Appendix A.

Factors, facets and individual questions of the DPQ (short form, Jones, 2008) and internal consistency of factors, calculated from the German translation of the questionnaire (Turcsán et al., in prep.). Numbers in the second column represent the original numbers of the questions in the questionnaire. In the current study, the owners were asked to rate their agreement with the German translation of the statements on a 5-point Likert scale ("sehr unzutreffend", "eher unzutreffend", "teils-teils", "eher zutreffend", "sehr zutreffend"), which can be freely translated as "disagree strongly", "tend to disagree", "partly-partly", "tend to agree", "agree strongly".

Factor 1 – Fearfulness		Cronbach's alpha: 0.793
	Facet 1 – Fear of People	
	1* Dog is relaxed when greeting people.	
	6 Dog is shy.	
	27 Dog behaves fearfully towards unfamiliar people.	
	Facet 2 – Nonsocial Fear	
	3 Dog is anxious.	
	11* Dog is confident.	
	22* Dog adapts easily to new situations and environments.	
	Facet 3 – Fear of Dogs	
	13 Dog avoids other dogs.	
	21 Dog behaves submissively (e.g., rolls over, avoids eye contact, licks lips) when greeting other dogs.	
	42 Dog behaves fearfully towards other dogs.	
	Facet 4 – Fear of Handling	
	16 Dog behaves fearfully during visits to the veterinarian.	
	35 Dog exhibits fearful behaviours when restrained.	
	44 Dog behaves fearfully when groomed (e.g., nails trimmed, brushed, bathed, ears cleaned).	
Factor 2 – Aggression towards People		Cronbach's alpha: 0.707
	Facet 1 – General Aggression	
	7 Dog behaves aggressively towards unfamiliar people.	
	18* Dog is friendly towards unfamiliar people.	
	40 Dog shows aggression when nervous or fearful.	
	Facet 2 – Situational Aggression	
	25 Dog behaves aggressively in response to perceived threats from people (e.g., being cornered, having collar reached for).	
	30 Dog behaves aggressively during visits to the veterinarian.	
	36 Dog aggressively guards coveted items (e.g., stolen item, treats, food bowl).	
Factor 3 – Activity/Excitability		Cronbach's alpha: 0.683
	Facet 1 – Excitability	
	15 Dog is boisterous.	
	31 Dog seeks constant activity.	
	41* Dog tends to be calm.	
	Facet 2 – Playfulness	
	9* Dog gets bored in play quickly.	
	17 Dog enjoys playing with toys.	
	33 Dog retrieves objects (e.g., balls, toys, sticks).	

Facet 3 – Active Engagement

4* Dog is lethargic
14 Dog works at tasks (e.g., getting treats out of a Kong, shredding toys) until entirely finished.
24 Dog is curious.

Facet 4 – Companionability

20 Dog seeks companionship from people.
26* Dog is aloof.
37 Dog is affectionate.

Factor 4 – Responsiveness to Training	Cronbach's alpha: 0.646

Facet 1 – Trainability

29* Dog is slow to respond to corrections.
38* Dog ignores commands.
43 Dog is able to focus on a task in a distracting situation (e.g., loud or busy places, around other dogs).

Facet 2 – Controllability

5 When off leash, dog comes immediately when called.
10* Dog is quick to sneak out through open doors, gates.
32 Dog leaves food or objects alone when told to do so.

Factor 5 – Aggression towards Animals	Cronbach's alpha: 0.673

Facet 1 – Aggression towards Dogs

2 Dog behaves aggressively toward dogs.
19* Dog is playful with other dogs.
34* Dog is friendly towards other dogs.

Facet 2 – Prey Drive

8 Dog likes to chase squirrels, birds, or other small animals.
23 Dog likes to chase bicycles, joggers, and skateboarders.
39 Dog behaves aggressively towards cats.

Facet 3 – Dominance over other Dogs

12 Dog is dominant over other dogs.
28* Dog willingly shares toys with other dogs.
45 Dog is assertive or pushy with other dogs (e.g., if in a home with other dogs, when greeting).

Note: Items marked with an asterisk are reverse coded items.

Appendix B.

Mean (bolded) and interquartile range of DPQ factor scores in the three age groups

Age group	Fearfulness	Aggression towards People	Activity/Excitability	Responsiveness to Training	Aggression towards Animals
6 months	**21.32** (16–25)	**7.89** (6–9)	**51.56** (49–54)	**21.13** (18–24)	**17.91** (14–21)
12 months	**23.81** (18.25–28.75)	**8.50** (6–9.75)	**51.54** (48–55)	**22.20** (20–24)	**18.96** (15–22)
18–24 months	**24.27** (19–28.5)	**8.99** (6–10)	**50.96** (47.5–54.5)	**22.99** (20.5–26)	**19.85** (16–22.5)

Appendix C.

Intra-class correlation coefficients (two way random, absolute consistency, single measures) between facets at 6, 12 and 18 months. All results are significant after correction for multiple testing.

Facet	ICC	P
Fear of People	0.68	<0.001
Nonsocial Fear	0.65	<0.001
Fear of Dogs	0.58	<0.001
Fear of Handling	0.56	<0.001
General Aggression	0.64	<0.001
Situational Aggression	0.45	<0.001
Excitability	0.55	<0.001
Playfulness	0.64	<0.001
Engagement	0.39	<0.001
Companionability	0.41	<0.001
Trainability	0.51	<0.001
Controllability	0.47	<0.001
Aggression towards Dogs	0.53	<0.001
Prey Drive	0.63	<0.001
Dominance over other Dogs	0.59	<0.001

Appendix D.

Results of minimal GLMMs testing for differences in DPQ facets between age groups. Variables that were log10, double log or square-root transformed or were normally distributed without transformation were analysed with GLMMs assuming a normal distribution (F statistics presented). Variables transformed into binary variables were analysed with binomial models (Chi^2 statistics presented). Litter effects, if significant, are indicated in the column "Random effect(s) of best model". All significant results for the full models remain significant after FDR correction for multiple testing.

Dependent variable	Transformation	Random effect(s) of best model	Test statistic (DF)	P full model	Within model comparison	P 6 vs 12 months and 12 vs 18 months
Fear of People	log10	ID nested within litter	$F_{(2,138)} = 7.72$	0.0007	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.002 0.737 0.0006
Nonsocial Fear	log10	ID	$F_{(2,138)} = 8.85$	0.0002	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.020 0.064 0.0001
Fear of Dogs	log10	ID	$F_{(2,138)} = 0.57$	0.57	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.414 0.317 0.825
Fear of Handling	double log	ID nested within litter	$F_{(2,138)} = 7.38$	0.0009	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.002 0.651 0.0007
General aggression	binary	ID; Litter (p = 0.007)	$X^2_{(2)} = 253.61$	0.2636	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.237 0.699 0.127
Situational aggression	binary	ID; Litter	$X^2_{(2)} = 280.35$	0.009	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.873 0.006 0.008
Excitability	log10	ID	$F_{(2,138)} = 2.95$	0.056	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.020 0.097 0.551
Playfulness	binary	ID	$X^2_{(2)} = 274.66$	0.8679	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.913 0.691 0.610
Active Engagement	binary	ID	$X^2_{(2)} = 273.43$	0.0133	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.796 0.009 0.010
Companionability	binary	ID	$X^2_{(2)} = 272.41$	0.7894	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.489 0.568 0.924
Trainability	log10	ID	$F_{(2,138)} = 2.40$	0.09	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.110 0.616 0.040
Controllability	none	ID	$F_{(2,138)} = 11.09$	< 0.0001	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.003 0.093 < 0.0001
Aggression towards Dogs	double log	ID nested within litter	$F_{(2,138)} = 19.48$	< 0.0001	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.002 0.003 < 0.0001
Prey Drive	square-root	ID	$F_{(2,138)} = 0.03$	0.97	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.813 0.891 0.927
Dominance over other Dogs	none	ID	$F_{(2,138)} = 2.64$	0.075	6 vs 12 months 12 vs 18–24 months 6 vs 18–24 months	0.104 0.550 0.030