

Qualtrics column variable names and descriptions

Notes:

- *These are the variables and column names for the data frame produced after running the Qualtrics_formatting.R script.*
- *Emails for the Amazon voucher and for the Section 2 contact list are kept in separate Excel files.*
- *Generally, the variable name is the same as in CBARQ dataset from James Serpell, where possible.*

1. Finished: whether or not the questionnaire was completed. True = 1, False = 0
2. Eligible: whether or not the dog/owner dyad are eligible. Yes = 1, No = 0
3. Country: which country the dog and owner are from
4. Name: dog's name
5. Sex: dog's sex
6. Breed: dog's breed
7. AgeAtEvaluation: dog's age at evaluation, in weeks
8. AgeAcquired: dog's age when acquired by the owner, in weeks
9. Weight: the dog's approximate weight, in pounds
10. WhereAcquired: where the owner acquired the dog. Breeder/Bred by you/Friend or relative/ Pet store/Shelter/Stray/Other.
11. IsNeutered: whether or not the dog is neutered. No = 0, Yes = 1, Unsure/don't know = 2
12. NeuterAge: age of the dog when neutered, in weeks
13. NeuteredWhy: why the owner neutered the dog
14. HealthProblems: No = 0, Yes = 1, Unsure/don't know
15. HealthDescription: description of dog's health problems. Write-in text.
16. Concerned: whether the owner is currently experiencing any problems with the dog's behavior (No problems; Only minor problems; Moderate problems; Serious problems).
17. Roles: whether the dog is purely a pet or is involved in other activities/sports (e.g. none; working roles; breeding/showing; field trials/hunting; other sports).
18. FirstOwned: is this the first dog the owner has ever owned? No = 0, Yes = 1
19. OwnedAmt: if 'No' to previous question, number of previous dogs owned. (1 or 2; 3 to 5; 6 to 10; more than 10)
20. AsChild: did the owner grow up with dogs as a child. No = 0, Yes = 1
21. OtherPets: are there other pets in the household. No = 0, Yes = 1
22. Pets: What the other pets in the household are (Other dog(s); Cat(s); Hamster(s) or other small rodents; Lizard(s) or other reptiles; Frog(s) or other amphibians; Rabbit(s); Other).
23. PetsText: write-in text if "Other" selected in Q22.
24. OtherDogsAge: age of the other dogs compared to this dog. (Older; Younger; Same age; Older and younger)
- 25 - 128: CBARQ Raw item scores.
- 129 - 149: Beck Anxiety Inventory raw scores.
- 150 - 169: Positive and Negative Affect Schedule raw scores.
170. Email: to be used for matching personality data with behavioural data collected during the food searching task
- 171 - 184. CBARQ factor averages
185. BAITotal: Total score on the Beck Anxiety Inventory
186. PANASPositive: Total score for positive affect
187. PANASNegative: Total score for negative affect
188. BreedGroup: Ancient, modern, or non-domestic
189. GF: general fear. Average of all fear-related traits.
- 190: GA: general aggression. Average of all aggression-related traits.

CBARQ Scoring

C-BARQ⁽¹⁰⁰⁾ scoring method

The C-BARQ provides a set of quantitative scores for the following fourteen different subscales or categories of behavior:

- 1. Stranger-directed aggression (SDA):** Dog shows threatening or aggressive responses to strangers approaching or invading the dog's or the owner's personal space, territory, or home range.
- 2. Owner-directed aggression (ODA):** Dog shows threatening or aggressive responses to the owner or other members of the household when challenged, manhandled, stared at, stepped over, or when approached while in possession of food or objects.
- 3. Dog-directed aggression (DDA):** Dog shows threatening or aggressive responses when approached directly by unfamiliar dogs.
- 4. Dog rivalry (DR):** Dog shows aggressive or threatening responses to other familiar dogs in the same household. In previous versions of the questionnaire, known as familiar dog aggression.
- 5. Stranger-directed fear (SDF):** Dog shows fearful or wary responses when approached directly by strangers.
- 6. Nonsocial fear (NSF):** Dog shows fearful or wary responses to sudden or loud noises (e.g. thunder), traffic, and unfamiliar objects and situations.
- 7. Dog-directed fear (DDF):** Dog shows fearful or wary responses when approached directly by unfamiliar dogs.
- 8. Touch sensitivity (TS):** Dog shows fearful or wary responses to potentially painful or uncomfortable procedures, including bathing, grooming, nail-clipping, and veterinary examinations.
- 9. Separation-related problems (SRP):** Dog vocalizes and/or is destructive when separated from the owner, often accompanied or preceded by behavioral and autonomic signs of anxiety including restlessness, loss of appetite, trembling, and excessive salivation.
- 10. Attachment and attention-seeking (AAS):** Dog maintains close proximity to the owner or other members of the household, solicits affection or attention, and displays agitation when the owner gives attention to third parties.
- 11. Trainability (Train):** Dog shows a willingness to attend to the owner and obey simple commands. Dog is not easily distracted, tends to be a fast learner, responds positively to correction, and will fetch or retrieve objects.
- 12. Chasing (Chase):** Dog chases cats, birds, and/or other small animals, given the opportunity.
- 13. Excitability (Excite):** Dog displays strong reaction to potentially exciting or arousing events, such as going for walks or car trips, doorbells, arrival of visitors, and the owner arriving home; has difficulty calming down after such events.
- 14. Energy level (Energy):** Dog is energetic, "always on the go", and/or playful.

In addition, the C-BARQ provides useful information on the occurrence of a further 22 miscellaneous behavior problems ranging from coprophagia to stereotypic spinning/tail-chasing.

Each subscale is represented by a number of 5-point scales (questions). Some are graduated scales that measure severity of particular behaviors (e.g. aggression, fear, excitability) and are numbered from 0–4 in the questionnaire. The remainder are frequency scales which should be scored as: Never = 0, Seldom = 1, Sometimes = 2, Usually = 3 and Always = 4, **except for items 5, 6 & 7 in Section 1. FOR THESE SCALES ONLY, reverse the scores to: Never = 4, Seldom = 3, etc.** To calculate behavior subscale scores, use the following formulae:

"Stranger-directed aggression" score = (questionnaire items 10 + 11 + 12 + 15 + 16 + 18 + 20 + 21 + 22 + 28)/10.

"Owner-directed aggression" score = (items 9 + 13 + 14 + 17 + 19 + 25 + 30 + 31)/8.

"Dog-directed aggression" = (items 23 + 24 + 26 + 29)/4

"Dog-directed fear" = (items 45 + 46 + 52 + 53)/4.

“Dog rivalry”(familiar dog aggression) score = (items 32 + 33 + 34 + 35)/4

“Trainability” score = (items 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8)/8—remember to reverse scoring order for items 5, 6 & 7 (see above).

“Chasing” score = (items 27 + 74 + 75 + 76)/4

“Stranger-directed fear” score = (items 36 + 37 + 39 + 40)/4

“Nonsocial fear” score = (items 38 + 41 + 42 + 44 + 47 + 48)/6

“Separation-related problems” score = (items 54 + 55 + 56 + 57 + 58 + 59 + 60 + 61)/8

“Touch sensitivity” score = (items 43 + 49 + 50 + 51)/4

“Excitability” score = (items 62 + 63 + 64 + 65 + 66 + 67)/6

“Attachment/attention-seeking” score = (items 68 + 69 + 70 + 71 + 72 + 73)/6

“Energy” score = (items 91 + 92)/2

Items 1–76 & 91–92 cannot be removed from the questionnaire without potentially reducing the reliability and/or validity of one or other of the behavior subscales. Other “Miscellaneous” items are optional, and can be removed from the questionnaire as desired. If retained, they should be scored individually, 0–4.

Missing values: Owners may be unable to answer some of the C-BARQ questions for a variety of reasons. These “Not observed/Not applicable” responses should be recorded as missing values and the subscale scores calculated as the average of the remaining completed item scores. If more than 25% of the items in a subscale are missing values, the factor/subscale score should be recorded as a missing value.

NB: This version of the C-BARQ has been modified since Hsu & Serpell (2003) to improve the reliability of some existing factors, and to include new “Dog rivalry (familiar dog aggression)” and “Energy” factors. The subscales “Dog rivalry”, “Chasing”, “Touch sensitivity”, “Trainability”, “Energy” and “Excitability” have not been formally validated, although they have been shown to have predictive validity in long-term studies of working guide dogs (Duffy & Serpell, 2012).

References:

Hsu, Y. and Serpell, J.A. 2003. Development and validation of a questionnaire for measuring behavior and temperament traits in pet dogs. *Journal of the American Veterinary Medical Association*, 223: 1293-1300.

Duffy, D.L. and Serpell, J.A. 2012. Predictive validity of a method for evaluating temperament in young guide and service dogs. *Applied Animal Behavior Science*, 138: 99-109.

BIA Scoring:

Not at all = 0

Mildly, but it didn't bother me much = 1

Moderately - it wasn't pleasant at times = 2

Severely - it bothered me a lot = 3

The total score is calculated by finding the sum of the 21 items.

Score of 0-21 = low anxiety

Score of 22-35 = moderate anxiety

Score of 36 and above = potentially concerning levels of anxiety

References:

Beck, A.T., Epstein, N., Brown, G., & Steer, R.A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, 56, 893-897.

PANAS Scoring:

Very slightly or not at all = 1

A little = 2

Moderately = 3

Quite a bit = 4

Extremely = 5

Positive Affect Score: Add the scores on items 1, 3, 5, 9, 10, 12, 14, 16, 17, and 19. Scores can range from 10 – 50, with higher scores representing higher levels of positive affect.

Mean Scores: 33.3 (SD±7.2)

Negative Affect Score: Add the scores on items 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20. Scores can range from 10 – 50, with lower scores representing lower levels of negative affect.

Mean Score: 17.4 (SD ± 6.2)

References:

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, 54(6), 1063.