Supplementary tables:

Supplement 1   Description of the categories of cats for household, along with other potential explanatory factors for the selected health, behaviour and owner care variables. Data for these factors were extracted from questionnaires 1 to 5 (Q1: age two-four months; Q5: age two-and-a-half years respectively) in the Bristol Cats Study

Explanatory factor	Source (Questionnaire number – question number(s) paper version; online version)	Description	Categories

Household	Q1- D5; 38
	Q2- A1; 1
	Q3- A5; 5
	Q4- A5; 5
	Q5- A5, E13*; 5,73*
		Between Q1 and Q5 inclusive, the single/multi-cat status of the study cat.*	Single cat household
			Multi-cat household*
			  Agonistic multi-cat household
			  Non-agonistic multi-cat household

Tenure	Q1- G5; 63	Owner reports renting or owning the property where the study cat resides	Rent Own
Income	Q1- G6; 64	Annual household income	$\leq$£24,999 £25,000-£49,999 $\geq$£50,000
Education	Q1- G7; 65	Highest level of education achieved by any member of the household	A levels or equivalent or below Degree or above
Age of owner	Q1- G10; 68	Owner reported age	$\leq$24 years old 25-54 years old $\geq$ 55 years old
Owned cat before	Q1- A6; 6	The owner has owned a cat before the study cat as an adult	Yes No
Children in house	Q1- G2; 60	Children <16 years old in household	Yes No
Playing time	Q5- B1; 8	How often the cat is reported to play with a human member of the household	Most days/quite often Not often/never
Sex	Q1- A3; 3	Owner reported sex of cat	Male Female
Mixed/Pure breed	Q1- A4; 4	Owner reported breed of cat, categorised.	DSH/DLH/mixed breed Purebred
Time spent outdoors	Q5- B4; 11	Amount of time cat spends outdoors as reported by owner	Never/hardly any A little/ equal amounts Indoor and outdoor Most/all
Neighbourhood cat density	Q5- G6; 89	The number of cats from other households that the owner knows of in that are in the immediate neighbourhood	0- 5 6+

Neighbourhood cats stare in windows	Q5- G7; 90	Neighbouring cats stare into the house through cat flaps, doors or windows	Yes No
Neighbourhood cats come in house	Q5- G10; 93	Neighbouring cats come into the house	Yes No
Neighbourhood cats come in garden	Q5- G11; 94	Neighbouring cats come into the garden	Yes No
Insured†	Q5- D8; 46	Owner reported insurance status of cat	Yes (insured) No (uninsured)
Vaccinated†	Q5- D9; 47	Owner reported up to date, or reported vaccination date within last 365 days	Up to date Lapsed/Never vaccinated
Neutered	Q5- F6; 81	Owner reported neuter status of study cat	Yes (neutered) No (entire)
Location of house	Q1- F1; 49 Q2- H3; 79 Q3- G3; 74 Q4- G3; 71 Q5- G3; 87	Location of house reported by owner	In a rural or village location In a town or city location
Presence of garden	Q1- F2; 50 Q2- H4; 80 Q3- G4; 75 Q4- G4; 72 Q5- G4; 88	Owner reports if household where cat resides has a garden (including communal gardens)	Yes No
Initial 'BS' postcode cohort	Bristol Cat ID number	Owner was included in the initial restriction to the Bristol (BS postcode) area	Non-BS postcode BS postcode
Negative interaction with owner	Q5- E4; 64	Study cat reported to run away, hiss, growl or swipe when approached by owner	Yes No

* See materials and methods for definitions

†Insurance and vaccination were included as outcomes, as well as potential explanatory factors for the other outcomes

Q1 = questionnaire 1 (2-4 months); Q2 = questionnaire 2 (6 months); Q3 = questionnaire 3 (12 months); Q4 = questionnaire 4 (18 months); Q5 = questionnaire 5 (2.5 years); DSH = domestic shorthair; DLH = domestic longhair

Supplement 2   The number of households from the study cohort that have multiple cats

Number of cats	Number of households N (%)
Two	265 (43.0)
Three	130 (21.1)
Four	65 (10.6)
Five-nine	129 (20.9)
Ten- fourteen	20 (3.2)
More than fifteen	7 (1.1)

Supplement 3   Univariable analysis for overweight/obesity and periuria for association with single, agonistic and non-agonistic multi-cat households in a UK cat cohort at age 2.5 years. These were not taken forward to multivariable analysis.

Household	Number of cases n (%)	Number of controls n (%)	P-value	OR (95% CI)
SCH	28 (17.5)	132 (82.5)	0.388	1.0
AMCH	81 (21.9)	289 (78.1)	0.252	1.32 (0.82-2.13)
NMCH	41 (18.2)	184 (81.8)	0.856	1.05 (0.62-1.79)
SCH	15 (10.8)	124 (89.2)	0.556	1.0
AMCH	45 (14.5)	266 (85.5)	0.291	1.39 (0.75-2.61)
NMCH	23 (12.7)	158 (87.3)	0.600	1.20 (0.60-2.40)

SCH= single cat household; AMCH= agonistic multi-cat household, NMCH= non-agonistic multi-cat household

Supplement 4 Univariable analysis for owner reported abscess/cat bite within the last 12 months for association with household and other explanatory factors in a UK cat cohort at age 2.5 years. The factors where P<0.2 (in bold) were taken on into multivariable analysis

Explanatory factor	Category	Number of cases (owner reported abscess/cat bite) (%)	Number of controls (owner reported no abscess/cat bite) (%)	P-value	OR (95% CI)
Household	**SCH**	**22 (13.2)**	**145 (86.8)**	**0.014**	**1.0**
	AMCH	**35 (9.1)**	**348 (90.9)**	**0.155**	**0.66 (0.38-1.17)**
	NMCH	**11 (4.7)**	**222 (95.3)**	**0.004**	**0.33 (0.15-0.69)**
Tenure	Own	51 (8.6)	543 (91.4)	0.931	1.0
	Rent	15 (8.4)	164 (91.6)		0.97 (0.53-1.78)
Income	≤£24,999	16 (7.8)	188 (92.2)	0.197	1.0
	£25,000-£49,999	21 (7.3)	268 (92.7)	0.811	0.92 (0.47-1.81)
	≥£50,000	25 (11.7)	189 (88.3)	0.190	1.55 (0.80-3.00)
Education	**A-Levels or below**	**9 (4.7)**	**184 (95.3)**	**0.018**	**1.0**
	Degree or higher	**58 (10.5)**	**497 (89.5)**		**2.39 (1.16-4.91)**
Age of owner	≤24 years old	9 (14.3)	54 (85.7)	0.223	1.0
	25-54 years old	48 (8.5)	519 (91.5)	0.131	0.55 (0.26-1.19)
	> 55 years old	10 (6.9)	134 (93.1)	0.099	0.45 (0.17-1.16)
Owned cat before	**Yes**	**51 (8.1)**	**578 (91.9)**	**0.176**	**1.0**
	No	**17 (11.6)**	**129 (88.4)**		**1.50 (0.84-2.71)**
Children in house	Yes	17 (9.5)	162 (90.5)	0.739	1.0
	No	51 (8.7)	536 (91.3)		0.91 (0.51-1.40)
Playing time	Most days/quite often	62 (9.1)	617 (90.9)	0.21	1.0
	Not often/never	5 (5.2)	91 (94.8)		0.55 (0.21-1.40)
Gender of cat	**Male**	**45 (11.0)**	**364 (89.0)**	**0.02**	**1.0**
	Female	**23 (6.2)**	**347 (93.8)**		**0.54 (0.32-0.91)**
Breed of cat	Mixed/DSH/DLH	55 (9.3)	539 (90.7)	0.27	**1.0**
	Pure breed	12 (6.6)	170 (93.4)		**1.45 (0.76-2.76)**
Time spent outdoors	**Never/hardly any**	**2 (1.6)**	**123 (98.4)**	**0.017**	**1.0**
	A little/equal amounts	**57 (11.2)**	**453 (88.8)**	**0.005**	**7.74 (1.86-32.14)**
	Most/all	**7 (12.7)**	**48 (87.3)**	**0.007**	**8.969 (1.80-44.71)**
Neighbourhood cat density	0- 5	46 (8.4)	502 (91.6)	0.59	1.0
	6+	22 (9.6)	207 (90.4)		1.16 (0.68-1.98)
Neighbourhood cats stare in windows	**Yes**	**35 (11.1)**	**280 (88.9)**	**0.061**	**1.0**
	No	**25 (7.0)**	**334 (93.0)**		**0.60 (0.35-1.02)**
Neighbourhood cats come in house	**Yes**	**20 (16.1)**	**104 (16.1)**	**0.028**	**1.0**
	No	**104 (83.9)**	**416 (90.8)**		**0.53 (0.30-0.93)**
Neighbourhood cats come in garden	Yes	55 (10.8)	453 (89.2)	0.590	1.0
	No	6 (8.7)	63 (91.3)		0.78 (0.32-1.90)
Insured	**Yes**	**31 (7.3)**	**396 (92.7)**	**0.182**	**1.0**
	no	**34 (10.0)**	**307 (90)**		**1.42 (0.85-2.35)**
Vaccinated	Yes	50 (8.6)	532 (91.4)	0.820	1.0
	No	9 (9.3)	88 (90.7)		1.01 (0.52-2.29)
Neutered	**Yes**	**68 (8.9)**	**693 (91.1)**	**0.140**	**1.0**
	No	**0 (0.0)***	**22 (100.0)**		**1.46 (0.88-2.42)**
Location of house	**Rural/village**	**39 (12.0)**	**285 (88.0)**	**0.024**	**1.0**
	Town/city	**29 (8.7)**	**428 (93.7)**		**0.46 (0.30-0.82)**
Presence of garden	**Yes**	**67 (9.1)**	**673 (90.9)**	**0.161**	**1.0**
	No	**1 (2.3)**	**42 (97.7)**		**0.24 (0.03-1.77)**

Initial 'BS' postcode cohort	Non-BS postcode BS postcode	65 (9.2) 3 (3.9)	642 (90.9) 42 (97.7)	0.140	1.0 0.41 (0.12-1.32
Negative interaction with owner	Yes No	14 (10.6) 54 (8.3)	118 (89.4) 596 (91.7)	0.394	1.0 0.76 (0.41-1.42)

[*]One entire (unneutered) cat changed from control- case to allow multivariable analysis to run

SCH= single cat household; AMCH= agonistic multi-cat household, NMCH= non-agonistic multi-cat household; DLH= domestic longhair; DSH= domestic shorthair

Supplement 5 Univariable analysis for negative interactions with owner for association with household and other explanatory factors in a UK cat cohort at age 2.5 years. Factors with a P-value<0.2 (in bold) were taken forward to multivariable anlaysis.

Explanatory factor	Category	Number of cases (owner reported negative interactions) (%)	Number of controls (owner reported no negative interactions) (%)	P-value	OR (95% CI)
Household	**SCH** **AMCH** **NMCH**	**40 (24.1)** **74 (19.3)** **18 (7.7)**	**126 (75.9)** **309 (80.7)** **215 (92.3)**	**P<0.001** **P= 0.206** **p<0.001**	**1.0** **0.75 (0.49-1.17)** **0.26 (0.14-0.48)**
Tenure	Own Rent	96 (16.2) 35 (19.6)	497 (83.8) 144 (80.4)	0.290	1.0 1.26 (0.82-1.93)
Income	≤£24,999 £25,000-£49,999 ≥£50,000	32 (15.7) 50 (17.4) 38 (17.8)	172 (84.3) 238 (82.6) 176 (82.2)	0.845 0.623 0.571	1.0 1.13 (0.70-1.83) 1.16 (0.69- 1.94)
Education	A-Levels or below Degree or higher	31 (16.1) 98 (17.7)	162 (83.9) 456 (82.3)	0.617	1.0 1.12 (0.72-1.75)
Age of owner	**≤24 years old** **25-54 years old** **≥ 55 years old**	**16 (25.4)** **101 (17.8)** **15 (10.4)**	**47 (74.6)** **465 (82.2)** **129 (89.6)**	**0.02** **0.15** **0.01**	**1.0** **0.63 (0.35-1.17)** **0.12 (0.16-0.75)**
Owned cat before	**Yes** **No**	**90 (15.6)** **33 (22.6)**	**530 (84.4)** **113 (77.4)**	**0.04**	**1.0** **1.58 (1.00-2.46)**
Children in house	Yes No	30 (16.8) 101 (17.2)	149 (83.2) 485 (82.8)	0.882	1.0 1.03 (0.66-1.62)
Playing time	Most days/quite often Not often/never	118 (17.4) 14 (14.7)	561 (82.6) 81 (85.3)	0.522	1.0 0.82 (0.45-1.50)
Gender of cat	**Male** **Female**	**56 (13.7)** **76 (20.6)**	**354 (86.3)** **293 (79.4)**	**0.01**	**1.0** **0.54 (0.32-0.91)**
Breed of cat	**Mixed/DSH/DLH** **Pure breed**	**117 (19.7)** **15 (8.2)**	**476 (80.3)** **167 (91.8)**	**<0.001**	**1.0** **1.64 (1.12-2.39)**
Time spent outdoors	Never/hardly any A little/equal amounts Most/all	19 (15.2) 93 (18.3) 8 (14.5)	106 (84.8) 416 (81.7) 47 (85.5)	0.61 0.42 0.91	1.0 1.25 (0.73-2.14) 0.95 (0.39-2.32)
Neighbourhood cat density†	**0- 5** **6+**	**80 (14.6)** **52 (22.7)**	**467 (85.4)** **177 (77.3)**	**0.007**	**1.0** **1.71 (1.16-2.53)**
Neighbourhood cats stare in windows	**Yes** **No**	**65 (20.7)** **51 (14.2)**	**249 (79.3)** **308 (85.8)**	**0.027**	**1.0** **0.63 (0.42-0.95)**
Neighbourhood cats come in house	Yes No	26 (21.0) 78 (17.1)	98 (79.0) 379 (82.9)	0.320	1.0 0.78 (0.47-1.27)
Neighbourhood cats come in garden	Yes No	95 (18.7) 11 (15.9)	412 (81.3) 58 (84.1)	0.574	1.0 0.82 (0.42-1.63)
Insured	Yes No	70 (16.4) 59 (17.3)	356 (83.6) 282 (82.7)	0.749	1.0 1.06 (0.73-1.56)
Vaccinated	Yes No	103 (17.7) 13 (13.4)	478 (82.3) 84 (86.6)	0.297	1.0 0.72 (0.39-1.34)
Neutered	**Yes** **No**	**132 (17.4)** **0 (0.0)***	**628 (82.6)** **22 (100)**	**0.149**	**1.0** **0.23 (0.84-1.83)**
Location of house	Rural/village Town/city	49 (15.2) 83 (18.2)	274 (84.8) 374 (81.8)	0.273	1.0 1.24 (0.84-1.83)
Presence of garden	Yes No	125 (16.9) 7 (16.3)	614 (83.1) 36 (83.1)	0.914	1.0 0.96 (0.42-2.20)
'BS' postcode	Non-BS postcode	21 (17.1)	585 (82.9)	0.556	1.0

	BS postcode	11 (14.5)	65 (85.5)		0.82 (0.42-1.60)
Negative interaction with owner	N/A	N/A	N/A	N/A	N/A

*One entire (unneutered) cat changed from control to a case to allow multivariable analysis to run

† The number of cats from other households that the owner knows of in that are in the immediate neighbourhood

SCH= single cat household; AMCH= agonistic multi-cat household, NMCH= non-agonistic multi-cat household; DLH= domestic longhair; DSH= domestic shorthair