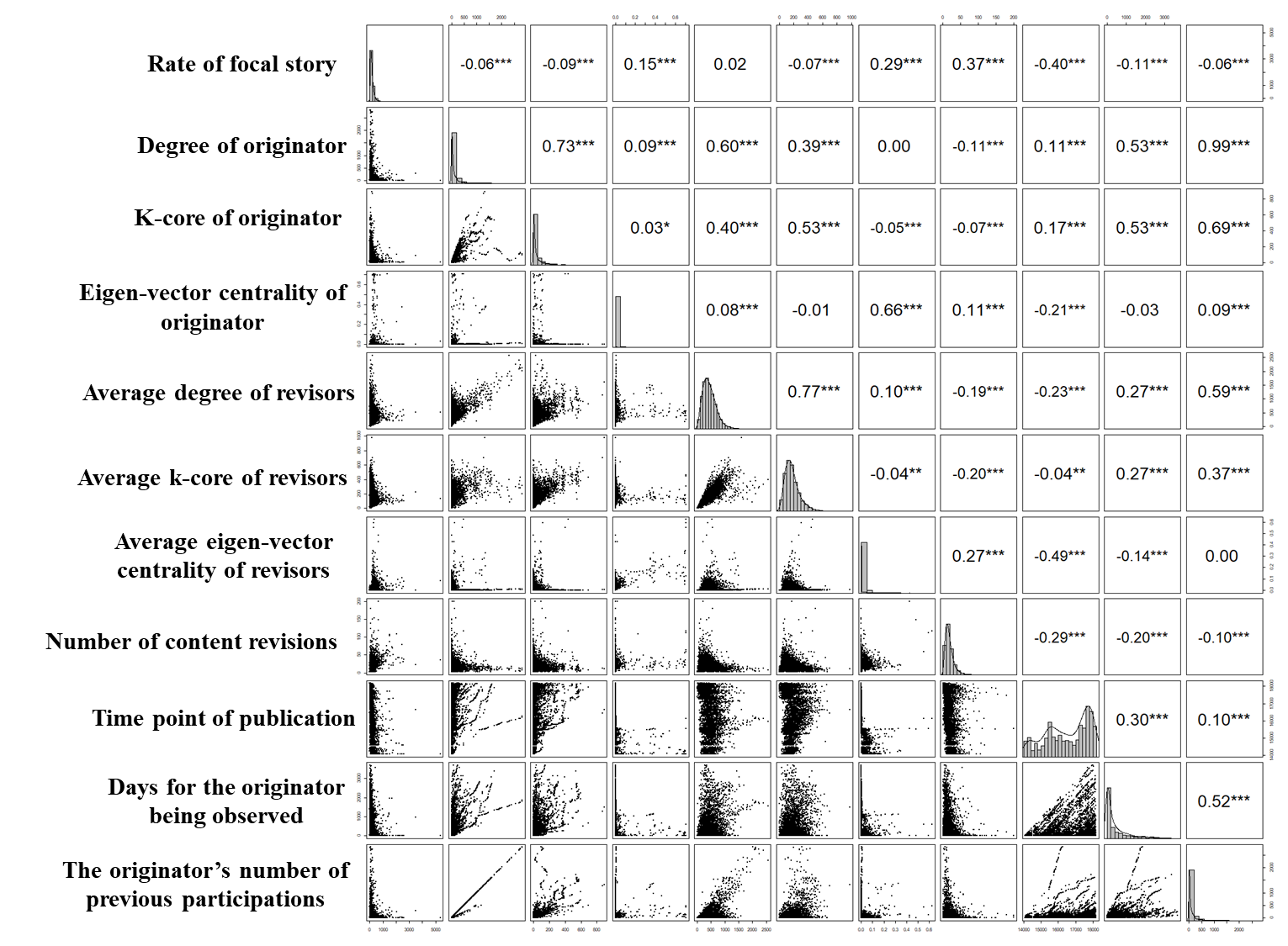


Fig. S1. Distribution, scatter plots, and correlations of variables in the regression model of SCP-Wiki content quality; the names of all variables are in the left of the figure. In this figure, the diagonal shows histograms with the density curves of every variable in the regression model of content quality in SCP-Wiki. Graphs in the lower triangle show scatter plots between each pair of variables. In the upper triangle, significant correlations between each pair of variables are shown. One asterisk refers to a *p*-value smaller than 0.1, two asterisks refer to a *p*-value smaller than 0.05, and three asterisks refer to a *p*-value smaller than 0.01.

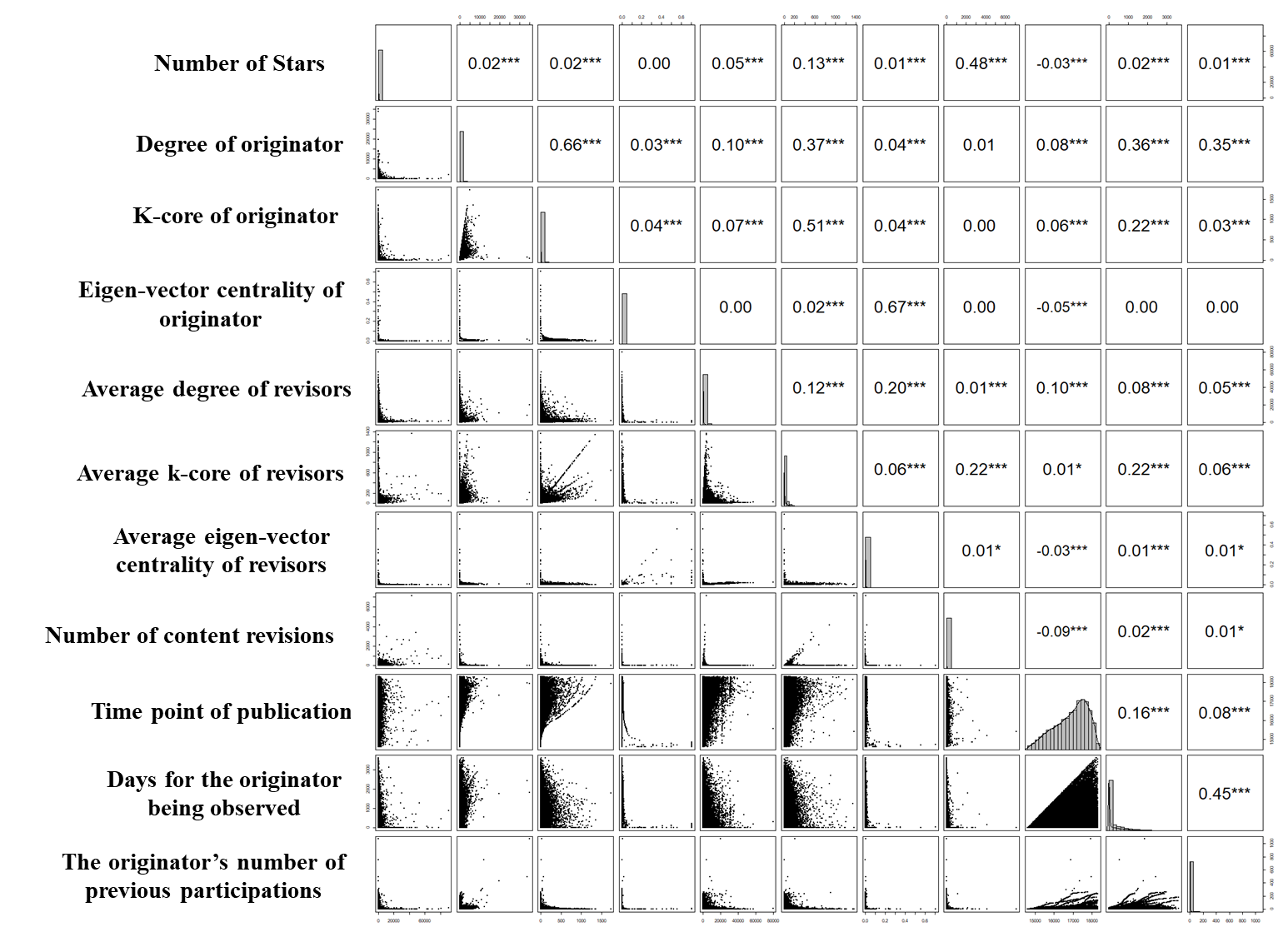


Fig. S2 Distribution, scatter plots, and correlations of variables in the regression model of Github content quality; the names of all variables are in the left of the figure. In this figure, the diagonal shows histograms with the density curves of every variable in the regression model of content quality in Github. Graphs in the lower triangle show scatter plots between each pair of variables. In the upper triangle, significant correlations between each pair of variables are shown. One asterisk refers to a *p*-value smaller than 0.1, two asterisks refer to a *p*-value smaller than 0.05, and three asterisks refer to a *p*-value smaller than 0.01.

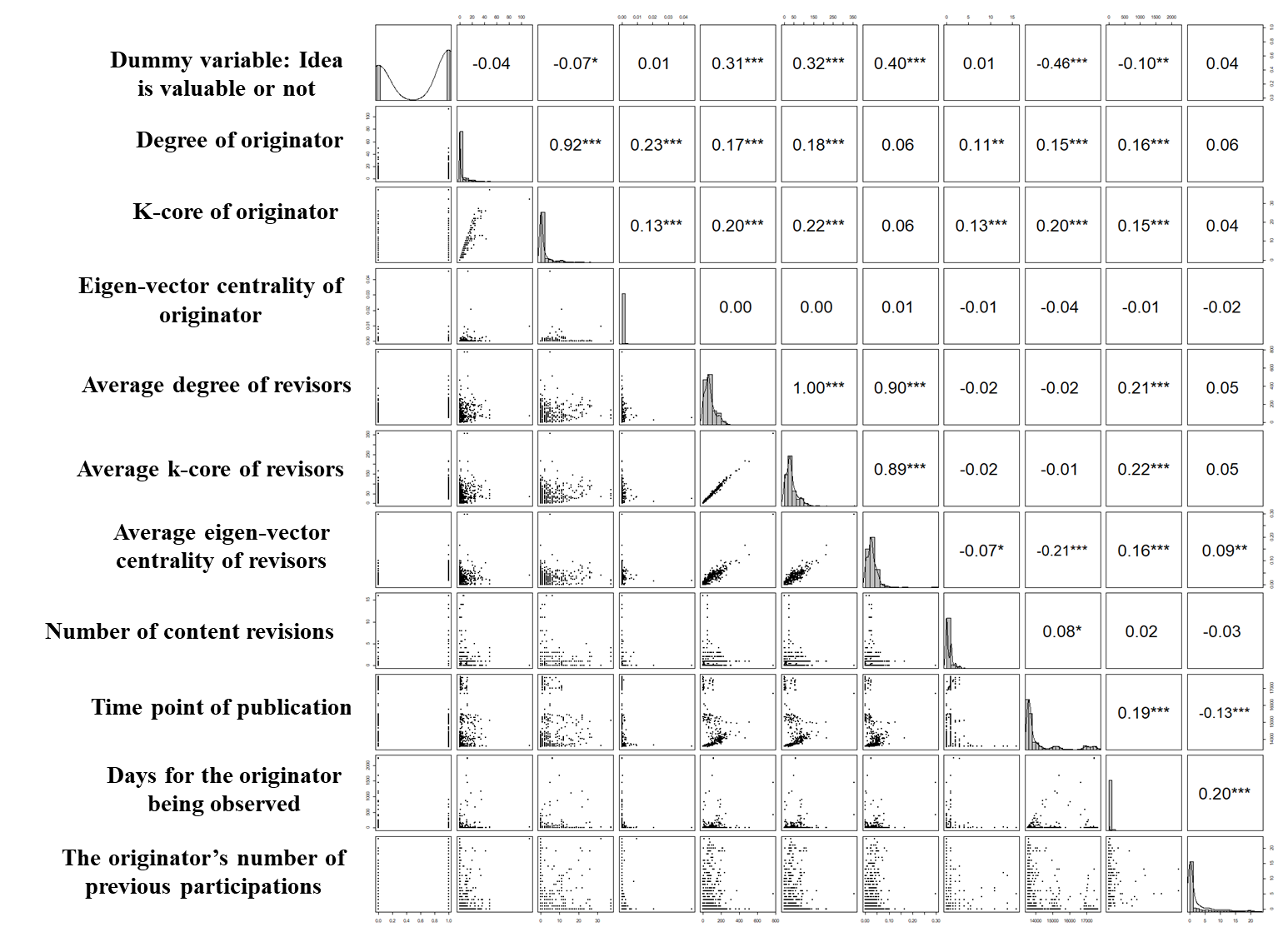


Fig. S3. Distribution, scatter plots, and correlations of all variables in the regression model of Idea Storm content quality; the names of all variables are in the left of the figure. Note that the names of the variables are abridged for display in the figure. In this figure, the diagonal shows histograms with the density curves of every variable in the regression model of content quality in Idea Storm. Graphs in the lower triangle show scatter plots between each pair of variables. In the upper triangle, significant correlations between each pair of variables are shown. One asterisk refers to a *p*-value smaller than 0.1, two asterisks refer to a *p*-value smaller than 0.05, and three asterisks refer to a *p*-value smaller than 0.01.

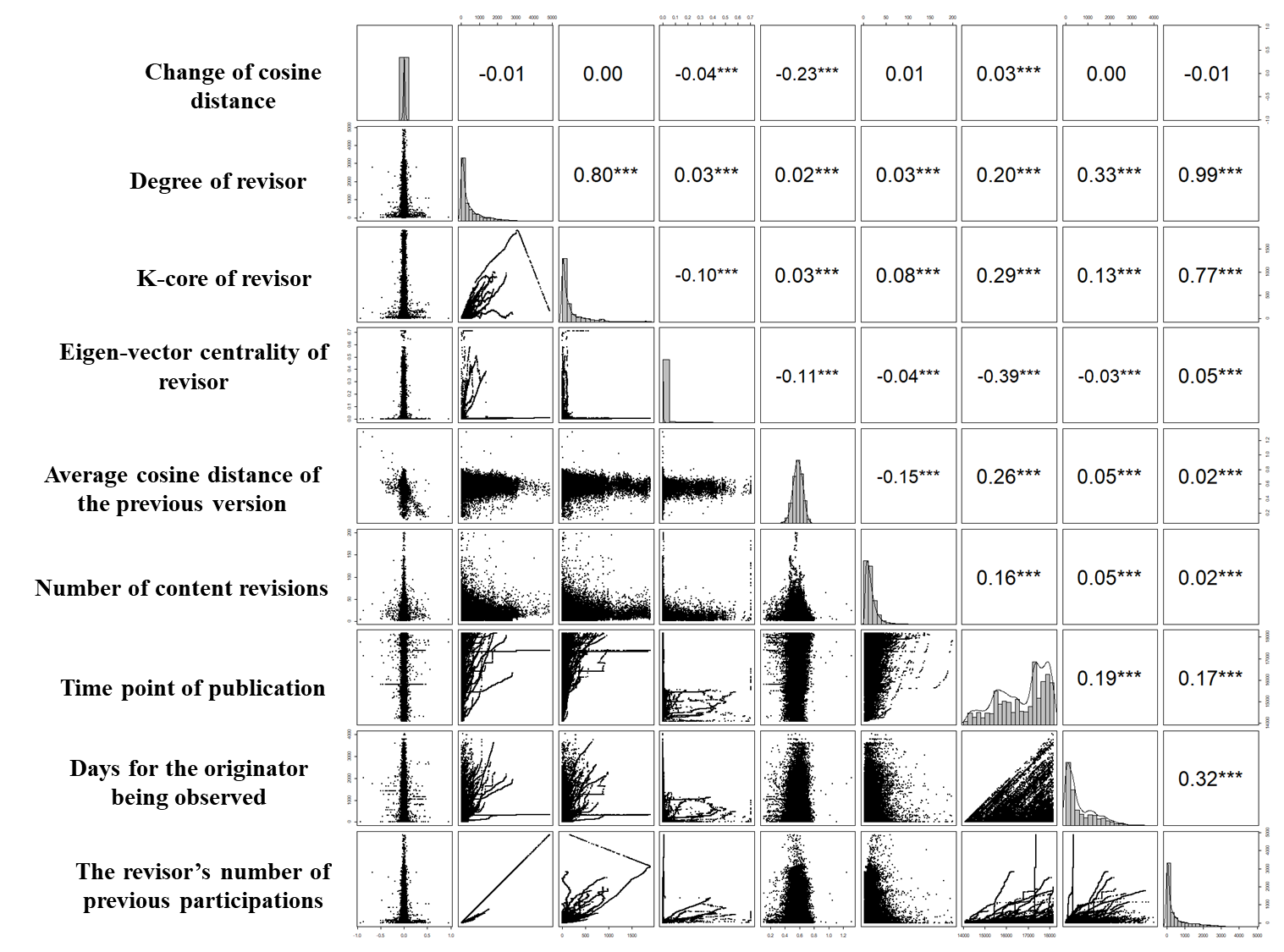
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Fig. S4. Distribution, scatter plots, and correlations of variables in the regression model of originality change; the names of all variables are in the left of the figure. In this figure, the diagonal shows histograms with the density curves of every variable in the regression model of originality change. Graphs in the lower triangle show scatter plots between each pair of variables. In the upper triangle, significant correlations between each pair of variables are shown. One asterisk refers to a *p*-value smaller than 0.1, two asterisks refer to a *p*-value smaller than 0.05, and three asterisks refer to a *p*-value smaller than 0.01.

Table S1. Statistics of variables in regression of the quality of content

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Statistic** | **Observations** | **Mean** | **St. Dev.** | **Min** | **Max** |
| SCP-Wiki | | | | | |
| Rate of focal story | 4,653 | 180.294 | 219.974 | −20 | 5,355 |
| Degree of originator | 4,653 | 128.338 | 275.132 | 0.000 | 2,818 |
| K-core of originator | 4,653 | 48.988 | 89.710 | 0.000 | 992 |
| Eigenvector centrality of originator | 4,653 | 0.009 | 0.057 | 0.000 | 0.707 |
| Average degree of revisors | 4,653 | 451.296 | 269.710 | 2.500 | 2,566 |
| Average k-core of revisors | 4,653 | 177.704 | 100.779 | 1.000 | 979.700 |
| Average eigenvector centrality of revisors | 4,653 | 0.012 | 0.034 | 0.000 | 0.623 |
| Number of content revisions | 4,653 | 19.629 | 14.108 | 2 | 200 |
| Time point of publication | 4,653 | 16,518.870 | 1,230.808 | 14,079 | 18,174 |
| Days for the originator being observed | 4,653 | 467.432 | 694.090 | 0.000 | 3,683.698 |
| The originator’s number of previous participations | 4,653 | 121.719 | 271.833 | 0 | 2,816 |
| Github | | | | | |
| Number of Stars | 99,235 | 194.324 | 1,087.2 | 5 | 90,351 |
| Degree of originator | 99,235 | 82.322 | 435.400 | 0 | 35,145 |
| K-core of originator | 99,235 | 9.047 | 49.415 | 0 | 1,728 |
| Eigenvector centrality of originator | 99,235 | 0.0003 | 0.010 | 0 | 0.707 |
| Average degree of revisors | 99,235 | 853.071 | 2,992.168 | 2 | 79,727.5 |
| Average k-core of revisors | 99,235 | 21.346 | 50.298 | 1 | 1,368.817 |
| Average eigenvector centrality of revisors | 99,235 | 0.0003 | 0.004 | 0.000 | 0.707 |
| Number of content revisions | 99,235 | 7.962 | 45.371 | 1 | 7,153 |
| Time point of publication | 99,235 | 16,894.690 | 858.192 | 14,610 | 18,300 |
| Days for the originator being observed | 99,235 | 276.965 | 503.548 | 0.000 | 3,605 |
| The originator’s number of previous participations | 99,235 | 3.563 | 15.698 | 0.000 | 1,069 |
| Idea Storm | | | | | |
| Dummy variable: Idea is valuable or not | 837 | 0.589 | / | 0 | 1 |
| Degree of originator | 837 | 3.907 | 8.583 | 0.000 | 113 |
| K-core of originator | 837 | 2.826 | 5.713 | 0.000 | 37 |
| Eigenvector centrality of originator | 837 | 0.0002 | 0.002 | 0.000 | 0.045 |
| Average degree of revisors | 837 | 76.774 | 73.930 | 0.000 | 775.000 |
| Average k-core of revisors | 837 | 36.614 | 34.130 | 0.000 | 358.000 |
| Average eigenvector centrality of revisors | 837 | 0.027 | 0.024 | 0.000 | 0.296 |
| Number of content revisions | 837 | 0.742 | 1.661 | 0 | 16 |
| Time point of publication | 837 | 14,194.400 | 1,143.889 | 13,571 | 17,660 |
| Days for the originator being observed | 837 | 33.227 | 165.736 | 0 | 2,240 |
| The originator’s number of previous participations | 837 | 2.804 | 4.955 | 0 | 23 |

Table S2. Statistic of variables in regression of the change of originality.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Statistic** | **Observations** | **Mean** | **St. Dev.** | **Min** | **Max** |
| Dependent Variables | | | | | |
| Change of cosine distance | 43,693 | 0.0002 | 0.030 | −0.935 | 0.957 |
| Independent Variables | | | | | |
| Degree of revisor | 43,693 | 511.160 | 676.245 | 1 | 4,868 |
| K-core of revisor | 43,693 | 222.524 | 347.891 | 0.000 | 1,896 |
| Eigenvector centrality of revisor | 43,693 | 0.019 | 0.072 | 0.000 | 1 |
| Control Variables | | | | | |
| Average cosine distance of the previous version | 43,693 | 0.573 | 0.072 | 0.107 | 1.317 |
| Number of content revisions | 43,693 | 16.278 | 13.482 | 2 | 200 |
| Time point of publication | 43,693 | 16,698.410 | 1,125.040 | 14,085 | 18,175 |
| Days for the revisor being observed | 43,693 | 655.539 | 718.230 | 0.000 | 4,025.694 |
| The revisor’s number of previous participations | 43,693 | 464.909 | 684.150 | 0 | 4,866 |