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The Development and Piloting of a Quality of Life Assessment Tool for Dogs

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Abstract

Assessing dogs' quality of life (QoL) pre- and post-adoption is crucial for shelters and rehoming organisations making decisions with far reaching and dire consequences for both dogs and humans. Making these assessments objectively and in a standardized way is important. As a first step to accomplish these two imperative goals, an assessment tool was developed based on the Framework of Dogs' Needs, a robust model of needs at a species, breed/breed type, and individual levels based on scientific literature and expert opinion. It qualifies dogs' QoL as a function of how well their needs are met. Because this tool will be used in real world situations, ensuring it is feasible and comprehensible by a non-scientific audience is key. Therefore, the three-step assessment tool was piloted with a dog owner sample (n = 14): a participant-completed questionnaire, an investigator given questionnaire with video chat observations (of the dog and their home environment), and participant recorded videos (of the dog displaying specific behaviours and scenarios). Participants then completed a feedback gathering survey on the entire process. Issues and aspects to change were also noted throughout by the principal investigator. Most issues pertained to the participant recorded videos, particularly regarding recording feasibility. Most participants said the collective time and effort involved in the assessment procedure would not discourage them from participating. Necessary changes were made to the tool based on all feedback and issues noted. It is now ready for usage in a larger project to assess dogs' QoL throughout the sheltering and rehoming process.

Keywords: dog assessment; dog shelter; dog welfare; dog quality of life; rescue organization

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1. Introduction

Objectively assessing dogs' quality of life (QoL) both pre- and post-adoption is crucial to ensure any assumptions being made about their overall welfare in both contexts are indeed accurate. The consequences of making incorrect assumptions both pre- and post-adoption can be dire and far-reaching for dogs' QoL The stakes are raised even higher with the increasing worldwide popularity of "no-kill" movements that can cause dogs to remain in shelters for extended periods of time [1–5]. These assumptions extend to all aspects of the sheltering and rehoming process, from where a dog resides pre-adoption to who is deemed suitable to adopt a dog.

When developing an objective tool to assess dogs' QoL, it is imperative to do so with scientific rigor, even when it is based on an established theoretical model. The Framework of Dogs' Needs (formerly known as the Hierarchy of Dogs' Needs in Griffin et al. [6]) is

a robust model of dogs' needs at a species, breed/breed type, and individual levels [6]. It was created by adapting Maslow's Hierarchy of Needs to be relevant to those of a dog. Developed by psychologist Abraham Maslow, Maslow's Hierarchy of Needs is a framework of human needs organized in a hierarchical structure with five levels: Physiological Needs, Safety Needs, Belongingness and Love Needs, Esteem Needs, and Self-actualization Needs [7]. Maslow theorized that humans would usually progress up the hierarchy to meet the next level of needs once the previous level had been acquired, though it was not always unidirectional movement. Thus, it is also a hierarchy of human motivations.

Griffin et al. created The Framework of Dogs' Needs as a theoretical model that provides a blueprint of the full breadth and scope of dogs' myriad needs, which they argued, is often challenging for humans to do, largely due to their tendency to anthropomorphize dogs [6]. Although anthropomorphization in some cases is done thoughtfully and can be beneficial to dog welfare, such as by employing critical anthropomorphization, that is often not the case [8,9]. Instead, the anthropomorphization of dogs can lead to the inability to recognize that their needs, wants, and emotional states may be different to ours as humans, due to the projection of our own needs, motivations, etc. onto them [10–12]. There is a tendency for humans to misjudge a dog's emotional state due to the influence of outside factors, such as the environment in which they see the dog [11]. Humans might also struggle to realize the nuance and specificity of even dogs' most basic needs. Only once humans accurately recognize dogs' needs, can they appropriately and fully meet them. The Framework of Dogs' Needs has a hierarchical structure that is divided into five levels: Physiological Needs, Safety Needs, Social Needs, Integrity Needs, and Cognitive Needs. Each need level is comprised of between one and seven need groups, with Physiological Needs and Safety Needs containing the most need groups (six and seven need groups, respectively). Each need group is further divided into specific needs. Each need group contains between two and seven specific needs, with the provision of social contact and support need group containing the most specific needs (seven). The Framework of Dogs' Needs thus contains 42 specific needs organized into 16 need groups., and it defines dogs' QoL as a function of how well their varied needs are met. (See Figure 1).

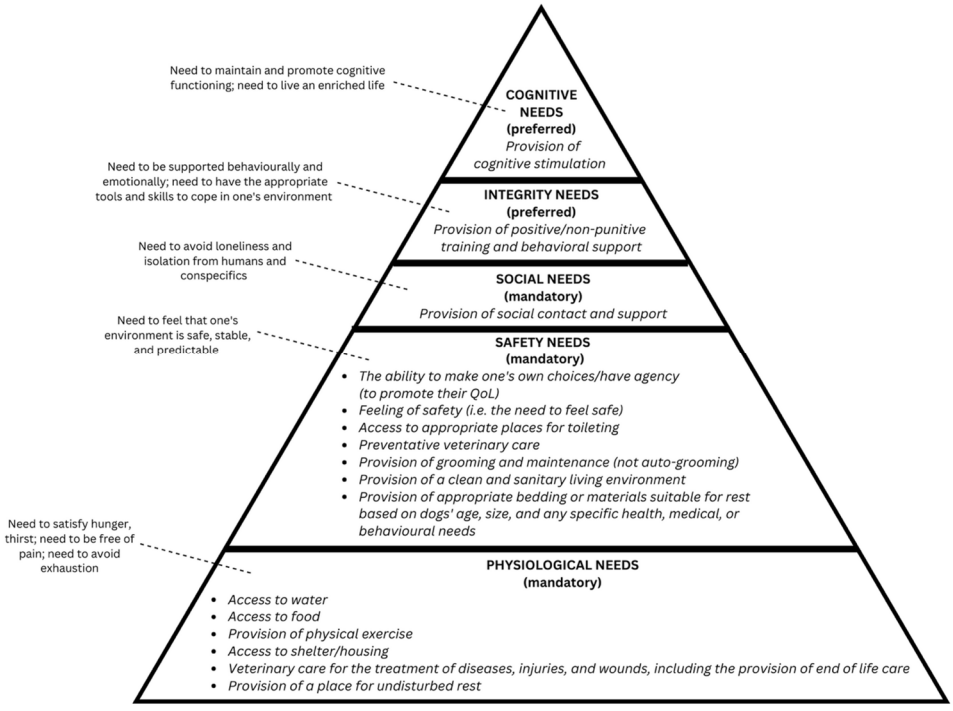


Figure 1. The Framework of Dogs' Needs [6].

Other assessment tools for the welfare of dogs in shelters have been developed in previous research. However, these tools have various shortcomings and limitations. The Five Domains model (nutrition, environment, health, behaviour, and mental state) expanded on the Five Freedoms, which had overhauled historic conceptualizations of animal welfare at the time of its creation by providing a novel and dynamic understanding of welfare [13]. The Framework of Dogs' Needs used the Five Domains in its development to help determine the determine the needs of dogs [6]. As such, the Five Domains do provide a useful starting point to assess dogs' welfare by outlining which areas (domains) need to be taken into consideration during assessment. However, the model remains theoretical in nature, and does not explore how these domains are functionally met; instead, it seems to provides a bird's eye view of animal welfare. For example, in the nutrition domain, a dog needs to be provided with water so that they are not thirsty. Though that is true, the model does not take into consideration whether the water is fresh or if the dog can easily reach their water bowl, both of which should be taken into account when assessing welfare.

A key shortcoming of other assessment tools is the environment study participants reside in. Barnard et al. developed an assessment protocol but it was solely focused on dogs that resided in a shelter environment prior to adoption [14]. A number of other studies have also only assessed dogs in shelters or kennel environments [15–18]. Although an abundance of dogs reside in shelters worldwide, this narrow focus is perhaps surprising since dogs very often reside in other environment pre-adoption (e.g., foster homes). For example, in a recent survey of 124 shelters and rehoming/rescue organisations, a noteworthy 84% stated that at least some of their animals reside in foster homes [19]. Thus, such assessments are not taking into consideration the welfare of dogs living in non-kennel settings, which is equally as important as those in shelters. These welfare assessments are also quite limited in how they assess welfare, or what indicators they use to do so. For example, they tend to use broad indicators, such as how often their kennels are cleaned or how many times per day they are fed. Though consistent cleaning and feeding are important, they lack the specificity of ensuring the needs of each individual dog are met, as well as the quality of the food provided, cleaning being done, etc. The Framework of Dogs' Needs was developed not only as novel way of conceptualizing a dogs' QoL, but it also aims to address the full breadth and scope of dogs' needs with a high level of specificity, regardless of where they are residing.

The aim of the current study was to develop a QoL assessment tool based on the Framework of Dogs' Needs. This study in conjunction with Griffin et al. [6] are components of a larger project that is investigating dogs' QoL pre-adoption when they are part of shelters/rescue organisations, and dogs' QoL post-adoption once they are residing in their new home. Although the assessment tool was developed to be used in a dog sheltering and rehoming context, the tool, or a modified version of it, is intended to be useable for assessing a wide range of populations of dogs, not limited to only companion dogs (e.g., free roaming dogs). The Framework of Dogs' Needs, and thus the assessment tool, investigates how well dogs' needs are being met, not how they are met. Because this tool must be applicable in practical situations, ensuring it is feasible and comprehensible by a non-scientific audience via a piloting process is key.

2. Materials and Methods

In order to create an objective and reliable tool to assess QoL, The Framework of Dogs' Needs was first deconstructed to develop the tool. It then underwent a comprehensive piloting phase, which was integral to ensuring the tool was developed in a scientifically rigorous manner. These two stages of tool development are described in this section.

2.1. The Assessment Tool

Due to the nature of the Framework of Dogs' Needs, it was determined that multiple methods of assessment were needed—a combination of questionnaire type and observational methods. The three assessment methods that comprise the tool are: a participant completed questionnaire, an investigator given questionnaire with video chat observations, and adopter recorder videos in different scenarios and/or contexts.

When the tool is used to collect data for the larger project, when participants give their consent to participate in the study they will be fully notified of their how the data will be kept private and securely stored. The project's results will be anonymized and any identifying details of themselves or their shelter/rescue organization will be omitted. (See Section 2.3 for a description of how volunteers for the piloting phase were made aware of their privacy in a similar regard).

2.1.1. Participant Completed Questionnaire

The purpose of the participant completed questionnaire (For piloting purposes, dog owners were used in lieu of dog adopters, but the two terms may be used interchangeably throughout.) is not only for the QoL assessment itself, but also to gather background/additional information about the dog (including their behavioural history) and the adopter (including their accommodation, lifestyle, etc.). As such, the questionnaire has five components:

1. dog owner demographics,
2. dog information,
3. reported dog behavioural history
4. adopter characteristics questionnaire, and
5. the QoL questionnaire

The following subsections describe each component in the order in which they appear in the questionnaire. The majority of the questionnaire items are forced choice, depending on the nature of the item, with fill-in response where applicable. It was comprised of 140 items in total. Qualtrics XM, an online survey platform, was used for the administering the questionnaire. (See Supplementary Materials for the full questionnaire).

Dog Owner Demographics

This section gathers general information about the dog adopter, such as their name, where they live, etc. Some items in this part of the questionnaire also serve to ensure participants meet qualifying criteria to take part in the study, such as to confirm that they live in the same household as their dog. This portion of the questionnaire contains ten items.

Dog Information

This section gathers general information about the dog, such as their age (or approximate age), sex, and weight. All of the items in this section are based on objective facts, aside from the final item, which asks participants to characterise the daily state of their dog. For this item only, a five-point Likert style rating scale was used in the form of emojis. The usage of emojis for response options was to hopefully mitigate any respondent fatigue that may be experienced due to the high number of items in the questionnaire. The purpose of this item and its response format was to gather a succinct snapshot of how adopters feel their dog is doing overall on a daily basis. This item can also be used to investigate whether adopters' perception of their dog's overall well-being correlates with the objective assessment of their QoL. This portion of the questionnaire contains eight items.

Reported Dog Behavioural History

As described in the Introduction, part of the purpose of this QoL assessment was to investigate if there is a relationship between behavioural factors that shelters/rescue organisations screen for to determine dogs' suitability for adoption and their QoL post-adoption. In other words, does the presence of these factors predict or affect their QoL once adopted? (The investigation of factors related to potential adopters and dogs' QoL is in the following subsection.) This portion of the questionnaire contains 49 items. Each item directly relates to the behaviours organisations screen for prior to adoption [20]. Items that address the presence of specific behaviours, such as destructiveness, shyness, etc., have three response choices: informed by shelter/rehoming organisation at the time of adoption, observed since adoption, and neither. Respondents can select both of the first two options if applicable. The second option was included because numerous studies have reported that pre-adoption behavioural assessments often have poor predictive validity [21–23].

Adopter Characteristics Questionnaire

As with the reported dog behavioural history section of the questionnaire, the items in this section are directly based on the characteristics about a potential adopter (including their family composition, lifestyle, and accommodation type) that organisations address when screening potential adopters [24]. Although the numerous factors addressed in potential adopter screenings may also be included to mitigate dog relinquishment risk and human safety risk, dogs' QoL appears to be a key motivation for their inclusion. There seems to be a common assumption that the presence or lack thereof of particular factors will improve a dog's QoL. However, as was described in other areas of this paper, there is a lack of scientific justification for screening for all of these factors when determining if somebody is suitable to adopt a dog [25]. This questionnaire component investigates if there is indeed a relationship between any of these characteristics about a potential adopter and a dog's QoL post-adoption. This section contains 31 items.

QoL Questionnaire

The items for this section were created by rewording each of the specific needs from the Framework of Dogs' Needs to be in a question format. For example, the specific need, consistently feasible access to food, was reworded to: "Does your dog have consistently feasible access to food?" Accordingly, the QoL questionnaire contains 42 items, which is how many specific needs there are.

The responses for the QoL questionnaire use the same five-point Likert style rating scale for all items:

- Always
- Most of the time
- Some of the time
- Rarely
- Never

2.1.2. Investigator Given Questionnaire with Video Chat Observation

As with the QoL questionnaire (i.e., the participant completed questionnaire), the 42 specific needs from the Framework of Dogs' Needs were adapted into question format. However, in this section the questions were reworded slightly differently with the goal of being more easily comprehensible by a non-scientific audience. In order to further achieve this goal, some specific needs were divided into two or more questions. Both of these things were done to the investigator given questionnaire to further establish the validity of the assessment tool. The two different versions of the questionnaire were created to determine

if there was consistency between the responses provided to questions when they were directly reworded versus slightly differently reworded. If there is consistency between the responses, then that would suggest that the direct rewording is sufficiently comprehensible. That would provide evidence that it is possible for the questionnaire to directly mirror the Framework of Dogs' Needs, which was the goal since the exact wording of the specific needs in the Framework was integral to its development. If there is disagreement between the responses on the two questionnaires, that suggests that more rewording from that of the specific needs is necessary. For example, the specific need, consistently feasible access to food, was divided into "Can your dog easily reach their food bowl (or whatever they eat from)?" and "Do you ever withhold food/meals from your dog, aside from any health/medical reasons?". Asking about the specific needs in two different manners will also help to establish the validity of the assessment tool. All items in the investigator given questionnaire uses the same response scale as the QoL questionnaire uses, with the exception of one item ("Where does your dog sleep?"). That question does not have forced choice responses.

The video chat observations are conducted by the principal investigator. (See Appendix A.1 for the adaptation of the specific needs into questions on QoL questionnaire and the investigator given questionnaire, including the functional observations made during the video chat.) Participants are notified in advance that they will be asked to show some items and aspects of their homes during the questionnaire (e.g., the dog's food, where the dog sleeps).

2.1.3. Adopter Recorded Videos

Participants were asked to provide brief video recordings of dogs' behaviours in different scenarios and/or contexts that were not easily observable during the video chat, such as the dog drinking from their water bowl or toileting. Following the video chat, participants were sent a list of the behaviours that video recordings were needed of. If they happened to have a recording of their dog engaging in any of the behaviours that was taken within the previous two weeks, they had the option of sending those in lieu of recording new videos of the same behaviour. Participants were asked to upload the video recordings to Google Drive. They were emailed a private link to access the folder for their specific dog. The behaviours that participants were asked to submit video recordings of are indicated in Appendix A.1. (Some behaviours were omitted from the video chat observations and adopter recorded videos when not applicable, e.g., if no other dogs in the household).

2.2. How the Tool Calculates QoL

The Framework of Dogs' Needs has a hierarchical structure by which needs are categorized based on their necessity to QoL. Therefore, the assessment tool determines a dog's QoL based on how well (and consistently) each of their needs are met, with greater weight given to needs of a higher necessity. Each specific need is scored based on the responses provided in participant completed and the investigator given QoL questionnaires ('always', 'most of the time', etc.). The scores for the specific needs are summed to give a total score for the relevant need group. The purpose of the observations made by the investigator during the video chat and the participant recorded video clips is to assess the validity of the responses provided in the questionnaires. For example, if the participant replies 'always' when asked if their dog can reach their water bowl, and then it is observed that the dog does indeed appear to easily be able to reach their water bowl, that provides evidence how participants' questionnaire responses are valid. Because data collected during the current study was for piloting purposes only, QoL scores were not calculated.

2.3. Piloting

The entire assessment procedure was piloted with a group of dog owner volunteers in order to assess the feasibility and comprehensibility of all three components of the procedure. Because the assessment tool will be used for pre- and post-adoption dog populations in the context of the aforementioned larger project that the current study is part of, ensuring that it can be employed with relative ease was central to its usefulness (i.e., its feasibility). This is particularly important since the tool has multiple components that require various processes/actions. Ensuring all components of the tool were easily understandable by participants was equally as important. For example, it was crucial to make sure that participants could understand questionnaire instructions, and what dog behaviours they were being asked to submit video recordings of.

When the tool is used for actual data collection in the larger project, it will be used by two populations: dog adopters (and their recently adopted dogs) and shelter/rehoming organisations (and the dogs in their care). However, for piloting purposes volunteers were recruited from a very similar, yet broader, pool. The assessment process is planned to be similar for both populations during data collection. It is recognized that organisations may be lacking in time and other resources, so the feasibility of coordinating the various steps of the assessment may be more challenging than for the dog adopter population. If that does turn out to be the case, the researchers involved in data collection phase of the project are able to work with organisations in person to collect some of the necessary data to mitigate the burden on their resources by participating. For example, dogs' behaviours, living environments, etc. that would normally be observed during the video chats or via participant submitted recordings, can instead be done in person by the researchers. Additionally, although the larger project is longitudinal (i.e., it reassesses dogs at multiple time points pre- and post-adoption), fewer reassessments are needed for the pre-adoption sample, which also will lessen the burden on organisations. Large sample sizes are needed for both populations in order to compensate for projected participant attrition rates over the course of the study. However, because the pre-adoption sample will be assessed over a shorter times span than the post-adoption sample, it is possible that there will be lower attrition rates, and thus a smaller sample size might be sufficient.

In order to participate in the piloting, volunteers only had to be current dog owners; it did not matter how long they had had their dog for, where they acquired them from, etc. Volunteer recruitment took place somewhat informally via word of mouth and social media calls. During recruitment when explaining what volunteers' role would be, it was clearly stated that data collected during the piloting process about their dogs and themselves would not be used for larger project's purposes (i.e., assessing dogs' QoL pre- and post-adoption). The data would be kept private and not shared with anybody aside from the study's researchers. Their participation would be anonymous in any publications or other means of presenting the results of this study. The entire assessment procedure is done remotely, so volunteers could live anywhere in the world. Aside from being dog owners, the only other criteria to participate was that they were English speaking, as the assessment is only conducted in English, and that they were comfortable (i.e., proficient) with the usage of minimal technology, such as completing online questionnaires, and taking and uploading short video recordings. Volunteer recruitment took place between February and March 2024. Volunteers were emailed initially after agreeing to take part; they were given an overview of the assessment procedure, including the order of the components for completion and approximately how long it would take to complete them, and were sent the link for the participant completed questionnaire. After completing each step, they were emailed with information for the next assessment component (e.g., scheduling the video chat with the principal investigator). The final step was a feedback survey (created using

Google Forms) in which participants were asked how they felt about various aspects of the assessment procedure. It was sent to all volunteers who had completed at least one component of the assessment procedure. For those who did not complete all components, they were instructed to skip the irrelevant survey items.

3. Results of the Pilot

Seventeen volunteers responded to participant calls for piloting and agreed to take part. Volunteers completed the assessment procedure between March and April 2024. However, not all ultimately participated, and of those who did, not all completed each of the assessment components. Fourteen started the participant questionnaire, but only 12 completed it. Eleven completed the investigator given questionnaire with video chat observations. Nine submitted the requested video recordings. Finally, ten completed the feedback survey. For those who had completed the entire assessment procedure, they responded to the feedback survey items that pertained to each component; eight volunteers did this. For those who did not participate in all components of the assessment procedure, they only responded to the survey items that pertained to those they did complete. An overview of responses from the piloting feedback survey is in Table 1.

Table 1. Frequency of responses to binary items from the piloting feedback survey (n = 10) [1].

Item	Frequency of "Yes" Responses	Frequency of "No" Responses
Did you feel that the self-completion [participant completed] questionnaire took too long to complete, or that its length would have discouraged you from completing it?	0	10
Did you feel that overall the questions in the questionnaire were easily comprehensible, including the multiple choice response options (i.e., you understood what they were asking)?	9	1
Did you feel that the instructions for the questionnaire were easily comprehensible (i.e., did you understand them)?	10	0
Did you feel that the time and effort necessary to complete the video call were excessive?	0	9
Overall, would any or all of the various components of this assessment discourage you from participating in the study, such as due to time commitment involved, nature of the questions, etc.? [2]	3	7
Did you feel that the time and effort necessary to complete any video clips requested were excessive?	3	6
Did you understand what actions, behaviours, etc. you were asked to submit video clips of?	8	1

[1] Not all participants responded to all survey items. [2] Not all respondents participated in all components of the assessment.

3.1. Participant Completed Questionnaire

All ten survey respondents reported that the length of the participant completed questionnaire would not discourage them from completing it. Overall, respondents reported being able to easily understand the questionnaire items and instructions, with only one respondent stating they had trouble understanding questionnaire items and/or the response options. During the video chat with one volunteer, they noted suggestions for change with some questionnaire items, such as differentiating between a dental cleaning performed

under anesthesia by a veterinarian versus teeth brushing done by an owner or groomer. (Only the latter was included in a questionnaire item.) Even though all respondents felt that the questionnaire instructions were easily comprehensible, one did note that it would be helpful to be provided with a guide for what qualifies each response option:

> *"...it would be helpful to have a guide as to what counts as "doing the thing asked about". For instance, what counts as "always" for providing cognitive stimulation? (daily? two daily? every two days?) and likewise for some other questions. Also...sometimes "always" etc sound odd. For instance, do you take your dog to the vet when necessary. Always is fine. Yes, I always do that when necessary. Do you provide your dog with appropriate cognitive stimulation. Always sounds odd. I know what you mean—as in, yes, I do that thing. But in English it's hard not to parse that as "I am continuously providing cognitive stimulation 24/7" which is obviously not the question."*

In response to this feedback, qualifying criteria was added for response options to questions that likely might be ambiguous or not particularly straightforward. For example, the responses to the item referenced above regarding cognitive stimulation were qualified as:

- Always (on a daily basis)
- Most of the time (the majority of days and consistently provided on those days)
- Some of the time (less than the majority of days and not always consistently provided)
- Rarely (only occasionally provided with no consistency)
- Never

An item was added to the 'dog owner demographics' section of the questionnaire to determine if the participant considers themselves to be an expert or particularly knowledgeable on dog behaviour, and if so, on what grounds? Its response options are multiple choice (e.g., undergraduate or postgraduate degree in dog behaviour or related field, a dog training certification). This item was added due to participants' comments during the video chat in which they considered themselves to be an expert, but seemed to lack sufficient qualifications to be objectively be labelled as such. It was thus theorized by the principal investigator that self-labeling of expertise without verification of sufficient qualifications may affect their responses throughout the assessment.

It was decided during the piloting process that an additional section should be added to the questionnaire. Because the quality of the adopter's relationship with their dog may affect how well they recognize and meet, their dog's needs, an assessment of how an adopter perceives that relationship was added. The Dog Owner Satisfaction Survey was added for this purpose. It was developed in prior research and is based on the eight dimensions of the human-dog relationship [25,26]. The dimensions Mills et al. [26] outlined were:

1. the content of interactions within the relationship,
2. the diversity of interactions contained within the relationship,
3. the level of reciprocity versus complementarity of interactions within the relationship,
4. the quality of the interactions within the relationship,
5. the frequency and patterning of interactions within the relationship,
6. the intimacy of a relationship,
7. cognitive perspectives of the interactions, and
8. multidimensional qualities.

The survey contains nine items in which the owner (adopter) rates their level of satisfaction with their relationship with their dog from the owner's perspective using a forced-choice Likert style scale from 'completely satisfying' to 'completely dissatisfying'. Because the survey assesses satisfaction with their dog from the owner's perspective, it

is a subjective assessment. With this addition, the total number of items for participant completed questionnaire is 149.

3.2. Investigator Given Questionnaire with Video Chat Observation

All feedback survey respondents stated that the amount of time and effort necessary to complete the video call was not excessive. (Video calls lasted approximately 30–45 min each.) During this portion of the assessment tool, several problems or issues to improve were noted by the investigator. The nature of these varied widely, and many of them pertained to the logistics of collecting data by this method. Because the investigator given questionnaire is done verbally during the video call, participants seemed to sometimes have trouble remembering what the multiple choice response options were (i.e., the same Likert scale used in the adopter-completed questionnaire). It was also generally challenging to get participants to respond to questions using the Likert scale, and instead tended to respond with yes/no. As such, writing the response options in the chat feature of the video call so that participants can refer to them as needed should address these issues.

Because the questionnaire covers several topics, some participants seemed to have trouble following along as the questions moved from one topic to the next. The investigator stating which need group the forthcoming questions pertain to should help with that. This would also help make the questions shorter in length and less repetitive seeming. Similarly, participants will also be given the option for the investigator to write the questions themselves in the chat during the video call, as participants seemed to have trouble comprehending some of them as they were read aloud.

Other issues pertained to the being able to sufficiently observe what the participants were asked to show during the call. In some cases this was because participants had enabled the blurred background setting, so they will be asked to turn that feature off in advance of the call in future. Participants may have used a blurred background for privacy purposes during the video chat, so when they are asked to turn off the feature in advance, they will be informed of why it needs to be disabled (i.e., to be able to make clear observations). They will also be reminded that the video chats are being conducted with the principal investigator in a secure, private room, and the video chat footage will not be shared with anybody aside from the study's researchers. In other cases, the level of room lighting, quality of their cameras, etc. impacted how clearly or the degree to which the investigator could see items, such as how clean a dog's food bowl was. Since it would not be possible to request that participants have a high quality camera, they will instead be asked in advance to have the room they are in be as well-lit as possible. Similarly, because participants need to move around their homes and in some cases go outside, this seemed more challenging for those who were using their computers rather than a phone or tablet to conduct the call. To address this issue, it will be suggested that participants not use their computers if possible. Not all participants were home during the video call, thus making the necessary observations impossible, so in future participants will be instructed to ensure they are home for the video call. Similarly, it appeared challenging (and possibly an inconvenience) for participants to show all items and areas inside/outside the house needed, so participants will be given a list prior to the call of what specifically will need to be shown. Doing so should prevent this issue from arising. For any reason if any of the necessary observations cannot be made (or adequately made) during the call, these can be added to the list of video clips they are asked to submit.

Reading the questionnaire items out load to the participants and observing how they reacted to, responded, needed further clarification for, etc. provided insight into issues with their wording and comprehensibility. For example, an item relating to a specific need in Integrity Needs ("Does your dog receive positive/non-punitive behavioural support/training

as needed from or overseen by appropriately qualified people?"), "appropriately qualified people" often needed further clarification in terms of what is meant by this term. This was already defined in the participant completed questionnaire, but it will now also be done in this context. For other questionnaire items, the response options evidently needed to be better qualified. This observation echoed respondent feedback on the participant completed questionnaire. For items such as, "How often do you change your dog's water?, what is meant by 'always', 'most of the time', etc. was unclear. Therefore, the response options have been clarified with frequencies, so 'always' now is defined as 'at least daily', 'most of the time' now is 'not routinely but as soon as it is visibly noticed that the water is unclean', etc. In the case of other items, such as "Is your dog permitted to decide where/when they want to sleep/rest, toilet, sniff, etc.?" and "Is your dog permitted to socialize with other dogs if they choose to?", participants' reactions to those questions suggested that there needed to be a general caveat or preface added to such items to note that this refers to wherever it is safe or appropriate to do so. Other items where it was noted that similar amendments needed to be made were: "Do you ever force your dog into situations, environments, interactions, etc. in which they are showing disinterest or signs of stress?" and "Do you ensure your dog has social contact with people of their choosing on a regular basis?". In the case of the former, respondents suggested that there are instances when this is necessary for brief periods of time, such as to receive veterinary care. For the latter item, it was realized that it is necessary to add 'if appropriate', as some dogs may choose to not have social contact with humans on any sort of regular basis. This was also true for the similar item pertaining to social contact with dogs of their choosing. Clarification was also needed for the item, "If your dog is hurt or injured do you promptly seek medical attention?", after a participant replied that she always does so when the injury is serious enough to warrant urgent medical attention but not necessarily if it is a more minor injury. As such, this item was amended accordingly.

3.3. Adopter Recorded Video Clips

This component received the most feedback of the entire assessment tool, and the issues reported by participants with completing and uploading the recordings seemed to be of the greatest magnitude compared to the rest of the tool. Six of the nine feedback survey respondents stated that they felt the time and effort necessary to complete and submit any video clips requested were excessive (see Table A1). Specific feedback provided on the video recordings included:

- "Make the videos easier."
- "it was hard to get the videos with angles and what you asked for, given that I walk [dog's name] alone and had no one else to help with the videography. It would be easier if there are two people!"

In response to this feedback, the assessment instructions have been amended to note that a second person is recommended to help with the video recordings, if possible.

There were also issues with the feasibility of participants uploading the video clips. One participant reported having difficulties uploading the clips to their respective private folder in Google Drive. Although only one participant seemed to have trouble with this, in the interest of mitigating wider uploading issues with a much larger sample size, it was determined that an alternate secure means would be used for uploading and data storage would be used in future. Additionally, because it was in some cases difficult to determine which clips pertained to which requested behaviour/scenario, instructions for specifically how to label each file will be given to participants, as this was not done during piloting.

3.4. Other Aspects of the Assessment Tool

One volunteer noted in the feedback survey that she did not receive the email to schedule the video call; she stated that it had gone to her spam inbox, and thus she did not see it. Two items in the feedback survey were included to provide general insight on participants' experience with the assessment procedure, rather than to make any changes to the procedure. These items asked volunteers to report approximately how long it took for them to complete the questionnaire, and how long it took collectively to record and upload the video clips. Responses to these items will be used during participant recruitment for the data collection phase of the study, in order to inform participants of what to expect once they decide or when deciding to take part in the study.

4. Discussion

Though it is not absolutely necessary to undertake a piloting phase with an assessment tool prior to its usage for data collection in a study, doing so is beneficial in several capacities, including simply making it generally easier to use. This is particularly important for a tool that has multiple steps and employs more than one method of collecting data. Because it relies on the involvement of an untrained/non-scientific population, ensuring its feasibility of administration and overall comprehensibility with such a population is of utmost importance.

Even with the rigorous nature of this piloting process, there were undoubtedly some limitations. In the case of the piloting participants, due to how volunteers for participation were recruited, such as by who shared the social media post with the call, there was likely a bias in the nature of the them. For example, they may have been more likely to work with dogs professionally in some capacity (e.g., working as a dog trainer), and thus might have had a greater knowledge of specialized terminology used in the questionnaire. It is possible that the general public would not be familiar with such terminology. Those participants may also have had a greater interest in canine science, behaviour, etc., and thus may have been more interested in participating in the pilot than the general public. These biases may have affected piloting outcomes, such as ensuring the tool would be fully comprehensible to a population who does not work with dogs.

There was not a fixed minimum number of participants required for piloting, but the approximate target number was in line with studies in the canine science field [25,27]. More than half of the volunteers who responded to the call for participants actually completed the entire assessment procedure, which is a decent participation rate and exceeds that of other studies in the field [25]. Aside from the reason previously mentioned (i.e., emails ending up in a participant's spam inbox), it is not possible to know for sure why other participants did not complete the entire assessment procedure. Forgetfulness and lack of time were likely reasons though, as evidenced by one participant's response in the feedback survey regarding submitting the video recordings: "I dropped the ball on the video clips, sorry". However, there are ways to potentially further increase actual participation during data collection. For piloting purposes volunteers were emailed once for each component of the assessment procedure, which may have affected overall participation. In order to mitigate this possibility, they will be sent reminder emails during the data collection phase.

As previously noted, this assessment tool will be used in the context of the larger project of which this study is part, for assessing QoL in dogs pre-adoption when they are part of shelters/rehoming organisations. Although the piloting of the tool did not include that specific dog population, the issues that arose during piloting are anticipated to be at very least similar to those that would exist when assessing the population of pre-adoption dogs. Moreover, because dogs will be assessed in a variety of environments where they are residing pre-adoption, and because it is expected that many will be in foster homes (rather

than in a shelter facility), a foster home environment is very similar to a post-adoption home environment, so continuity in feasibility and comprehensibility is expected. A key difference in the assessment when used pre-adoption versus post-adoption, is that some components of the participant completed questionnaire will be omitted for the former due to lack of relevance for that population.

Although the piloting process illuminated several aspects of assessment procedure that needed to be amended, there were also factors that were anticipated to be problematic that did not actually end up being so. For example, considering the high number of items in the participant completed questionnaire (140 items in the version used for piloting), it was somewhat surprising that none of the survey respondents stated that the time it took to complete it would discourage them from completing it. (The average completion time was 49 min (The completion time of one participant was >18 h, which suggests that that participant stopped and started the questionnaire, and thus the total time is inaccurate; that participant's completion time was omitted from the calculated average.)). Having said that, the fact that the questionnaire contained nearly all forced-choice style responses likely caused the time necessary to complete the questionnaire to be shorter than if it would have contained some or all open ended items. It is also possible that piloting participants did not feel the time it took to complete the participant completed questionnaire was excessive because they were a group of self-selected of dog owners eager to be involved in canine science. The fact that many worked with dogs professionally in some capacity may further have contributed to their willingness to complete a questionnaire with quite a few items. Therefore, it is plausible that when the assessment tool is used for actual data collection, study participants may find the questionnaire length off-putting. This could lead to incomplete questionnaires or a high level of participant attrition. In order to mitigate this possibility, participants will be notified in advance about the length of the questionnaire and approximately how long it takes to complete, so that they can choose to not participate at the outset rather than part of the way through.

A central aim of this tool was to create a way to objectively assess dogs' QoL. However, it is not possible to remove all subjectivity, but the degree of subjectivity in this tool is theorized to be far less than in other ways that dog welfare is assessed. In the case of the Dog Owner Satisfaction Survey, as previously mentioned, it is a subjective assessment. However, this study's researchers believe that the benefits of including known subjectivity in the assessment outweigh any potential downsides. It should also be noted that it asks owners to interpret or understand the causes or underpinnings of dogs' behaviour (e.g., "My dog's motives or intentions for his/her behaviours are _____".). It is recognized that accurately doing this might be challenging for at least some owners, again due to humans' tendency to anthropomorphize. For example, research has found that owners misinterpret what is often (inaccurately) referred to as the "guilty look" [28]. Evidence such as this suggests that humans attribute particular dog facial expressions to showing remorse for something they "should not" have done. Therefore, owners may be more likely to be dissatisfied (or possibly more satisfied) with their dogs' motives or intentions for their behaviour because they have incorrectly interpreted them.

Because the assessment tool has multiple steps, making the procedure as easy as possible for participants is crucial, such as by providing them with clear instructions in advance and lists of what must be observed during the video call. Potential hiccups during the procedure can also be barriers to sufficiently and efficiently collecting all of the necessary data at each step of the process. Logistically challenging aspects, such as needing two people to recording the video clips, could be a shortcoming of this method of data collection for the assessment tool. When the tool is used in the larger project, a central goal aside from data collection itself, is refining it to allow the removal of unnecessary components (e.g.,

the participant recorded videos). This will be done through establishing the reliability and validity of the data that is collected via the different means that comprise the tool. Therefore, it is anticipated that the final version of the tool will be more streamlined and user friendly than the current iteration of it, in order to easily be used by shelters, researchers, dog owners, and other populations. By employing the tool in a wide range of contexts, the goal is for there to be a scientifically sound way to improve dogs' welfare at both individual and group levels. Thus, stakeholders and the general public will be able to make decisions about the dogs in their care based on scientific evidence.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/pets2030028/s1. QoL study: questionnaires for recently adopted dog sample (for owner completion).

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Institutional Review Board Statement: This project was reviewed and approved by the relevant body at Utrecht University in accordance with Dutch and EU regulations pertaining to animal experiments (AWB, IvD—Utrecht). The declaration of ethical approval issued for this study is filed in the archive of the Animal Welfare Body, but it did not receive an approval number because the study did not involve invasive procedures on animals or collect data that met the definition of an animal experiment as described in the Dutch Experiments on Animals Act and EU Directive 2010/63/EU.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: All data are available by contacting the corresponding author, Karen E. Griffin, via email: k.e.griffin@uu.nl.

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Appendix A

Appendix A.1. The Adaptation of the Specific Needs into Questions for the QoL Questionnaire and the Investigator Given Questionnaire (with Functional Observations)

Table A1. The Adaptation of the Specific Needs into Questions for the QoL Questionnaire and the Investigator Given Questionnaire (with Functional Observations).

Specific Need	Specific Need Exact Question (for QoL Questionnaire)	Specific Need Qualifying Question (for Investigator Given Questionnaire)	Functional Observation (by Investigator)	Adopter Recorded Videos [1]
Consistently feasible access to water	Does your dog have consistently feasible access to water?	Can your dog easily reach their water bowl?	Observe dog drinking water from bowl	√
		Is your dog ever not permitted to have water, such as by removing their water bowl?	--	
Fresh water	Does your dog have fresh water?	How often do you change your dog's water?	--	

Table A1. *Cont.*

Specific Need	Specific Need Exact Question (for QoL Questionnaire)	Specific Need Qualifying Question (for Investigator Given Questionnaire)	Functional Observation (by Investigator)	Adopter Recorded Videos [1]
Consistently feasible access to food	Does your dog have consistently feasible access to food?	Can your dog easily reach their food (or wherever they eat from)?	Observe dog eating from bowl	√
		Do you every withhold food/meals from your dog, aside from for any health/medical reason?	--	
Food should be palatable and provided in a manner that allows comfort in eating and satiety	Is your dog provided with food that is palatable and is provided in a manner that allows comfort in eating and satiety?	Is your frequently not interested in or unwilling to eat the food they're provided with?	Observe dog eating from multiple angles/body positions	√
Appropriate amounts of sufficient quality food that is composed of an adequate and balance of macro and micronutrients based on dogs' age, weight, and individual health needs	Is your dog provided with appropriate amounts of sufficient quality food that is composed of an adequate and balance of macro and micronutrients based on the dog's age, weight, and individual health needs?	Do you provide your dog with food that is intended for dogs, or homecooked food that has been assessed by a qualified person to ensure that it meets your dog's nutritional needs?	Closely examine the food the dog regularly eats	
		Do you ever give your dog food that is spoiled, rotten, or is growing mould?		
Consistently provided physical exercise	Is your dog consistently provided with physical exercise?	Is your dog under- or overweight, as observed by you or your vet?	Observe dog from sides and top of body	
Type of exercise that is appropriate for the dog based on their age, health/medical condition, and breed/breed type	Is the dog provided with exercise that is appropriate for the dog based on their age, health/medical condition, and breed/breed type?	Does your dog go for walks or other forms of exercise on a regular basis?	--	
		After exercising, does your dog ever appear to be in pain or sore, such as by limping?	Observe dog during and after engaging in exercise	√
		Does your dog often seem unwilling to go for a walk or partake in other forms of exercise?	--	
Duration of exercise that is appropriate for the dog based on their age, health/medical condition, and breed/breed type	Is your dog provided with a duration of exercise that is appropriate for the dog based on their age, health/medical condition, and breed/breed type?	During or after exercise, does your dog ever excessively pant or struggle to catch their breath?	Observe dog during and after engaging in exercise	√
Consistently feasible access to shelter/housing	Does your dog have consistently feasible access to shelter/housing?	Is your dog permitted to come inside whenever they want to?	Observe the access points and the dog walking through them	
		Does coming inside via whatever means they use (e.g., a dog door) appear to cause your dog pain or discomfort, or do they appear to have difficulty/hesitancy using the means of access?	--	

Table A1. *Cont.*

Specific Need	Specific Need Exact Question (for QoL Questionnaire)	Specific Need Qualifying Question (for Investigator Given Questionnaire)	Functional Observation (by Investigator)	Adopter Recorded Videos [1]
Shelter that provides protection from the outside environment, including, but not limited to, snow, rain, temps >degrees, temps <degrees, and is free from draft/drought?	Does your dog have access to shelter that provides protection from the outside environment, including, but not limited to, snow, rain, low temperatures, high temperatures, and is free from draft/drought?	Does your dog live indoors or have their own house/shelter outside that they can always access?	Observe the house/shelter	
Access to daylight and fresh air on a daily basis	Does your dog have access to daylight and fresh air on a daily basis?	Does your dog go outside on a daily basis?	Observe the outside area that the dog normally uses	
Shelter/housing is appropriately sized for the size of the dog, ensuring that the dog has adequate room for species specific behaviours (including, but not limited to, lying down, stretching, walking)	Does your dog have shelter/housing that is appropriately sized for the size of the dog, ensuring that the dog has adequate room for species specific behaviours, including, but not limited to, lying down, walking, stretching?	Does your dog have shelter/housing that they can sit, stand, lie down, and move with ease in?	Observe the dog in their house/shelter	√
Care immediately following the occurrence or observance of the injury, or upon noticing signs or symptoms of disease or illness	Does your dog receive veterinary care immediately following the occurrence or observance of wounds or injuries?	If your dog is hurt or injured do you promptly seek medical attention?	--	
Follow-up care for the treatment of diseases, illnesses, injuries, and wounds as dictated by a veterinarian	Does your dog receive follow-up care for the treatment of diseases, illnesses, and wounds, as dictated by a veterinarian?	If your dog receives medical attention for any diseases, illnesses, injuries, or wounds, do you comply with any necessary follow-up care, such as vet rechecks?	--	
Consistently feasible access [to a place for undisturbed rest]	Does your dog have consistently feasible access to a place for undisturbed rest?	Does your dog appear to experience pain or discomfort, or have trouble accessing/reaching the place(s) where they like to sleep?	Observe the dog accessing their preferred place to sleep	√
A place [for undisturbed rest] that is consistently quiet and calm	Does your dog have access to place that is consistently quiet and calm?	Where does your dog like to sleep? Is your dog able/permitted to access the place(s) where they like to sleep?	Observe where the dog sleeps	
Predictability [in their environment]	Does your dog experience predictability in their environment, i.e., can your dog predict what will happen in their environment?	Does your dog have a similar routine from day to day (i.e., are walks, meals, etc. at roughly the same time daily)?		

Table A1. *Cont.*

Specific Need	Specific Need Exact Question (for QoL Questionnaire)	Specific Need Qualifying Question (for Investigator Given Questionnaire)	Functional Observation (by Investigator)	Adopter Recorded Videos [1]
Controllability [in their environment]	Does the dog experience controllability in their environment, i.e., does your dog have control over their environment?	Is your dog permitted to decide where/when they want to sleep/rest, toilet, sniff, etc.?		
		Do you look for signs of consent from your dog before petting/stroking them (e.g., approaching/leaning into your hand that is petting them)?	Observe dog being petted	√
An environment that promotes/fosters a feeling of safety	Does your dog have a consistent feeling of safety (from your dog's perspective)?	Does your dog have a place that they can always access where they can choose to retreat to and stay undisturbed, ideally in a quiet, low traffic area (e.g., a crate in the corner of a room)?	Observe undisturbed/quiet place	
		Do you ever force your dog into situations, environments, interactions, etc. in which they are showing disinterest or signs of stress?		
Consistently feasible access to appropriate places for toileting	Does your dog have consistently feasible access to appropriate places for toileting?	Does your dog have open access to or is taken to routinely for toileting?	Observe usual toileting place(s)	
Places for toileting that are safe, sanitary, are recognisable to as a toilet area to the dog, and do not cause any pain or discomfort to the dog	Does your dog have access to places for toileting that are safe, sanitary, are recognizable as a toilet area to your dog, and do not cause any pain or discomfort to your dog?	Is your dog ever scolded/punished for toileting in an unwanted or inappropriate place?		
		Does your dog show any signs of hesitation (aside from any related to pain or discomfort) when about to toilet?	Observe dog toileting	√
		When in an appropriate place for toileting (e.g., outside on a walk), are they permitted to "mark"/urinate when they choose to do so?		
		Does your dog show any signs of pain or discomfort when toileting, such as a hesitation to squat down?	Observe dog toileting	√
Routinely executed preventative veterinary care,, as dictated by a veterinarian	Does your dog receive routinely executed preventative veterinary care, as dictated by a veterinarian?	Do you take your dog for routine (well) health exams at the frequency advised by your veterinarian?		

Table A1. *Cont.*

Specific Need	Specific Need Exact Question (for QoL Questionnaire)	Specific Need Qualifying Question (for Investigator Given Questionnaire)	Functional Observation (by Investigator)	Adopter Recorded Videos [1]
Preventative veterinary care based on dogs' age, living environment, and individual health needs, including, but not limited to, vaccinations, preventative parasite control, and monitoring of organ functions	Does your dog receive preventative veterinary care based on the dog's age, living environment, and individual health needs, including, but not limited to, vaccinations, preventative parasite control, and monitoring of organ functions?	Does your dog routinely receive preventative veterinary care, as advised by your veterinarian (e.g., vaccinations, parasite preventatives, bloodwork, etc.)?		
Provision of grooming and maintenance (not auto-grooming) conducted routinely, including, but not limited to, baths, haircuts, brushing of fur, teeth brushing, nail trimming or filing, and ear cleaning, as dictated by dogs' age, morphological characteristics, and specific health/medical needs	Is grooming and maintenance conducted routinely for your dog, including, but not limited to, baths, haircuts, brushing of fur, teeth brushing, nail trimming or filing, and ear cleaning, as dictated by the dog's age, morphological characteristics, and specific health/medical needs?	Is your dog routinely bathed, given haircuts, and fur brushed (if necessary based on their coat type)?	observe dog's fur/hair and overall appearance	√
		Is your dog routinely given nail trims, ear cleanings, teeth cleanings, and any other grooming procedures needed, based on their specific characteristics?		
Provision of an indoor living environment that is consistently both visibly and invisibly clean and sanitary	Is your dog provided with an indoor living environment that is consistently both visibly and invisibly clean and sanitary?	Is the area where your dog resides indoors routinely cleaned (e.g., beds, crates, overall accommodation, etc.)?	observe indoor living area	
Provision of an outdoor living environment that is consistently both visibly and invisibly clean and sanitary	Is your dog provided with an outdoor living environment that is consistently both visibly and invisibly clean and sanitary?	Is the area where your dog spends time outdoors routinely cleaned, such as by cleaning up after they toilet?	observe area where dog spends time outside	
Consistent access to appropriate bedding or materials suitable for rest (based on dogs' age, size, and any specific health, medical, or behavioural needs	Does your dog have consistent access to appropriate bedding or materials suitable for rest?	Is your dog able to freely access whatever materials they prefer to sleep on (e.g., dog beds, blankets, etc.)?		
Bedding or materials for rest are clean, dry, and safe (for dogs that may chew or ingest bedding)	Is your dog provided with bedding or materials for rest that are clean, dry, and safe (for dogs that may chew or ingest bedding)?	Are the materials that your dog sleeps on clean, dry, and could not cause harm to them?	observe bedding materials	
Consistently provided social contact with humans	Is your dog consistently provided with social contact with humans?	Do you ensure your dog has social contact with people of their choosing on a regular basis?		

Table A1. *Cont.*

Specific Need	Specific Need Exact Question (for QoL Questionnaire)	Specific Need Qualifying Question (for Investigator Given Questionnaire)	Functional Observation (by Investigator)	Adopter Recorded Videos [1]
Type of social contact with humans that is appropriate for the dog based on their age and behavioural characteristics, is diverse (including humans with varying physical characteristics), is safe for the dog	Is your dog provided with a type of social contact with humans that is appropriate for the dog based on their age and behavioural characteristics, is diverse (including humans with varying physical characteristics), and is safe for the dog?	Is your dog permitted to socialize with other people if they choose to?		
		If your dog does not approach a person for social contact, do you allow the person to approach them?		
		Is your dog ever forced into a social interaction with a human, such as by placing them on a person's lap?		
Duration of social contact with humans that is appropriate for the dog based on their age and behavioural characteristics	Is your dog provided with a duration of social contact with humans that is appropriate for your dog based on their age and behavioural characteristics (in order to mitigate the risk of under- or over-socialization)?	Is your dog permitted to socialize with people when they want to?		
		Is your dog permitted to leave/remove themselves from a social interaction with a person when they choose to?		
Housing with other dogs when appropriate, as dictated by the dog's age, breed, health/medical status, and behavioural characteristics	Is your dog housed with other dogs when appropriate, as dictated by your dog's age, breed/breed type, health/medical status, and behavioural characteristics?	Does your dog live with another dog(s)?		
		If your dog lives with another dog(s), do they sleep/rest in close proximity to each other?	observe dogs' sleeping proximity	√
		If your dog lives with another dog(s), do they engage in any sort of play behaviour?	observe dogs playing	√
		If your dog lives with another dog(s), do they ever show signs of stress when in proximity to each other?	observe dogs in close proximity to each other	√
Type of social contact with other dogs that is appropriate for the dog based on their age and behavioural characteristics, is diverse (including various types of dogs), and is safe for the dog; dogs must show willingness for conspecific contact and should not be forced into any such situation	Is your dog provided with a type of social contact with other dogs that is appropriate for them based on their age and behavioural characteristics, is diverse (including various types of dogs), and is safe for your dog (they must show willingness for conspecific contact and should not be forced into any situation in which they do not show willingness)?	Is your dog permitted to socialize with other dogs if they choose to?		
		If your dog does not approach another dog for social contact, do you allow that dog to approach them?		
		Is your dog ever forced into a social interaction with another dog?		

Table A1. *Cont.*

Specific Need	Specific Need Exact Question (for QoL Questionnaire)	Specific Need Qualifying Question (for Investigator Given Questionnaire)	Functional Observation (by Investigator)	Adopter Recorded Videos [1]
Duration of social contact with other dogs that is appropriate for the dog based on their age and behavioural characteristics	Is your dog provided with a duration of social contact with other dogs that is appropriate for the dog based on their age and behavioural characteristics?	Is your dog permitted to leave/remove themselves from a social interaction with a dog when they choose to?		
Behavioural support provided by or overseen by appropriately qualified people (i.e., clinical animal behaviourists, veterinary behaviourists, certified dog trainers)	Is your dog provided with behavioural support by or overseen by appropriately qualified people (i.e., clinical animal behaviourists, veterinary behaviourists, certified dog trainers)?	Does your dog receive positive/non-punitive behavioural support/training as needed from or overseen by appropriately qualified people?	observe training	√
Consistently provided behavioural support as needed to address specific behavioural and emotional needs	Is your dog consistently provided with behavioural support as needed to address specific behaviours and emotional needs?	Does your dog receive positive/non-punitive behavioural support/training on a consistent basis (as needed)?		
Type of behavioural support that is appropriate for the dog based on their age, breed/breed type, and health/medical condition	Is your dog provided with behavioural support that is appropriate for your dog based on their age, breed/breed type, and health/medical condition?	Does your dog receive behavioural support/training that is appropriate for their specific characteristics (e.g., age, breed, etc.)?	observe training	√
Consistently provided cognitive stimulation, including learning new skills	Is your dog consistently provided with cognitive stimulation, including learning new skills?	Is your dog routinely provided with cognitive stimulation (e.g., nose work, eating from food puzzles, etc.)?		
Variability (vs. habituation) of cognitive stimulation	Is your dog provided with cognitive stimulation that is variable (rather than habitual)?	Do you vary the type(s) of cognitive stimulation you provide your dog with?	observe types of cognitive stimulation	√
Type of cognitive stimulation that is appropriate for the dog based on their age, breed/breed type, health/medical condition, and behavioural characteristics	Is your dog provided with a type of cognitive stimulation that is appropriate for your dog based on their age, breed/breed type, health/medical condition, and behavioural characteristics?	Is the type(s) of cognitive stimulation your dog is provided with appropriate, such as in terms of feasibility, for their individual characteristics (e.g., age, breed, etc.)?		
		Does your dog show interest in/engage with the type of cognitive stimulation they are provided with?		
		Does your dog show signs of frustration or stress when interacting with the type of cognitive stimulation they are provided with?		

Table A1. *Cont.*

Specific Need	Specific Need Exact Question (for QoL Questionnaire)	Specific Need Qualifying Question (for Investigator Given Questionnaire)	Functional Observation (by Investigator)	Adopter Recorded Videos [1]
Duration of cognitive stimulation that is appropriate for the dog based on their age, breed/breed type, health/medical condition, and behavioural characteristics	Is your dog provided with a duration of cognitive stimulation that is appropriate for your dog based on their age, breed/breed type, health/medical condition, and behavioural characteristics?	Does your dog show an eagerness to continue interacting with the cognitive stimulation they are provided with if it is removed or they are no longer permitted to access it, such as by whining or whimpering?		
		Does your dog quickly lose interest in or disengage with the type of cognitive stimulation they are provided with?		

[1] The environments, behaviours, etc. that participants are routinely asked to submit video recordings of. If it is not possible to sufficiently observe other elements during the video chat, participants are asked to submit video recordings of those as well.

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