

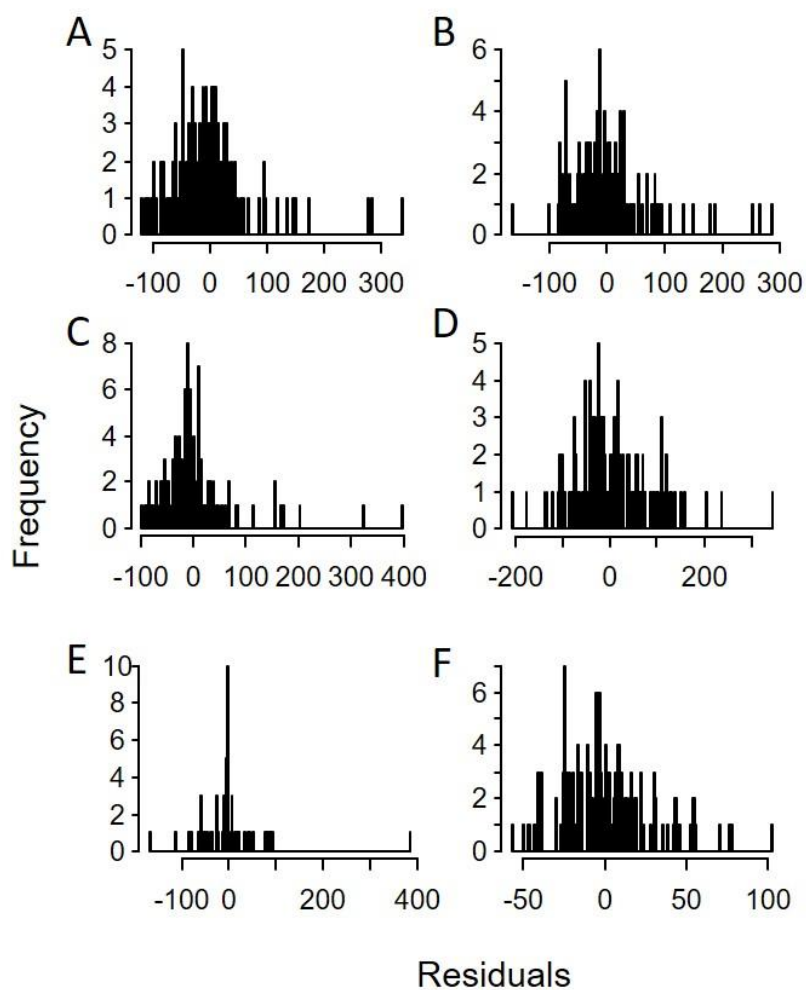


Fig. S1. Histograms of distribution of residuals of linear mixed-effects models investigating adhesion force of spider silk to different surface coatings. A) *Amaurobius* sp. B) *A. diadematus* C) *B. longinqua* D) *C. elegans* E) *U. plumipes* and F) *Z. x-notata*. See also [1, 2] about the robustness of linear mixed-effects models.

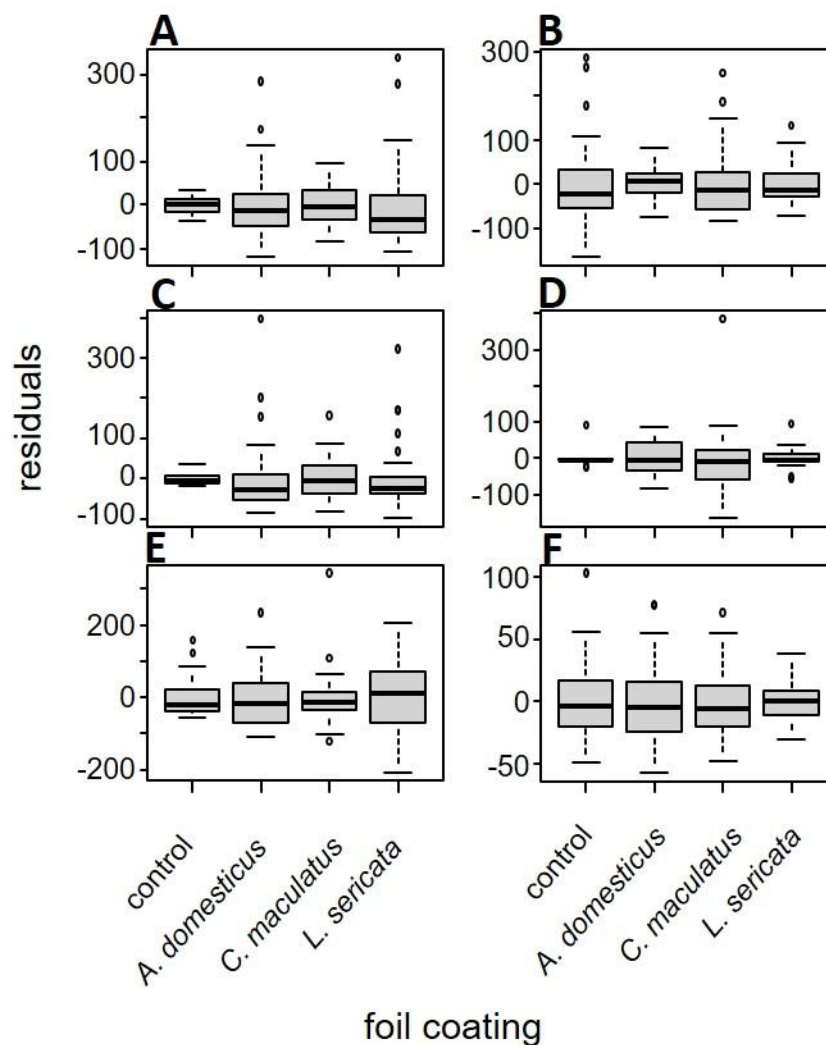


Fig. S2. Boxplot of residuals of linear mixed-effects models investigating adhesion force of spider silk to different surface coatings. Threads of (A) *Amaurobius* sp., (B) *A. diadematus*, (C) *B. longinqua*, (D) *C. elegans*, (E) *U. plumipes* and (F) *Z. x-notata* were brought into contact to foils coated with CHCs of *A. domesticus*, *C. maculatus*, *L. sericata* or uncoated foils (control).

Table S1. Replicate number and results of the statistical analysis of the retention experiment. The data was analysed for each insect separately using a Cox mixed-effects model with spider species as the explanatory variable and spider individual as a random effect. The effect of the explanatory variable was tested with type-II ANOVA. Pairwise comparisons were done using a Tukey post hoc comparisons.

Replicate number				
	<i>A. similis.</i>	<i>C. elegans</i>	<i>U. plumipes</i>	<i>Z. x-notata</i>
<i>A. domesticus</i>	8	16	31	15
<i>C. maculatus</i>	15	16	30	15

Statistical analysis				
Dataset	fixed factor	df	χ^2	p
<i>A. domesticus</i>	spider	3	15.933	0.001
<i>C. maculatus</i>	spider	3	52.841	< 0.001

Table S2: Replicate number for the adhesion experiments with (non-)coated aluminium foils or native insects.

Foils	Control foil	<i>A. domesticus</i>	<i>C. maculatus</i>	<i>L. sericata</i>
<i>Amaurobius spec.</i>	34	35	35	35
<i>A. diadematus</i>	35	35	35	35
<i>B. longinqua</i>	35	34	34	35
<i>C. elegans</i>	15	15	15	30
<i>U. plumipes</i>	35	35	35	35
<i>Z. x-notata</i>	35	35	35	35

Native prey insects				
<i>A. diadematus</i>		18	18	18
<i>B. longinqua</i>		18	19	18
<i>C. elegans</i>		15	15	16
<i>U. plumipes</i>		18	18	18

Table S3. Results from linear mixed-effects models on adhesion experiments with (non-)coated aluminium foils or native prey insects.

Foils: The first part of the table gives results for a model including all insect and all spider species. "Insect species" includes the control treatment (i.e. no coating) as a fourth factor level. The second part gives results for separate models for each insect species. The third part refers to separate models for each spider species.

Native prey insects: The first part of the table gives results for a model including all insect and all spider species. The second part gives results for separate models for each insect species.

*: did not meet assumption of normality.

Foils				
Dataset	fixed effect	df	χ^2	p
All data	Insect species	3	87.039	< 0.001
	Spider species	5	66.500	< 0.001
	Insect x spider	15	186.403	< 0.001
<i>Amaurobius spec.</i>	Insect species	3	81.170	< 0.001
<i>A. diadematus</i>	Insect species	3	42.322	< 0.001
<i>B. longinqua</i>	Insect species	3	58.078	< 0.001
<i>C. elegans</i>	Insect species	3	36.778	< 0.001
<i>U. plumipes</i>	Insect species	3	16.810	< 0.001
<i>Z. x-notata</i>	Insect species	3	30.799	< 0.001
Control	Spider species	5	101.780	< 0.001
<i>A. domesticus</i>	Spider species	5	18.720	0.002
<i>C. maculatus</i>	Spider species	5	45.097	< 0.001
<i>L. sericata</i>	Spider species	5	35.637	< 0.001
Native prey insects				
Dataset	fixed effect	df	χ^2	p
All data	Spider species	5	6.162	< 0.001
	Insect species	2	0.032	0.968
	Spider x insect	8	10.281	< 0.001
<i>A. diadematus</i> *	Insect species	2	0.239	0.788
<i>B. longinqua</i>	Insect species	2	13.340	< 0.001
<i>C. elegans</i>	Insect species	2	3.772	0.031
<i>U. plumipes</i>	Insect species	2	4.420	0.017
<i>Z. x-notata</i>	Insect species	2	10.724	< 0.001

Table S4. Results of the Shapiro-Wilk normality and Lavene's test.

Shapiro-Wilk	W	p	
<i>Amaurobius</i> sp.	0.864	< 0.001	
<i>A. diadematus</i>	0.880	< 0.001	
<i>B. longinqua</i>	0.756	< 0.001	
<i>C. elegans</i>	0.758	< 0.001	
<i>U. plumipes</i>	0.953	< 0.001	
<i>Z. x-notata</i>	0.960	< 0.001	
Lavene's	df	F	p
<i>Amaurobius</i> sp.	3	6.3	< 0.001
<i>A. diadematus</i>	3	4.3	0.006
<i>B. longinqua</i>	3	3.6	0.014
<i>C. elegans</i>	3	4.6	0.006
<i>U. plumipes</i>	3	3.5	0.02

References

1. Zuur, A.F., Ieno, E.N., and Elphick, C.S. (2010). A protocol for data exploration to avoid common statistical problems. *Methods in Ecology and Evolution* 1, 3-14.
2. Schielzeth, H., Dingemanse, N.J., Nakagawa, S., Westneat, D.F., Allee, H., Teplitsky, C., Réale, D., Dochtermann, N.A., Garamszegi, L.Z., and Araya-Ajoy, Y.G. (2020). Robustness of linear mixed-effects models to violations of distributional assumptions. *Methods in Ecology and Evolution* 11, 1141-1152.