Supplementary Data SD1: Data Supporting Factor Test Results and Comparisons Between Network and Dominance Measures

Tables of Regression and Correlation Results for All Network and Dominance Measures

Table SD1-1. Degrees of freedom (DF), correlation coefficient (r), 95% confidence intervals, P-value after randomization, adjusted P-value from the 4-way Benjamini and Hochberg (B-H) false discovery rate method (using the four network centrality measures), and adjusted P-value from the 6-way B-H false discovery rate method (using the four network centrality measures and two traditional dominance measures) for **age, mass, number of matings, and offspring sired** by bison males in 2004.

Factor of Interest	Measure	DF	Correlation Coefficient (r)	95% Confidence Interval	P-value	4-way B-H Adjusted P-value	6-way B-H Adjusted P-value
Age							
	Out-degree	109	0.475	0.409 - 0.558	0.0001	0.0001	0.0002
	Strength	109	0.455	0.353 - 0.564	0.0001	0.0001	0.0001
	Closeness	109	0.498	0.345 - 0.649	0.0001	0.0002	0.0003
	Betweenness	109	0.364	0.280 - 0.478	0.0020	0.0020	0.0024
	David's score	109	0.308	0.228 - 0.403	0.0043		0.0043
	Elo-rating	109	0.416	0.332 - 0.510	0.0001		0.0001
Mass							
	Out-degree	38	0.464	0.354 - 0.589	0.0053	0.0071	0.0106
	Strength	38	0.458	0.251 - 0.608	0.0021	0.0042	0.0063
	Closeness	38	0.590	0.286 - 0.765	0.0001	0.0004	0.0006
	Betweenness	38	0.403	0.257 - 0.553	0.0131	0.0131	0.0186
	David's score	38	0.313	0.146 - 0.533	0.0496		0.0496
	Elo-rating	38	0.378	0.216 - 0.588	0.0155		0.0186
Matings							
	Out-degree	30	0.572	0.286 - 0.777	0.0014	0.0028	0.0028
	Strength	30	0.432	0.091 - 0.674	0.0130	0.0130	0.0130
	Closeness	30	0.496	0.205 - 0.669	0.0042	0.0056	0.0063
	Betweenness	30	0.591	-0.005 - 0.83	0.0012	0.0028	0.0028
	David's score	30	0.571	0.337 - 0.770	0.0009		0.0036
	Elo-rating	30	0.445	0.228 - 0.729	0.0101		0.0121
Offspring							
	Out-degree	40	0.443	0.202 - 0.687	0.0050	0.0100	0.0100
	Strength	40	0.316	0.053 - 0.569	0.0414	0.0414	0.0414
	Closeness	40	0.377	0.130 - 0.592	0.0150	0.0190	0.0190
	Betweenness	40	0.496	0.130 - 0.782	0.0009	0.0036	0.0054
	David's score	40	0.450	0.229 - 0.666	0.0041		0.0100
	Elo-rating	40	0.367	0.160 - 0.593	0.0158		0.0190

Table SD1-2. Degrees of freedom (DF), correlation coefficient (*r*), 95% confidence intervals, *P*-value after randomization, adjusted *P*-value from the 4-way Benjamini and Hochberg (B-H) false discovery rate method (using the four network centrality measures), and adjusted *P*-value from the 6-way B-H false discovery rate method (using the four network centrality measures and two traditional dominance measures) for measures of **breeding tactic and tending effort** by bison males during 2004.
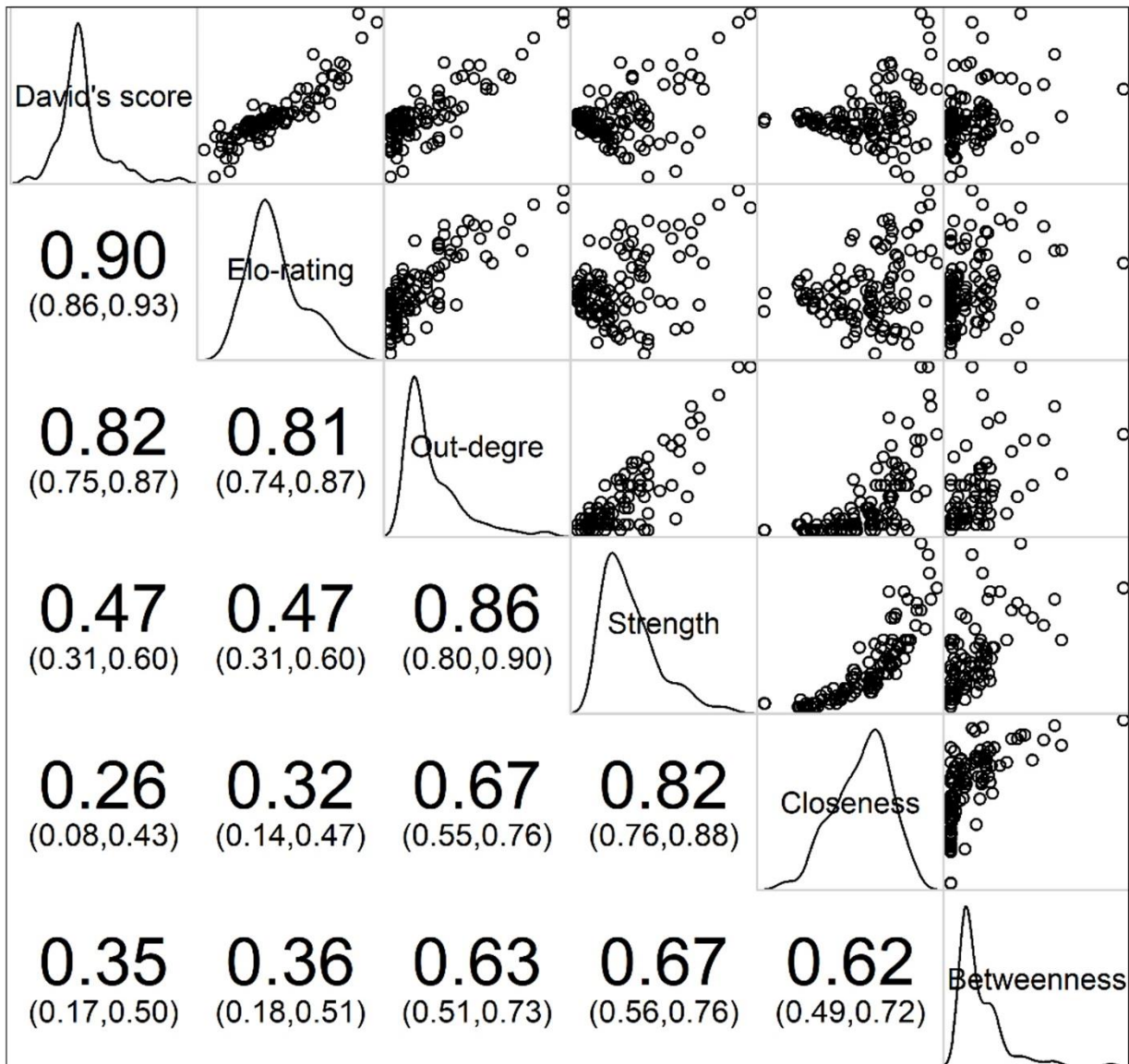
Factor of Interest	Measure	DF	Correlation Coefficient (*r*)	95% Confidence Interval	*P*-value	4-way B-H Adjusted *P*-value	6-way B-H Adjusted *P*-value
Number of Females Tended							
	Out-degree	108	0.548	0.459 - 0.650	0.0001	0.0001	0.0002
	Strength	108	0.538	0.418 - 0.646	0.0001	0.0001	0.0001
	Closeness	108	0.564	0.431 - 0.676	0.0001	0.0002	0.0003
	Betweenness	108	0.455	0.280 - 0.595	0.0001	0.0001	0.0001
	David's score	108	0.329	0.196 - 0.452	0.0005		0.0005
	Elo-rating	108	0.461	0.341 - 0.575	0.0001		0.0001
Number of Satellite Males Attending							
	Out-degree	53	0.932	0.867 - 0.967	0.0001	0.0002	0.0003
	Strength	53	0.819	0.684 - 0.901	0.0001	0.0001	0.0002
	Closeness	53	0.598	0.479 - 0.710	0.0001	0.0001	0.0001
	Betweenness	53	0.278	0.080 - 0.566	0.0448	0.0448	0.0448
	David's score	53	0.767	0.563 - 0.872	0.0001		0.0001
	Elo-rating	53	0.721	0.555 - 0.834	0.0001		0.0001
Number of Tending Males Attended (Satellited)							
	Out-degree	97	-0.086	-0.236 - 0.089	0.3874	0.3874	0.3874
	Strength	97	0.367	0.161 - 0.572	0.0002	0.0004	0.0003
	Closeness	97	0.431	0.305 - 0.546	0.0001	0.0004	0.0002
	Betweenness	97	0.197	-0.025 - 0.384	0.0511	0.0681	0.0613
	David's score	97	-0.482	-0.605 - -0.349	0.0001		0.0003
	Elo-rating	97	-0.444	-0.562 - -0.305	0.0001		0.0002
Number of Tending Days							
	Out-degree	108	0.581	0.474 - 0.675	0.0001	0.0002	0.0003
	Strength	108	0.569	0.440 - 0.678	0.0001	0.0001	0.0002
	Closeness	108	0.557	0.417 - 0.673	0.0001	0.0001	0.0001
	Betweenness	108	0.399	0.221 - 0.551	0.0001	0.0001	0.0001
	David's score	108	0.391	0.221 - 0.531	0.0001		0.0001
	Elo-rating	108	0.460	0.324 - 0.580	0.0001		0.0001
Avg. Number of Tending Observations per Female							
	Out-degree	108	0.595	0.434 - 0.738	0.0001	0.0002	0.0002
	Strength	108	0.401	0.191 - 0.592	0.0001	0.0002	0.0002
	Closeness	108	0.345	0.192 - 0.495	0.0002	0.0003	0.0002
	Betweenness	108	0.209	0.039 - 0.428	0.0295	0.0295	0.0295
	David's score	108	0.614	0.475 - 0.728	0.0001		0.0003
	Elo-rating	108	0.431	0.472 - 0.726	0.0001		0.0002

Table SD1-3. Degrees of freedom (DF), correlation coefficient (*r*), 95% confidence intervals, *P*-value after randomization, adjusted *P*-value from the 4-way Benjamini and Hochberg (B-H) false discovery rate method (using the four network centrality measures), and adjusted *P*-value from the 6-way B-H false discovery rate method (using the four network centrality measures and two traditional dominance measures) for number of females tended (a measure of tending effort) during the **early, mid-, and late period of breeding season** by bison males during 2004.
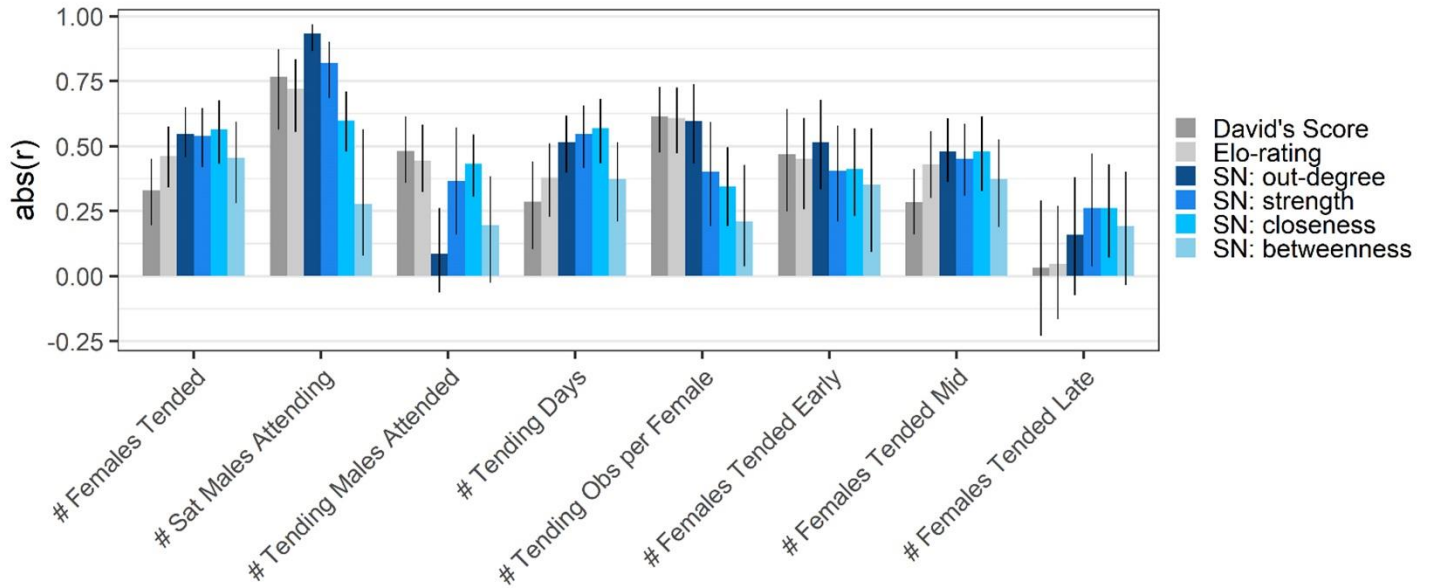
Factor of Interest	Measure	DF	Correlation Coefficient (*r*)	95% Confidence Interval	*P*-value	4-way B-H Adjusted *P*-value	6-way B-H Adjusted *P*-value
Early Season: Number of Females Tended							
	Out-degree	76	0.514	0.333 – 0.679	0.0001	0.0003	0.0003
	Strength	76	0.406	0.210 - 0.578	0.0006	0.0002	0.0007
	Closeness	76	0.411	0.230 - 0.567	0.0002	0.0002	0.0003
	Betweenness	76	0.353	0.093 - 0.568	0.0034	0.0003	0.0034
	David's score	76	0.470	0.250 - 0.644	0.0001		0.0002
	Elo-rating	76	0.452	0.258 - 0.609	0.0001		0.0002
Mid-Season: Number of Females Tended							
	Out-degree	108	0.478	0.361 - 0.607	0.0001	0.0002	0.0003
	Strength	108	0.452	0.310 - 0.586	0.0001	0.0001	0.0001
	Closeness	108	0.478	0.327 - 0.614	0.0001	0.0001	0.0002
	Betweenness	108	0.372	0.190 - 0.525	0.0001	0.0001	0.0001
	David's score	108	0.283	0.161 - 0.411	0.0027		0.0027
	Elo-rating	108	0.431	0.300 - 0.556	0.0001		0.0001
Late Season: Number of Females Tended							
	Out-degree	89	0.159	-0.073 - 0.379	0.1313	0.1313	0.1970
	Strength	89	0.262	0.038 - 0.471	0.0107	0.0254	0.0381
	Closeness	89	0.261	0.071 - 0.430	0.0127	0.0254	0.0381
	Betweenness	89	0.193	-0.033 - 0.401	0.0665	0.0887	0.1330
	David's score	89	0.032	-0.229 - 0.290	0.7687		0.7687
	Elo-rating	89	0.048	-0166 - 0.271	0.6525		0.7687

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Figure SD1-1. Correlation Plot.
Correlation plot is based on Pearson's correlation tests between network centrality measures and traditional dominance measures.

Figure SD1-2. Absolute Values of the Correlation Coefficients of Relationships Between All Traditional Dominance and Social Network (SN) Centrality Measures Versus Measures of Tending Tactic and Effort. The absolute values of the correlation coefficients ('abs(r)' as bars) are presented along with 95% confidence intervals (vertical black lines).

Figure SD1-3. Paired Plots Representing the Difference in Absolute Correlation Coefficients Between Traditional Dominance Measures and Out-degree. Paired plots depict the change in absolute correlation coefficient for all factor tests: (A) David's score vs. out-degree and (B) Elo-rating vs. out-degree. These plots illustrate the Wilcoxon signed-rank test results showing that absolute correlation coefficients from factor tests using out-degree were higher than those for tests using Elo-rating ($V = 13$, $P = 0.04$) but not David's score ($V = 17$, $P = 0.09$).