

Enhancing quality of life for dogs and cats in confined situations

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Abstract

An international panel of experts in the fields of canine and feline health, welfare and behaviour conducted an online discussion addressing two questions: (1) how can one define quality of life (QoL) for dogs and cats in confined living situations, such as laboratories; and (2) what additional research is needed to determine how optimal QoL can be achieved? The panel suggested that QoL encompasses animal welfare and the subjective 'feelings' of the animal regarding its life, and that it can only be inferred from behavioural, physiological and other measures. Two methods for measuring QoL were proposed: establishing an ethogram defining QoL for individuals; and developing a 'quality of living' scale that can be applied to facilities housing groups of dogs and cats. Constructing these measures requires a comprehensive research program, and the paper discusses overall research objectives, specific questions that must be addressed, and some proposed research methods.

Keywords: animal welfare, companion animals, ethogram, human-animal bond, laboratory animals, quality of life

Introduction

During the past few decades, there has been a significant change in the relationship between humans and non-human animals (Lagoni *et al* 1994), particularly evident in the interactions between humans and companion animals — notably dogs and cats. In one study (Brown & Silverman 1999), 85% of pet owners who were interviewed considered pets to be a part of the family. It is projected that in 2005, pet owners in the United States will spend almost \$36 billion on products and services for their animal companions (American Pet Products Manufacturers Association 2005). This emotional and financial investment has not only influenced how we speak about these interspecies relationships (eg the 'human-animal bond'), but has also promoted a keen interest in the welfare of these animals. The concept of quality of life (QoL) has gained prominence as humans evaluate their own lives, and it has increasingly been extrapolated to the pets that live with them.

Despite the fact that dogs and cats enjoy a special companion status in human households, many continue to serve in roles that are not family-oriented. It has been estimated that 140 000 dogs are used worldwide in research and testing each year (Prescott *et al* 2004). Dogs and cats can also be found in a variety of other confined situations, such as breeding kennels and catteries or humane shelters. How does confinement affect the QoL of dogs and cats, and what strategies can be used to enhance the QoL of these animals?

In order to address this issue, The Iams Company collaborated with the School of Veterinary Medicine, University of California, Davis, to assemble an international panel of 12 experts in the fields of canine and feline health, welfare and behaviour. The panel was asked to address a number of questions, including: (1) how can one define QoL for dogs and cats in confined situations; and (2) what additional

research is needed to determine how optimal QoL can be achieved for these animals?

Defining quality of life for dogs and cats in confinement

Several publications provide thorough discussions of the care and welfare of dogs and cats in confined situations, such as laboratories and shelters (Hubrecht & Buckwell 2004; Miller & Zawistowski 2004; Rochlitz 2005). These works generally address issues such as housing and environment, behaviour, nutrition, husbandry and physical health, which are considered important in determining welfare. The concepts of animal 'welfare' and 'quality of life' are certainly interconnected, since enhancing welfare would presumably enhance QoL and *vice versa*. Whether they are synonymous, however, is unclear. Recent definitions of animal welfare (Duncan & Fraser 1997) expand the breadth of welfare concerns beyond physical well-being to include the state of the animal's mind and the extent to which the animal's nature is satisfied (Hewson 2003).

Panel members agreed that QoL is an important component of an animal's welfare, but it is also a very challenging concept to define. Whereas welfare usually refers to the observable and measurable experiences of an animal, QoL is related to the animal's mental state, which is determined by feelings and emotions. Assessing the QoL of humans involves asking individuals how they feel about themselves and their lives now and in the future. With animals, such feelings and emotions may be inferred from behavioural or physiological responses, but there is no certainty that one can 'know' what the animal feels. In spite of the difficulty of pinpointing precisely what is meant by an individual animal's — or a group of animals' — QoL, it is important to make the attempt.

Consideration of a definition for QoL as applied to dogs and cats in confinement must include the following:

- it encompasses the concept of animal welfare;
- it encompasses the subjective feelings of the animal regarding its life;
- it can only be inferred from behavioural, physiological and other measures.

Identifying an applicable model

In many cultures, dogs and cats are perceived primarily as companion animals. The panel considered the question of whether the optimal QoL of a pet in a home environment should be the model for dogs and cats in confined living situations. There are a number of problems with this. The most obvious is that currently there is no established, validated standard for optimal QoL for companion animals. Most investigations into the behaviour or physiology of dogs and cats have been conducted in laboratory conditions, and very little research has been done in a home environment. A discussion of the philosophical basis of QoL for dogs and cats has been initiated (McMillan 2000; Wojciechowska & Hewson 2005) that may eventually lead

to development of standards applicable to animals in defined situations such as a home environment.

A second issue is that the direct knowledge of a dog's or a cat's emotions and feelings is not attainable. The panel felt that a potential approach to accessing the animal's emotions and feelings might involve modification of questionnaires and surveys designed for use with caretakers serving as proxies (persons given legal authority to act for another person) for humans who cannot speak for themselves, such as infants or people with dementia. Such questionnaires could be completed by pet owners, veterinarians, or others familiar with the individual animal. Utilisation of this technique has been reported, but the studies were limited, in one case (Wiseman-Orr *et al* 2004) by a focus on one aspect of QoL (pain/discomfort) and a lack of external validation and, in the other, by a lack of a clear definition of QoL and a confusion of the human–animal relationship with QoL (Adamelli *et al* 2005). The difficulty with such evaluations is that they are subject to the value system and aesthetic sensibilities of the evaluator. For example, anthropomorphism, misinterpretation of behaviour, and inexperience with physiological or social needs of the animal may inhibit effective evaluation by a pet owner (Bradshaw & Casey 2007, pp 149–154, this issue); a focus on one or a few aspects of QoL, such as health or pain, may limit the evaluation by a veterinarian; and emphasis on functional performance may bias a trainer or a sports enthusiast.

Finally, the experiences of an 'owned' dog or cat may not be relevant to those of animals confined to laboratories or shelters. Many companion dogs and cats are the only animals in the household or may share the house with one or two other animals which may or may not be of the same species, in comparison with the laboratory environment, where animals are usually housed with many other animals of the same species. Environmental conditions, exercise regimens, training, nutritional management and human interaction may also differ markedly between household pets and laboratory or other confined dogs and cats. Such disparate experiences may profoundly affect how QoL is defined and measured.

In spite of these shortcomings, there is value in considering the QoL of pets in the home when developing protocols for enhancing QoL of confined dogs and cats. It will be helpful to identify home experiences that enhance QoL but that are not commonly available in confined situations. In addition, many laboratories and nearly all shelters have as an eventual goal the rehoming of animals. Preparing these pets for a home environment mandates an understanding of how QoL changes when an animal moves from one environment to another.

Is quality of life the same for the individual and for the group?

It has been noted that in the home environment, special attention is paid to the individual animal and its perceived needs and wants. In confined conditions, the well-being of the animal is addressed through a 'herd health' approach, in

which protocols to ensure the mental and physical health of the entire group of animals are assumed to meet the needs of the individuals. In order to understand the extent of the correlation between individual and group QoL, the following should be considered:

- the source of the animal (early experience);
- the age of the animal (previous experience);
- genetics (behavioural predispositions and disease potential);
- nutrition (defining what is optimal for the growth and maintenance of the animal).

Laboratories which are consistent in the acquisition of animals (same source, same age, same breed) will probably encounter fewer differences between individual QoL and 'herd' QoL. At the other extreme, shelters encounter extreme variety (age, breed, socialisation, previous experience, species, etc). Staff in a laboratory environment are usually very cognisant of the genetics, age and details of the health status of animals under their care. Shelter staff often do not know the genetic background, the age, or health status other than general physical appearance. Individual QoL may differ markedly from QoL based on protocols for the entire shelter population. It is possible that an aggressive dog or cat could have a good QoL if allowed to express its nature, although such an animal would not be adoptable and would be a constant challenge to manage. The growth of the 'no kill' movement brings additional complications for unadoptable, long-term-housed animals. And of course, for all shelters, resource limitations will have an impact on the QoL of individual animals. An ability to measure individual QoL becomes more important as the animals vary in the factors listed above.

Establishing an ethogram to define quality of life for individuals

If it is accepted that QoL is an essential component of, if not synonymous with, welfare, the measurement of an individual animal's QoL is important — and this importance grows with increasing physiological and behavioural differences between the individual and the group in the confined environment. Of course there are many research questions that must be explored before meaningful evaluations can be developed (see below.) The panel suggested that a good start toward building evaluations would be the construction of an ethogram that describes behaviour that may be consistent with optimal QoL. Initial ethograms would be established for groups of animals that are consistent with regard to source, age, genetics, gender and nutritional profile. Behaviours denoting 'optimal' QoL would initially be defined by panels of behaviourists, caretakers, veterinarians and other expert stakeholders. Once standards for optimal QoL have been defined for a cohort of comparable animals, the study can be extended to other breeds, ages, etc.

The panel recommended utilising choice or preference tests as well as other ethological approaches to compare the animal's behaviour in a current situation with behaviour in

a 'natural' environment (which could be regarded as the home environment). Information could be gathered through direct observation or through camera surveillance. Special attention should be directed toward the animal's behaviours that allow evaluation of reactions to the following:

- Stress
- Pain
- Social enrichment (conspecific and interspecific)
- Environmental enrichment and complexity
- Nutrition
- Exercise
- Housing (including light, sound, ventilation, humidity, temperature, substrate and surface texture, size of the confined area)
- Routine activities occurring at consistent intervals during the day (such as exercise, feeding, grooming, interaction with other animals or humans)
- Caregiver interaction

The standards defined by expert stakeholders and the results of choice or preference testing can then be integrated to build an ethogram describing behaviours consistent with optimal QoL within a confined situation. If individual animals exhibit behaviours outside the range of those considered acceptable, either the specific factors which are thought to stimulate the aberrant behaviour can be changed, or the animal can be removed from the group.

Establishing a scale to assess quality of life for groups in confinement

The panel also suggested a supplemental tool that could be useful in the development of protocols and facilities that promote optimal QoL for group-housed dogs and cats in confinement. This tool could also be used to assess the success of organisations which are working toward achieving optimal QoL for the animal groups under their care. The model for such a tool could be found among the many governmental and private QoL measurements for humans (CJC Phillips, unpublished data). One example is the scale for humans in different geographical locations that was developed by Mercer Human Resources Consulting, LLC (Mercer 2005). This scale assigns scores for *quality of living* based on defined categories. Mercer differentiates *quality of living* from *quality of life* in that the objective measurement of specific factors (*quality of living*) may or may not be related to the subjective interpretation by one human regarding how that measurement may affect overall quality of life for that individual in a specific environment. For example, a lower *quality of living* rating due to poor roads and intermittent energy outages may not affect the quality of life perceived by an individual to whom environmental beauty or cultural interests are more important. Similar differences in preferences may occur among individual animals.

Mercer identifies 39 'quality of living' factors based on 10 categories, which, once evaluated, give a 'quality of living'

Table 1 Quality of living: comparison of measurements for humans and animals.

Quality of living factors	Examples (Human)	Examples (Confined animals)
Political and social environment	Political stability, crime, law enforcement, etc.	Consistency and quality of husbandry.
Economic environment	Currency exchange regulations, banking services, etc.	Impact of external economic issues, appropriateness of budget for animal care.
Socio-cultural environment	Censorship, limitations on personal freedom, etc.	Companionship (human and animal), social enrichment, personal choice, etc.
Medical and health considerations	Medical supplies and services, infectious diseases, sewage and waste disposal, air pollution, etc.	Preventative medicine, health monitoring, diagnostic and therapeutic capacity, etc.
Schools and education	Standards and availability of schools, etc.	Training of caretakers, training of animals.
Public services and transportation	Electricity, water, public transport, quality of roads, traffic congestion, etc.	Quality of utilities, lighting in facilities, cleaning services, etc.
Recreation	Restaurants, theatres, cinemas, sports and leisure, etc.	Requirements for work versus rest, environmental enrichment.
Consumer goods	Availability of food and daily consumption items, cars, etc.	Availability of food, water, toys, etc.
Housing	Availability and quality of housing, household appliances, furniture, maintenance services, etc.	Appropriateness for breed/species, protection from the elements, comfort, etc.
Natural environment	Climate, natural disasters, etc.	Climate, protection from potential natural disasters, etc.

score. These categories can be modified (CJC Phillips, unpublished data) for application to animals in confined environments (Table 1). Once the individual factors are defined, a numerical score can be assigned to each. This would allow individual organisations or external assessors to provide an objective score for the quality of living for groups of animals under the care of that organisation. Although a high score on quality of living should be consistent with optimal QoL, continuing assessment of individual animals would be required to ensure that the environment suited their QoL needs.

Research questions

Building a quality of living scale and constructing a QoL ethogram are dependent on a dedicated and comprehensive research program. The panel identified certain issues that must be explored in order to achieve these measures.

Overall objectives

- Define behavioural and physiological parameters indicating high QoL for individual animals in home environments and determine the relevance for individual animals in confinement.
- Establish baseline values for behavioural and physiological indicators to determine whether animals fall within an acceptable range representing high QoL.
- Develop reliable and standardised measures of behavioural phenotypes (eg personality/temperament/behavioural distinctiveness) for companion animals in confined situations.

Some specific questions

- How do expert stakeholders define QoL for dogs and cats, and on what do they base these definitions?
- What are the spatial needs of dogs and cats in confinement?
- What are the needs for exercise?
- What are the effects of specific resources on QoL?
- What is the nature of the need for companionship, both conspecific and interspecific?
- What are the effects of unpredictable *versus* regular daily routines on behaviour and other stress indicators in confinement?
- Are existing behaviour/temperament tests and assessment methods adequate to predict behaviour problems in a home environment and in confined situations?
- What are the most efficient and reliable non-invasive measurements of stress?
- How do breed (genetic) differences affect QoL, and how can these differences be taken into account in confined situations?
- What factors affect the sociability of cats and their ability to live harmoniously in multicat living situations?
- How can individual animal experiences, preferences and personalities be taken into account in the definition of high QoL?

Proposed methodologies

- Focus groups comprising, and questionnaires completed by, experienced and knowledgeable people (veterinarians,

breeders, behaviourists, enthusiasts, 'quality' pet owners) to identify and define behaviours indicating high QoL. Identify consensus areas for further investigation.

- Choice, preference and other ethological tests.
- Longitudinal studies (similar to Framingham study; see <http://www.nhibi.nih.gov/about/framingham>).
- Observational studies to quantify and compare animals' responses to environmental stressors or enrichment strategies.

Conclusion

This panel sought to address two questions: (1) how can one define QoL for dogs and cats in confined situations; and (2) what research is needed to determine how optimal QoL can be achieved for these animals? We have proposed a combination of approaches: establishment of an ethogram defining behaviours of individual animals consistent with optimal QoL; and construction of a quality of living scale that allows assessment of environments and protocols, evaluating their capacity to provide optimal QoL to dogs and cats in confinement. Achieving these goals depends on exploration of a number of issues, and the panel has identified a series of research questions and has proposed appropriate methods of research.

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