Supplementary Information

Prosocial Preferences can Escalate Intergroup Conflicts by Countering Selfish Motivations to Leave

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Supplementary Tables

Multilevel (logistic) models included random intercepts for participants nested within their group to account for violations of independence, since participants made repeated decisions and were part of a group in which they potentially influenced each other's decisions over time. All reported statistical tests were two-tailed.

Study 2

We fit a multilevel logistic regression model to examine which factors impacted defender leaving (see Table S1). In this model with defender leaving (0 = stay, 1 = leave) as the dependent variable, we included the following fixed factors: the cost of leaving (the intercept refers to a cost of 7), if a defender left themselves in the previous round (= 1) or not (= 0), how many other defenders stayed in the previous round, if the defender group was successful in the previous round (= 1) or not (= 0), how many Experimental Money Units (henceforth EMU) other defenders contributed to conflict in the previous round, participants' social value orientation angle, participants' risk preferences, and round. This model only included data of participants who were defenders and only included blocks in which leaving was possible.

Supplementary Table S1. Mixed effects logistic regression modelling which factors impacted defender leaving.

		Estimate	SE	z	p	95% CI
Model	intercept	2.63	0.44	5.93	< .001	[1.76, 3.51]
	cost 5	0.50	0.16	3.18	.001	[0.22, 0.82]
	cost 10	-0.58	0.14	-4.03	< .001	[-0.87, -0.30]
	previous leave	1.37	0.14	9.65	< .001	[1.12, 1.64]
	previous other(s) stayed	-1.08	0.12	-8.72	< .001	[-1.33, -0.84]
	previous success	-1.13	0.13	-8.72	< .001	[-1.41, -0.88]
	previous other(s) invest	0.02	0.01	1.43	.153	[-0.01, 0.04]
	svo angle	-0.03	0.01	-3.14	.002	[-0.04, -0.01]
	risk taking	-0.05	0.02	-2.70	.007	[-0.09, -0.02]
	round	0.003	0.02	0.13	.900	[-0.04, 0.05]

We fit a multilevel regression model to examine how many defenders participants expected to leave under different costs of leaving (see Table S2). In this model with the expected number of defenders who left as the dependent variable, we included the cost of leaving as a fixed factor. This model only included blocks in which leaving was possible. The intercept refers to a cost of 7.

Supplementary Table S2. Mixed effects regression modelling how many defenders participants expected to leave under different costs of leaving.

		Estimate	SE	t	p	95% CI
Model	intercept	1.80	0.05	39.57	< .001	[1.71, 1.88]
	cost 5	0.20	0.02	9.57	< .001	[0.16, 0.24]
	cost 10	-0.53	0.02	-25.51	< .001	[-0.57, -0.49]

We fit two multilevel regression models to examine how giving defenders the ability to leave impacted group-level contributions to conflict (see Table S3 & S4). In both models with group-level contributions to conflict as the dependent variable, we included the following fixed factors: if defenders could leave in the 'leave blocks' (= 1) or not in the 'no leave block' (= 0), how many defenders stayed, and round. We ran this model separately for attacker and defender groups. Both models only included random intercepts for groups, as we investigated group-level contributions to conflict.

Supplementary Table S3. Mixed effects regression modelling how giving defenders the ability to leave impacted attackers' group-level contributions to conflict.

		Estimate	SE	t	p	95% CI
Model	intercept	17.73	1.50	11.79	< .001	[14.78, 20.68]
	leave possible	-1.03	0.71	-1.45	.147	[-2.43, 0.36]
	num defenders	3.13	0.41	7.69	< .001	[2.33, 3.92]
	round	-0.83	0.09	-9.69	< .001	[-1.00, -0.67]

Supplementary Table S4. Mixed effects regression modelling how giving defenders the ability to leave impacted defenders' group-level contributions to conflict.

		Estimate	SE	t	p	95% CI
Model	intercept	20.28	1.21	16.83	< .001	[17.92, 22.64]
	leave possible	-4.69	0.62	-7.58	< .001	[-5.91, -3.48]
	num defenders	4.34	0.36	12.20	< .001	[3.64, 5.03]
	round	-0.56	0.08	-7.46	< .001	[-0.71, -0.41]

We fit a multilevel regression model to examine how defenders' social preferences and the number of defenders who stayed impacted their individual-level contributions to conflict (see Table S5). In the model with individual-level contributions to conflict as the dependent variable, we included the following fixed factors: defenders' social value orientation angle and how many defenders stayed. This model only included data of participants who were defenders and decided to stay in blocks in which defenders could leave.

Supplementary Table S5. Mixed effects regression modelling how social preferences and the number of defenders who stayed impacted defenders' individual-level contributions to conflict.

		Estimate	**SE**	t	**p**	**95% CI**
Model	intercept	10.22	0.85	12.09	< .001	[8.57, 11.88]
	svo angle	0.03	0.02	1.48	.143	[-0.01, 0.08]
	num defenders	-2.47	0.16	-15.39	< .001	[-2.78, -2.15]

We fit a multilevel logistic regression model to examine how giving defenders the ability to leave impacted defender success (see Table S6). In this model with defender success (0 = no success, 1 = success) as the dependent variable, we included if defenders could leave in the 'leave blocks' (= 1) or not in the 'no leave block' (= 0) and how many defenders stayed as fixed factors. This model only included a random intercept for groups, as we investigated group-level success.

Supplementary Table S6. Mixed effects logistic regression modelling how giving defenders the ability to leave impacted defender success.

		Estimate	SE	z	p	95% CI
Model	intercept	1.08	0.26	4.19	< .001	[0.58, 1.59]
	leave possible	-0.71	0.20	-3.57	< .001	[-1.10, -0.32]
	num defenders	0.10	0.10	0.95	.343	[-0.11, 0.30]

We fit two multilevel regression models to examine how giving defenders the ability to leave impacted defender earnings (see Table S7 & S8). In the first model with earnings as the dependent variable, we included the following fixed factors: the cost of leaving (the intercept refers to a cost of 7) and if a defender stayed (0 = left, 1 = stayed). In the second model with earnings as the dependent variable, we included a dummy variable that coded if no or all defenders left (= 1) or if one or two defenders left (= 0) as a fixed factor. Both models only included data of participants who were defenders and blocks in which defenders could leave.

Supplementary Table S7. Mixed effects regression modelling how giving defenders the ability to leave impacted defenders' earnings.

		Estimate	SE	t	p	95% CI
Model	intercept	13.18	0.29	46.01	< .001	[12.62, 13.75]
	cost 5	1.18	0.17	6.83	< .001	[0.84, 1.52]
	cost 10	-0.99	0.18	-5.64	< .001	[-1.34, -0.65]
	stay	-6.03	0.18	-33.67	< .001	[-6.38, -5.67]

Supplementary Table S8. Mixed effects regression modelling how coordination between defenders with regards to leaving impacted defenders' earnings.

		Estimate	SE	t	p	95% CI
Model	intercept	9.40	0.23	40.17	< .001	[8.94, 9.86]
	leave all or none	2.60	0.18	14.12	< .001	[2.24, 2.96]

Finally, we fit a multilevel regression model to examine how giving defenders the ability to leave impacted ingroup solidarity (see Table S9). In this multilevel model with ingroup solidarity as the dependent variable, we included if a defender stayed as a fixed factor (0 = left, 1 = stayed). This model only included data of participants who were defenders and blocks in which defenders could leave.

Supplementary Table S9. Mixed effects regression modelling how defenders' willingness to leave impacted defender ingroup solidarity.

		Estimate	SE	t	p	95% CI
Model	intercept	2.75	0.12	22.15	< .001	[2.50, 3.00]
	stay	0.36	0.03	12.76	< .001	[0.30, 0.41]

Study 3

We fit two multilevel logistic regression models to examine how asymmetric leaving opportunities impacted defender leaving (see Table S10 & S11). In the first model with defender leaving (0 = stay, 1 = leave) as the dependent variable, we included a dummy variable coding if leaving opportunities were asymmetric (= 1) or symmetric in the 'all leave block' (= 0). This model only included data of participants who were defenders and only included blocks in which leaving was possible. In the second model with defender leaving (0 = stay, 1 = leave) as the dependent variable, we included the following fixed factors: how many defenders could leave, if a defender left themselves in the previous round (= 1) or not (= 0), how many other defenders stayed in the previous round, how many EMU other defenders contributed to conflict in the previous round, if the defender group was successful in the previous round (= 1) or not (= 0), participants' social value orientation angle, participants' risk preferences, and round. The second model only included data of participants who were defenders and only included blocks in which leaving opportunities were asymmetric (i.e., only one or two defenders could leave).

Supplementary Table S10. Mixed effects logistic regression modelling how asymmetric leaving opportunities impacted defender leaving.

		Estimate	SE	z	p	95% CI
Model	intercept	1.41	0.24	5.76	< .001	[0.93, 1.91]
	asymmetric leave	-1.94	0.12	-16.07	< .001	[-2.19, -1.71]

Supplementary Table S11. Mixed effects logistic regression modelling which factors impacted defender leaving under asymmetric leaving opportunities.

		Estimate	SE	z	p	95% CI
Model	intercept	3.97	1.04	3.80	< .001	[2.07, 5.98]
	num defenders could leave	-0.26	0.22	-1.16	.247	[-0.71, 0.14]
	previous leave	0.45	0.21	2.18	.030	[0.05, 0.89]
	previous other(s) stayed	-1.03	0.25	-4.08	< .001	[-1.54, -0.55]
	previous other(s) invest	-0.0004	0.02	-0.03	.978	[-0.04, 0.03]
	previous success	-0.87	0.19	-4.63	< .001	[-1.25, -0.50]
	svo angle	-0.06	0.02	-3.16	.002	[-0.09, -0.03]
	risk taking	-0.01	0.03	-0.23	.819	[-0.07, 0.06]
	round	-0.05	0.03	-1.70	.090	[-0.12, 0.02]

We fit three multilevel regression models to examine how asymmetric leaving opportunities impacted defenders' individual-level contributions to conflict (see Table S12, S13, & S14). In all models, defenders' contributions to conflict were included as the dependent variable. In the first model, we included a dummy variable that coded if defenders could not leave under asymmetric leaving abilities (= 1) or if leaving was not possible in the 'no leave block' (= 0) as a fixed factor. In the second model, we included the following fixed factors: if a defender could leave (= 1) or not (= 0), how many defenders stayed, participants' social value orientation angle, participants' risk preferences, and round. This model only included blocks in which leaving opportunities were asymmetric (i.e., only one or two defenders could leave) and only included data of defenders who stayed. In the third model, we included the following fixed factors: how many defenders stayed and participants' social value orientation angle. This model only included data of defenders who decided to stay in the block in which all defenders could leave.

Supplementary Table S12. Mixed effects regression modelling how asymmetric versus no leaving opportunities impacted defenders' individual contributions to conflict.

		Estimate	SE	t	p	95% CI
Model	intercept	7.62	0.39	19.78	< .001	[6.86, 8.38]
	no leave asymmetric	1.07	0.16	6.59	< .001	[0.75, 1.39]

Supplementary Table S13. Mixed effects regression modelling which factors impacted defenders' individual contributions to conflict under asymmetric leaving opportunities.

		Estimate	SE	t	p	95% CI
Model	intercept	11.63	1.02	11.39	< .001	[9.62, 13.63]
	leave possible	-1.44	0.25	-5.72	< .001	[-1.93, -0.94]
	num defenders	-2.35	0.17	-13.66	< .001	[-2.68, -2.01]
	svo angle	0.06	0.02	2.76	.007	[0.02, 0.11]
	risk taking	-0.04	0.04	-0.93	.356	[-0.13, 0.05]
	round	-0.16	0.03	-6.04	< .001	[-0.21, -0.11]

Supplementary Table S14. Mixed effects regression modelling how the number of defenders who stayed and social preferences impacted defenders' individual-level contributions to conflict under symmetric leaving opportunities.

		Estimate	SE	t	p	95% CI
Model	intercept	10.23	1.50	6.83	< .001	[7.30, 13.19]
	num defenders	-3.94	0.35	-11.39	< .001	[-4.62, -3.24]
	svo angle	0.06	0.04	1.45	.153	[-0.02, 0.13]

We fit a multilevel logistic regression model to examine how asymmetric leaving opportunities impacted defender success (see Table S15). In this model with defender success (0 = no success, 1 = success) as the dependent variable, we included how many defenders stayed as a fixed factor. This model only included blocks in which leaving opportunities were asymmetric (i.e., only one or two defenders could leave) and only included data of defenders. This model only included a random intercept for groups, as we investigated group-level success.

Supplementary Table S15. Mixed effects logistic regression modelling how asymmetric leaving opportunities impacted defender success.

		Estimate	SE	z	p	95% CI
Model	intercept	-0.33	0.28	-1.21	.227	[-0.87, 0.22]
	num defenders	0.52	0.11	4.58	< .001	[0.30, 0.75]

We fit four multilevel regression models to examine how asymmetric leaving opportunities impacted defender earnings (see Table S16, S17, S18, & S19). In all models, defenders' earnings were included as the dependent variable. In the first model, we included a dummy variable that coded if defenders could not leave under asymmetric leaving abilities (= 1) or if leaving was not possible in the 'no leave block' (= 0) as a fixed factor. In the second model, we included a dummy variable that coded if defenders could leave under asymmetric leaving abilities (= 1) or if all defenders could leave in the 'all leave block' (= 0) as a fixed factor. In the third model, we included defenders' social value orientation angle as a fixed factor. In the fourth model, we included if a defender who could leave stayed (= 1) or left (= 0) as a fixed factor. All models only included data of participants who were defenders. The third and fourth model only included blocks in which leaving opportunities were asymmetric (i.e., only one or two defenders could leave).

Supplementary Table S16. Mixed effects regression modelling how asymmetric versus no leaving opportunities impacted defenders' earnings.

		Estimate	**SE**	**t**	**p**	**95% CI**
Model	intercept	13.42	0.45	30.12	< .001	[12.55, 14.30]
	no leave asymmetric	-5.45	0.44	-12.49	< .001	[-6.31, -4.58]

Supplementary Table S17. Mixed effects regression modelling how asymmetric versus symmetric leaving opportunities impacted defenders' earnings.

		Estimate	SE	t	p	95% CI
Model	intercept	15.83	0.28	57.09	< .001	[15.28, 16.38]
	all leave asymmetric	-1.47	0.21	-6.89	< .001	[-1.90, -1.04]

Supplementary Table S18. Mixed effects regression modelling how defenders' social preferences impacted defenders' earnings.

		Estimate	SE	t	p	95% CI
Model	intercept	11.84	0.82	14.40	< .001	[10.23, 13.45]
	svo angle	-0.06	0.02	-2.67	.009	[-0.11, -0.02]

Supplementary Table S19. Mixed effects regression modelling if defenders earned more if they stayed or left.

		Estimate	SE	t	p	95% CI
Model	intercept	15.18	0.37	41.23	< .001	[14.46, 15.90]
	could leave but stayed	-5.99	0.35	-17.18	< .001	[-6.67, -5.30]

Finally, we fit a multilevel regression model to examine how giving defenders the ability to leave impacted defender ingroup solidarity (see Table S20). In this multilevel model with ingroup solidarity as the dependent variable, we included if a defender who could leave stayed (0 = left, 1 = stayed) as a fixed factor. This model only included data of participants who were defenders and could leave.

Supplementary Table S20. Mixed effects regression modelling how giving defenders the ability to leave under asymmetric leaving opportunities impacted defender ingroup solidarity.

		Estimate	SE	t	p	95% CI
Model	intercept	3.07	0.15	21.08	< .001	[2.78, 3.36]
	could leave but stayed	0.41	0.04	10.91	< .001	[0.34, 0.49]