

Exploring children's perspectives on the welfare needs of pet animals

Janine C Muldoon (Child and Adolescent Health Research Unit, The University of St Andrews)

Joanne M Williams (Clinical Psychology, The University of Edinburgh)

Alistair Lawrence (Animal and Veterinary Sciences Research Group, Scotland's Rural College
- SRUC)

Corresponding author: Dr Janine C Muldoon, Child and Adolescent Health Research Unit,
(CAHRU), School of Medicine, University of St Andrews, Medical and Biological Sciences
Building, North Haugh, ST ANDREWS, Fife KY16 9TF

Email: jcm23@st-andrews.ac.uk

Tel: 01383 861280

Fax: 01334 463531

Abstract

Children are increasingly viewed as important recipients of educational interventions to improve animal welfare, yet research examining their perspectives is lacking, particularly within the UK. Helping children to care appropriately for animals depends, not least, on an ability to understand the needs of different species and correctly identify cues given by the animal that indicate its welfare state. This study began to explore: (a) children's perceptions of welfare needs, focusing on four common pet animals; (b) influences on the development of knowledge, (c) beliefs about whether or not (all) animals are sentient, and (d) their confidence in identifying when their own pets are in need. Fourteen focus groups were carried out with 53 children aged 7 to 13 years. Findings highlighted an affirmative response that animals have feelings (dogs especially), albeit with doubts about this applying universally. There was wide variation in children's knowledge of welfare needs, even among owners of the animal in question. Conversely, some children lacked confidence in spite of the extensive knowledge they had developed through direct experience. An important finding was a perceived difficulty in identifying the needs of particular species or specific types of need in their own pets. Fitting well with a recent emphasis on 'positive welfare', children felt that many animals need demonstrative love and attention, especially cats and dogs. While there is clearly scope for educating children about common needs and cues that indicate animals' welfare state, other areas pose a greater challenge. Emotional connection seems important in the development of extensive knowledge and concern for welfare. Accordingly, animals that do not possess the kind of behavioural repertoire that is easy to interpret or allows for a perceived sense of reciprocity are possibly at risk of negative welfare experiences.

Keywords: animal welfare, children, knowledge, pets, sentience

Introduction

According to Bousfield and Brown (2010: p.4), reference to 'needs' is often made in relation to animal welfare, '*as needs are the things that should be provided to ensure an animal's welfare. A need is: a requirement, fundamental in the biology of the animal, to obtain a particular resource or respond to a particular environmental or bodily stimulus*'. An animal in a good state of welfare has been defined (based on scientific evidence) by the American Veterinary Medical Association (2014: para.1) as '*healthy, comfortable, well nourished, safe, able to express innate behavior, and... not suffering from unpleasant states such as pain, fear and distress*'. In so far as the education of children is concerned, knowledge of animal needs and identification of welfare state are clearly important to ensure they are able to provide appropriate care for animals. As yet, research on children's understanding in these respects and its relationship to practical aspects of care is lacking.

Much attention, on the other hand, has been devoted (within developmental psychology and science education) to children's understanding of animal biology (Medin & Atran 1999; Inagaki & Hatano, 2002; Siegal 2008). These studies have investigated a range of biology concepts and how they develop with age (e.g., Williams & Binnie 2002; Myant & Williams 2005; 2008). Other research, in the context of visits to zoos, farms, natural history museums or marine centres, has focused on concepts of vertebrates and invertebrates (Prokop, Prokop & Tunnicliffe 2008), knowledge of animals' internal structures (Prokop *et al* 2007) and features or behaviours that children attend to most (Rigney & Callanan 2011). We therefore know that children's conceptual development proceeds through a process of analogy to humans (Carey 1985), whereby children use their experience and knowledge of their own

bodies to generate understandings of other animals ('comparison to people model').

Individual experiences, such as being ill or in pain, provide children with different bases for interpreting animals' needs. This goes hand in hand with children's tendency to employ anthropomorphic terms in their explanations of animal biology and behaviour (Carey 1985). It is unclear if and how this type of knowledge translates into care of animals. Are children aware of the common needs of animals (such as those highlighted within current animal welfare legislation) and the more specific needs of particular species?

In spite of its basic significance for ensuring animals are cared for properly, few studies have been carried out on children's perceptions of animal needs. One published study used interviews and drawings to identify 4 to 14-year-olds spontaneous concepts of their favourite animal in a zoo context (Myers, Saunders & Garrett 2004). Results showed a majority focus on physiological needs (44%), followed by reproduction needs (23%), ecological issues (22%) and social needs (21%). In line with the developmental literature, younger children (between age 4 and 7) prioritised physiological needs, whereas ecological/conservation needs concepts increased with age, undoubtedly due in part to educational curricula. Children's informal encounters and knowledge of everyday animals are far less researched (Patrick & Tunnicliffe 2011), although pet owners have been shown to have better knowledge of animal physiology and behaviour than those who do not have pets (Inagaki 1990). Similarly, in another published study assessing children's understanding of animal care, 6-year-olds who helped to look after animals in school had better knowledge of species-specific animal care procedures than non-participating children (Toyama, Lee & Muto 1997).

Caring 'about' and caring 'for' animals

According to Herzog (1988, p.474) '*the roles that animals play in our lives and the labels that we attach to them deeply influence our sense of what is ethical*'. Paul and Serpell (1993) suggest that adults involved with pets in childhood show more concern for animal welfare and are more likely to be vegetarians and/or members of animal welfare groups than adults who had no involvement. Therefore, direct experience with animals appears to play a fundamental role in both knowledge development and a sense of ethical/moral sensibility. Nonetheless, pet ownership *per se* may be less significant than having a strong emotional tie to a pet. Children who have a strong attachment have more ideas about the characteristics of their pet and how they should be cared for (Melson 2001). Indeed, Kellert (1996) argues that the development of an emotional relationship with animals is a necessary prerequisite to recognition of their needs. Palmer (1993) similarly argues that concern about the broader environment develops through formative, nature-based experiences.

Providing the right kind of care for animals is not just dependent on acquisition of factual knowledge based on scientific animal welfare research. Neither does 'concern' necessarily translate into practical caretaking. Application of knowledge is key (requiring recognition/identification skills). Here, the role of influential others is critical; learning being influenced by culture, personal interactions, and language (Solomon 1987; Medin & Atran, 1999; Williams & Smith 2006; Gelman 2009). The few studies that have explored children's extant relationships with animals show that pets are often described as friends or family members (Morrow 1998; Tipper 2011). However, children are not always allowed to care for them or interact with them in ways they would like (Muldoon, Williams & Lawrence 2015). Moreover, the whole process of defining and implementing a plan of care within families seems difficult (Bryant 1990). There are complexities and contradictions in the ways different members of the household relate to and care for family pets, with gender playing a potentially

significant role (Tipper 2011; Muldoon, Williams & Lawrence 2015). Children's subordinate position in the family means that they may often have to defer to parents, even when they feel the adults are wrong.

Belief in animal sentience has been described as a crucial component of peoples' attitudes towards animal welfare (Paul & Podberscek 2000; Phillips & McCulloch 2005). Broom (2010) argues that humans devote more attention and care towards animals considered to be like 'us'. Dawkins (2006) argues that it is the belief that animals possess at the very least a basic kind of consciousness that gives rise to our concerns for their welfare. Invoking the concept of 'qualia' or 'raw feels', she describes sentience (p.5) as an ability to have '*the basic experiences of seeing, hearing, feeling pain*'. When adults are asked to attribute sentience to different species, they typically place non-mammalian and small animals at the bottom of their 'scale' (Driscoll 1992; Broom 2010). While we have been unable to locate any published research on how children view the sentience of animals, qualitative research findings revealing pets as perceived friends or kin suggests they do not draw a significant line between human and animal sentience at least where the animals they have experience of are concerned.

Interestingly, a recent study (Almeida, Vasconcelos & Strecht-Ribeiro 2014) found that children are able to think about the welfare of animals in a way that is not exclusively centred on their own preferences or interests. However, there are significant deficiencies in our understanding of children's knowledge about animal needs (and the related concept of sentience) as well as its application in the practical care of pets. The present exploratory study begins to address these deficiencies and was undertaken in the early stages of a multidisciplinary project. The project's overall aim was to assess how a 'duty of care' might

be effectively promoted among children and young people, cognisant of children's significance in the long-term enhancement of animal welfare (Jamieson *et al* 2012). Duty of care refers to owners' obligation to ensure the welfare needs of their animals are met (Defra 2008).

Research questions

- (1) To what extent are children aware of the needs of different species of pet animal and how extensive is their knowledge?
- (2) Which factors potentially influence children's developing understanding of animal needs?
- (3) How well do the needs identified by children map onto the five needs outlined in current animal welfare legislation?
- (4) Do children believe that animals are sentient? What caveats do they employ?
- (5) How confident are children in their ability to identify when an animal needs something or is distressed?

Methods

Participants and procedure

Table 1 provides details of the sample distribution. Overall, 30 girls and 23 boys aged 7, 9, 11 and 13 years participated in fourteen same-sex focus groups (8 girls' groups, 6 boys'). With the exception of three groups (of three children), four children participated in each group. Children attended one of three semi-rural schools in Fife, Scotland (two primaries, one

secondary) that were closely situated and matched according to their socio-economic status (medium). The schools were located within 5 miles of a large town.

<Insert Table 1>

Prior to approaching schools, full details of the study were presented to the County Council and University Ethics Committee. Opt-in consent was required from parents, and teachers were asked to discuss the research with their class, identifying appropriate groupings of volunteers. The researcher (lead author) encouraged children to ask questions and ensured that they understood how to opt out at any point. Exploratory focus groups were employed because they are able to capture 'unfiltered' perspectives (Charlesworth & Rodwell 1997) as a result of them resembling ordinary conversations when group members know each other (Barbour & Kitzinger 1999). The groups were designed to maximise the opportunity for everyone to participate, combining group and individual activities and breaks for writing to allow all children to contribute. The general approach throughout the focus groups was informal and conversational, though followed a semi-structured protocol. The group discussions ranged between 40 and 60 minutes and took place during a normal school period. They were audiotaped and transcribed in full and pseudonyms were created for each child. Children were asked to write their name on folded card, like the researcher, and place it in front of them. The researcher then referred to names throughout to aid the transcription process.

The groups had four broad phases. The first began with an activity sheet that asked children to list their five 'favourite' and 'worst' animals as a warm-up exercise. The second stage involved questions relating to the welfare needs of four common pets. Children were briefly

introduced to ‘Pops’ the cat, ‘Molly’ the dog, ‘Goldy’ the goldfish and ‘Dumbo’ the hamster. First, they were shown a photograph of the animal in question while we introduced them: ‘This is Pops the cat who lives in a house with the Johnson family’. They were then asked ‘what sort of food do you think Pops needs?’ Subsequently, they were asked ‘how often do you need to feed cats?’ and ‘what else does Pops need to stay well?’ The third phase was less structured, where the researcher followed up children’s interests and asked three questions relating to Research Questions 4 and 5: (1) ‘do you think animals have feelings?’ and (2) ‘have *all* animals got feelings?’ accessing beliefs about sentience, and (3) ‘can you tell if an animal needs something?’. Children always referred to their own pets in relation to this last question and usually provided an explanation after responding affirmatively. These explanations were examined to establish *how* they were identifying their pets’ needs. For example, were the children using the animal’s facial expression, behaviour, vocalisations or other signals to determine an unmet need? Due to the children’s enthusiasm for the topic and the curtailing of some groups due to school requirements, these final three questions were asked in 11 of the 14 groups. A fourth question ‘can you tell if your animal is distressed’ was also asked where there was sufficient time. The final phase, not discussed here, looked at the care of pets within the family and issues of responsibility for animals (see Muldoon, Williams & Lawrence 2015).

Analysis

A simple form of content analysis (Krippendorff 1980; Weber 1985) was employed to convert children’s verbalised perceptions of animal welfare needs (as described in response to our introduction to four individual animals) into numeric data. While content analysis is typically used with large samples enabling subsequent statistical analysis, we used it to provide a broad overview of the extent of knowledge within and across groups (addressing

Research Question 1). Knowledge was assessed in relation to (a) the type of food eaten by the four animals and (b) other welfare needs identified by children. A summary of these data is provided in Appendix 1. In order to allow data comparisons according to whether or not there was experience of specific pet types within each group, children were asked what pets, if any, they currently owned. A few children explained that their pet lived in a different house to them (if their parents lived separately, for example, or at another family member's house). In these instances, it was clear that the child played a significant role in looking after the animal; therefore were considered pet owners. The few children who had previously owned the pet in question were also considered 'owners', making a total of 42 (79% of the sample).

A bottom-up approach to categorising children's responses was deemed necessary, whereby each author independently read through all responses for each animal and assigned the following codes to the focus group excerpts from each group: 1 = poor/minimal knowledge, 2 = moderate knowledge, 3 = extensive knowledge. In other words, the group content was analysed and coded relative to other children rather than a pre-defined protocol. Accuracy was important; however, where there was one mistake/inaccurate need identified within the context of a group that had been very good at pinpointing a range of other needs, they were not 'marked down'. The analysts also noted which cases they found difficult to code as a matter for discussion. Table 2 displays some examples of the application of codes.

<Insert Table 2>

Analysis of knowledge was an iterative process; when the application of one of the three codes was not clear-cut (i.e., initial coding was difficult or there was disagreement), the lead author/analyst asked everyone to supply an explanation for their choice. There was always

agreement between two coders, with the exception of fish food, where a decision had to be made as to whether descriptions of fish food or simply saying 'fish food' rather than providing details of ingredients, constituted poor/minimal or moderate knowledge (we decided it should represent 'moderate' because children knew there was a special shop-bought ready food that you sprinkle in and only one group identified ingredients). Where a third coder did not agree with the other two (in 14.4% of coding instances), each response was discussed individually until agreement was reached based on consistency in application of codes across participants and range of responses. To get the highest score, the groups had to refer to a wide range of welfare needs and not just concentrate on, say, the need for a suitable environment.

To address Research Question 3, for each group and animal type, codes were applied to show the extent to which children referred to the five welfare needs explicitly identified within the Animal Welfare Act 2006 (see Figure 1), which are based on the Five Freedoms (Farm Animal Welfare Committee, 2009). Finally, thematic analysis (Boyatzis 1998) was used to explore the data relevant to Research Questions 2, 4 and 5 (potential influences on knowledge development, perceptions of animal sentience and ability to detect animal needs). This process began with thorough immersion in/familiarisation with the data; reading through and listening to each transcript and making notes. Next, a systematic approach was taken to reduce the data and address individual research questions. Excerpts relevant to each question were extracted from the transcripts into separate Excel worksheets to facilitate cross-group and cross-question analysis. We did not ask specific questions relating to Research Question 2; therefore, the entire transcripts were explored to identify and further explain potential influences on the development of children's understanding of animal needs and care. With Research Questions 4 and 5, children's responses to our direct questions were entered into

one column within a worksheet, while spontaneous references of relevance within the rest of the focus group were entered into the next column. Subsequently, each set of data was examined closely. Categories/codes were developed that would succinctly encompass all comments made by the children. A note of the group's identifier code was made alongside each category/code, enabling data to be re-contextualised and to examine the extent to which this type of response was made. The next stage was to group these categories/codes into meaningful themes, which are discussed in the next section. Where direct quotations from the children are used to support key themes/observations, but require clarification (for example, when the child refers to a pet by name rather than species or to summarise context to avoid using lengthy passages of text), the authors' words are included within [square brackets].

Results

Children's awareness of animal needs and influences on their developing understanding

Analysis of discussions prompted by the four photos/introductions revealed wide variation in children's knowledge. While we cannot be precise about differences between groups where members owned the animal in question and groups that did not, it appeared that knowledge (particularly of food type) was not always better in groups where at least one child had experience of the pet in question (see Appendix 1). Overall, children were more likely to know what cats and dogs eat than fish and hamsters, citing ingredients and brand names of shop bought ready-made foods. By contrast, many children (even owners) described the appearance of 'fish food', but did not know its constituents, and many did not know which food types were appropriate for hamsters. This latter finding could be attributed to lack of

experience; hamsters' nocturnal nature appeared to be an impediment to choosing one for a pet. However, their knowledge of needs other than food was high.

There was also significant variation and indecision about the frequency with which any of the animals needed to be fed. Children tended to say, for example, 'well we feed ours twice a day', which prompted others to give a different response, as the following excerpt illustrates:

Janine: Do you know how often cats need to be fed?

Cara: Yes

Rebecca: Every day

Cara: Day and night, same as dogs

Janine: How do you know that?

Isabel: My dog doesn't

Rebecca: Just because they'd starve if they never

Cara: They'd get fat otherwise because my dog always gets fat

Rebecca: They need to be fed three times a day, breakfast, lunch and dinner

Janine: Isabel you don't think the same?

Isabel: No my dog has a tablet in the morning, he doesn't like a tablet so my mum puts milk in with his tablet and then he likes that but that's kind of like a breakfast... then he just has a meal in the night time and that's it and at the weekend he gets a pig's ear **(7-year-old girls)**

This suggests that even when children and their families own the same animal, consistent practices are not followed. The fall back position, when uncertain, was what the child felt they needed themselves. This was evident in the extract above, where Rebecca stated with

confidence that dogs need three meals a day. The same kind of thinking was applied by a 9-year-old girl when the researcher asked why she thought dogs needed 'dog biscuits' – "At school we get, in between starting and lunch time we get a break to eat a snack or something".

Interestingly, even where children appeared knowledgeable about animal needs, a great deal of uncertainty was expressed around the specifics of animal care. Children were particularly concerned about providing the right environment for fish, when they in fact, showed extensive and accurate knowledge. Boys in particular, were preoccupied with the death of fish, understandably attributing the problem of keeping fish alive to a lack of knowledge and getting something wrong, rather than factors outwith their control. Some children said they were not advised by pet shops about incompatible fish (one species eating another). As a result of direct experience, children had actually developed a great deal of knowledge around the complexities of keeping fish (e.g. the right temperature, cleanliness of water, compatibility, functioning of filters, presence of stones/moss and amount of food). It seems that the experience of losing fish provided the impetus for being concerned and thinking closely about the nature of their needs. With other animals (dogs in particular), concern about health and wellbeing appeared to stem from the relationship itself – the emotional connection or friendship. These children talked extensively about their pet, describing intricate details of their behaviour, their likes and dislikes and the concern the pet shows for them (discussed later).

Possible influences on children's developing knowledge

That knowledge of cats (food *and* other needs) and fish and hamster food was often better in groups where no children owned that animal is somewhat surprising. While it is possible that

these children had experience of other people's pets, a more likely explanation given the data, is that the reality of pet ownership is different from theory. It could be argued that children who do not own the pet in question only have the theory to rely on. Their knowledge has not been called into question by the actions of others or the animal itself. For example, some children were aware that their own animal ate foods they should not (as a result of family members giving leftovers from their plates or 'treats'). However, others simply listed these as foods the animal eats without recognising unsuitability.

The influence of parents (or other family members) was also evident when children talked about not being 'allowed' to feed the animal or take care of them in other ways. In families with pets, parents are responsible for safeguarding both children *and* animals. Accordingly, it is possible that confusion arises when responsibility for caring tasks is determined by adults (so children do not have to take responsibility for thinking carefully about needs), or when children observe adult behaviour that they believe may be problematic. In the excerpt below, John describes his sense of responsibility for the death of his fish because there was some confusion over the 'rules'.

John: some of mine died from fish food

Janine: from fish food, how do you know?

John: because sometimes I don't know if my dad's fed him or not because I'm allowed to give it when he tells me to, but I thought he told me to and it was in my mind and I just gave him fish food (**7-year-old boy**)

Misconceptions may also come into play when parents are trying to protect their children from negative realities. In the quotation below, discussion of death was clearly avoided, parents instead focusing on the animal being ill and in hospital.

Laurie: I don't think it's a safe idea to put stones in the fish tank...one of my friend's [fish], it didn't spit it out, it swallowed it and he had to go to the hospital and it came back and it had to stay in the hospital for about a year (**7-year-old boy**)

Here, this explanation may have been given because the child is very young and inevitably, as children age, they show evidence of increased factual knowledge. In our sample, children started to introduce concepts of: habitat; animal families; nutrition; infection; parasites; digestion, as well as knowledge that certain animals were nocturnal, independent, endangered or non-native to Britain. Older children also introduced notions of obedience and loyalty (descriptors of dogs' behaviour) and the need for comfort, attention and stimulation, rather than simply the description of 'a good owner' used by younger children. This links to the later section on identifying distress, where older children were more likely to focus on emotional upset, younger children emphasising physical harm.

Children's awareness of the five welfare needs

Figure 1 provides an overview of the extent to which the five welfare needs were referred to when asked 'what else does [the animal in question] need to stay well?' As children had already been asked about food, instead of considering 'suitable diet', groups were coded to show the extent to which water was identified. The absence of data for fish relates to water being identified as part of a suitable environment, not a drink.

<Insert Figure 1>

Figure 1 clearly shows variation in awareness of needs across the four species. Children showed least understanding of housing animals with/apart from others, perhaps unsurprising, given parents are only likely to purchase one animal at a time (fish being the exception). By contrast, there was far more consistent emphasis on animals' need to exhibit normal behaviours. Interestingly, although there were far more cat and dog owners than fish and hamster owners, children were more likely to identify, and describe in detail, suitable environments for fish and hamsters. This may be due to the nomadic/unrestricted nature of cats' and dogs' movement within children's homes (their greater independence). Fish and hamsters have to be kept in confined spaces, with salient equipment such as tanks and cages. Water was not always identified as an animal need (a particularly low proportion identified this for cats, as milk was perceived to be their main drink).

With the exception of cats, a fairly low proportion of groups described the need to be protected from pain, injury, suffering, disease, fear or distress and only one group mentioned this need for fish. They typically referred to trips to the vet (for injections) and preventing injury/disease (not letting them go in the road, keeping nails short, dental sticks for dogs). Four groups mentioned boredom and two groups fear (in relation to hamsters and little puppies in transit or in a new home). However, while children may not be aware of the specifics of mental distress, they do emphasise the need to be provided/cared for. In nine groups, conceptions of love and affection were invoked when children spontaneously referred to the need for a 'good/suitable owner' or to be 'really well looked after' by 'someone who really cares'.

Among 11 and 13-year-olds, language switched to an emphasis on the need for attention and enough stimulation. Eight groups used this language in relation to cats and dogs, accentuating the need to be played with. Three groups mentioned these needs for hamsters but only one group talked about the need for a good owner for fish. Friends (of same species) and interesting things in the tank were given priority. Cuddles were mentioned in six groups in relation to cats, four for dogs and one for hamsters. The need for demonstrative love is therefore seen as species dependent.

Children's perceptions of animal sentience

When asked directly 'do you think animals have feelings?', 'yes' was the instantaneous and unanimous response. However, there was often hesitation in response to a further prompt: 'have *all* animals got feelings?'. This suggests that they were doubtful about this applying universally (they appeared to think about their own pets first) or this was the first time they had given it any thought. Caveats to the general belief in sentience were applied by several children when considering which animals may not have feelings. These were always individual responses (i.e., each was only mentioned by one person), making reference to cold-blooded animals, stray dogs, very small animals (spider was given as an example) and fish. Girls appeared more reluctant than boys to accept that there were some animals that did not have feelings (doubts expressed within three of the seven girls' groups and all four boys' groups).

In the excerpt below, Ryan's comments highlight the commonly held perception that pets have feelings while also recognising that there is more than a binary yes-no response to the

question of feelings; animals may differ in the extent or range of feelings they experience.

Finlay, on the other hand, draws attention, like others, to a limited memory span of fish, which was used here to justify the reasoning that fish are not sentient.

Janine: Do you think animals have feelings Callum?

Callum: Yeah I think they do

Janine: Do you think all animals have got feelings or not?

Ryan: Some more than others

Janine: Are you thinking about particular animals there when you said that?

Ryan: Dogs they're household animals

Callum: Fish they don't have feelings

Ryan: Because they're just stuck in a tank, they can't do much really

Finlay: If they get fed up they've got three seconds before they forget all about it

Ryan: They've only got a three second span

Janine: So that makes a difference does it?

Ryan: Yes (**13-year-old boys**)

In responding to our direct questions and in more spontaneous references to sentience (see Methods section), children's comments suggest that they see sentience evidenced in animals' behaviour. They 'cry' or 'whine' or 'just sit there' when they are sad, they kick, bite or scratch if they are grumpy, and they run around, jump up, or wag tails if they are happy. A few children also described seeing animals frightened, bored or lonely. Another common behavioural sign that children described to indicate the presence of feelings was a display of affection from the animal; that they recognise and respond to their owner shows the animal feels happy and cared for. Jamie, for example, a 7-year-old boy, was extremely fond of his

dog and talked with great enthusiasm about his 'friend', especially when shows of affection were returned: "when I come home from school, my friend Ned always jumps up and licks me on the face". Indeed, some of the girls' groups even distinguished between cats and dogs based on the species' emotional characteristics:

Siobhan: [Talking about dogs] It's not like a cat. You can speak to them and have your own relationship with them, like them being your friend as well

Janine: They feel like that, do they, they feel like a friend?

Siobhan: Yeah

Janine: A cat doesn't feel the same do you think?

Emily: No

Siobhan: When you say anything to it they just walk off

Emily: A dog is more of an animal who senses when you're upset or you're feeling down. It'll come and comfort you

Siobhan: My dog does that, every time he sees me with my head down he comes over and licks me

Emily: They understand you (**11-year-old girls**)

While children described cats as having feelings, they were considered by some to be grumpy, 'suspicious', or difficult to interact with. The girls above describe this well, highlighting the greater capacity of dogs to connect with their own (the child's) feelings. Children also described certain animals as demonstrating through their behaviour, their 'need' for love (enjoying hugs, cuddles, stroking) and company, with the implication that they must have feelings.

To a lesser extent, children also attributed sentience to animals because they had seen them experience pain or get injured like humans and some children believed that animals are ‘just the same as humans’ (so obviously have feelings) or at least have the same rights. Several children also adopted a more abstract way of thinking about ‘feelings’, not looking directly at behaviour, but instead imagining how the animal might feel. Lily, in the first excerpt below, appears to have been influenced, to an extent, by a television commercial, but children often seemed to take-for-granted the idea that animals have feelings, as Emily’s comments suggest (second excerpt).

Janine: Do animals have feelings?

All: Yes

Janine: Do all animals have feelings do you think?

Lily: They might have feelings like, say you weren’t looking after it properly it might have feelings about you not caring about it. Isn’t there an advert on Dogs’ Trust [an animal welfare charity] where the dogs are just being left behind and they might have feelings that they’re not loved anymore?

Hannah: Sometimes they could feel happy if you play with it a lot and feed it and take it for a walk **(9-year-old girls)**

*

Emily: Every animal even if you go to smack it, it’s not right because it will be upset because how would you feel if you got smacked **(11-year-old girl)**

Six groups voluntarily mentioned dogs in response to our direct questions concerning sentience and were adamant that dogs had feelings. The exception was one 7-year-old girl who felt that ‘strays’ did not have feelings, “they want to bite you”. In fact, when children

spontaneously referred to the feelings and empathic capabilities of animals, it was almost always in respect of dogs; they show affection (hug and lick you), 'look happy' when they are played with and are 'friends'. They also referred to dogs knowing when something is wrong and trying to help; comforting the child when hurt and 'listening to you'). These observations led children to believe that dogs need a relationship with the owner. No other animals were discussed in this way, in spite of the majority view that all pets (fish excluded) have feelings. It seems that there may be a basic level of feelings (to do with pain, hunger, fear and physical comfort) that children attribute to most (if not all animals), and a higher-level capacity for a wide range of feelings in certain species (most notably dogs). Further research is required to hone in more closely on children's conceptions of 'feelings' and the types attributed to different animals.

Ability to identify animal needs and distress

In response to our question 'can you tell if an animal needs something?' (Asked in all but three groups), the most striking finding was the overwhelming emphasis on dogs. Cats, horses, rabbits and guinea pigs were also mentioned but far less. What children conveyed (explained explicitly by Caitlin below) was the idea that their ability to detect needs in their animals was due, in large part, to the communicative capacities of the particular animal. Dogs often make it clear when they need something.

Caitlin: You can tell with a dog, because if they need the toilet they prance about and they brush up against your leg and they'll go and sit at a door and then you kind of know. But then next they'll be needing to be fed and he'll go to this cupboard in the house and it's where his biscuits sit. So he goes in and pulls the bags open and

he'll be able to get his head in and he brings it through in his mouth and he'll drop it at my mum **(11-year-old girl)**

Other animals were difficult to understand, due, in part, to children's limited knowledge of the animal in question, but also the behavioural repertoire of the species:

Ewan: When I had the rabbit, it was quite difficult to tell if she was hungry or thirsty or if she wanted her hutch cleaned out or she wanted to be taken and washed... what she would do was she would come up and bite you, so it would be like "I want something" and you had to take a guess and see **(13-year-old boy)**

Nonetheless, when children did refer to being able to identify need, it tended to be with respect to hunger. This was the only welfare need that all groups felt they could identify, with animals giving clear signals in their behaviour (e.g., nudging/shaking bowl, standing by food cupboard, jumping up). Five groups said they knew when their dog 'needed the toilet' (e.g., sitting by/scratching door or crouching), three groups knew they wanted to go for a walk (e.g., sitting by door or lead, running backwards and forwards). Two groups said they could recognise gum disease (looking unhappy chewing food or bone, would moan while eating, or avoid tug-of-war toy), and two groups referred to boredom (lying on the floor, scratching leg). Accordingly, children, on the whole, felt able to identify basic physiological needs and ailments, but only then were they confident with this where dogs were concerned.

Importantly, there were children (within six groups), who while describing how they were able to tell *if* their animal needed something, clearly did not know exactly *what* was needed.

Janine: When you're looking at your animal can you tell if it needs something?

Ella: Sometimes

Lily: Maybe if it keeps bugging you maybe it wants something, like you to play with it or it wants something to eat (**9-year-old girls**)

*

Mhairi: You can tell [if they need something] because they don't act normally, they just act differently when they want something (**7-year-old girl**)

This suggests that animals that do not send out clear behavioural signals by 'bugging you' or clearly directing owners' attention to the object required may be at risk of not having their welfare needs met. Within seven groups, children did use animals' vocalisations to detect a need. However, this was typically in dogs (they whimper, pant, moan, bark or growl). Cats were described as continually meowing, and one girl described her guinea pigs squeaking a certain tone. Within four groups, children described using facial expressions (mostly eyes, through staring at you) to identify needs, but again this was with respect to dogs, and (in one group) horses.

Similar to the identification of needs, children typically used animals' behaviour to identify upset/distress (used within all groups). While all groups provided an answer as to how they could tell if their animal was upset or distressed, with the exception of physical injury (where clear signs would be evident), there was little indication in most cases that they would know what was wrong – just that there was something wrong. Interestingly, while the 7 and 9-year-olds tended to conceptualise upset/distress in terms of being hurt/in pain, the older children focused almost entirely on emotional distress – animals needing comfort or company.

There were instances of children who were extremely confident about their ability to observe signs that their pets need something and could detail different cues given by their animals to indicate particular needs. These children had a strong emotional connection to their animal, providing intricate details of their 'friend'. Hence there is an individual-level nature to children's knowledge. They may not know about other animals or even other animals of the same species, but they 'know' their own pet (also highlighted by Tipper 2011). Interestingly, it was these children who were aware of the distinction between a true 'need' and a short term 'want' that may not be good for welfare. Two children in particular described the behaviours of their dog and horse to elicit more food or 'treats'. They explained how difficult it was to resist the animal's pleas, when they 'stare at you', 'paw' or 'whimper'. Again, theory is called into question because of the complexities (and love) involved in pet ownership.

Discussion

The exploratory study reported in this paper has generated important insights that require further reflection and research to ensure animal welfare education is appropriately targeted. There is clearly a case for educating all children explicitly about the common needs of animals *and* the more specific needs/cues of particular species. Simple provision of factual information can be effective in enhancing knowledge, although the nature of material presented must be carefully honed to build on the prior knowledge of different age groups – more advanced than existing knowledge, but not too advanced (Williams & Affleck 1999). It is also unlikely that one-off provision will result in sustained improvements (Myant & Williams 2008). While these relatively straightforward methods would address children's uncertainties about their own pets' and other animals' needs, more interactive methods that

get closer to direct experience may be necessary to enhance identification skills. Being able to identify not just *when* an animal is in need, but *what* they need, as well as knowing how to take action, are essential components in helping children feel competent (Chawla 1988).

Extensive knowledge of animal cues often appears to come from an intimate relationship; getting to know a particular being through trial and error and observation of the animal's responses to their actions (Myers & Saunders 2002). We saw that it was only when children had experienced the complexities of keeping fish alive that their concerns about welfare were instigated. Pets, Mariti et al (2011 p 18) explain, are powerful motivators in this respect, as *'children learn and retain more about subjects in which they are emotionally involved'*. Children were 'drawn in' to reflect on how their fish had died and what they had 'done wrong'. These findings support Kellert's (1996) view that emotional connection (at some level) is a necessary prerequisite to recognition of needs. A major challenge is how to create a connection with (and thus the desire to understand) animals who are not perceived by children to be engaging, interactive or interesting enough and who are therefore potentially at greater risk of negative welfare experiences. Certain animal types have co-evolved to interact with humans, altering their social behaviour and reliance on certain senses (Miklósi et al 2005; Reid 2009). Therefore, it is no surprise that children have stronger relationships with, and perceive greater sentience in dogs (see Phillips & McCulloch 2005). The danger is that children only take active and responsible care for animals where the relationship seems more reciprocal or, conversely, where animals are viewed as entirely dependent on human care for their survival.

While direct experience is clearly a strong avenue for enhancing knowledge and identification skills, we have suggested that there may be a gap between the 'theory' and

'practice' of pet ownership and care. Ensuring animals' welfare, for example, is difficult when there is often a contradiction between wanting the animal to be happy but also healthy; a similar dilemma to the one that parents have with their children! The giving and receiving of love complicates matters. Children also see their parents and other family members treating the animals in ways that may not equate to what they have learnt 'in theory'. Where knowledge is lacking, children understandably resort to thinking about their own needs (Carey 1985) and while some researchers may wish to discourage anything that might increase 'personification' (Inagaki & Hatano 2002), we believe this tendency for children to use themselves as a model for understanding others may well be used to educators' advantage. Being able to build on, or conversely, contest, children's existing knowledge might usefully be achieved by highlighting similarities and differences to human beings and other animals when outlining specific species' needs. This would also help move children beyond thinking about their own individual animal to whom they may be strongly attached, to others they do not know well.

Finally, our finding that most children only described being able to tell if their animal was hungry implies that they need help to look for different signs of need. Recent research confirms that children inaccurately interpret the meaning of certain animal behaviours (Almeida, Vasconcelos & Strecht-Ribeiro 2014). Young children in particular, fail to correctly interpret dog behaviour because they focus on faces, neglecting other features that communicate affective state (Lakestani, Donaldson & Waran 2014). In our sample, younger children interpreted distress/upset as arising from an injury or being in pain, while older children emphasised emotional distress linked to experiences such as moving house, feeling lonely, or missing home. The accuracy or inaccuracy of applying knowledge about their own experiences needs to be addressed by animal welfare educators.

While this study has hinted at the possibility of differences in children's developing understanding of animals based on age, gender and parental influence, the size and distribution of the sample prevented us from examining these and other demographic/familial influences in great depth. The study was ambitious in scope, maximising opportunities for children to tell their own stories, which they were inordinately keen to do. Instead of honing in on key questions, we captured children's views across a wide range of highly interconnected areas. We were unable to examine precisely the extent to which knowledge of the four common pet animals was more extensive if the child had experience of it as a family pet (a subsequent study was designed to investigate this). However, the findings suggest that the degree of attachment the child has to the pet is important. Here, we were looking at group-level awareness and perceptions, although inevitably more input was received from those with direct experience. The focus group method also means we were unable to pinpoint the exact distribution and extent of individuals' knowledge. Dogs were the most commonly owned pet (which is the case within the broader population). In another sample, we may have observed stronger awareness of other animals' needs and cues, yet the overwhelming emphasis on dogs throughout all phases of the focus groups, suggest that they are the easiest animal with which to 'connect'. Interestingly, our investigation of children's conceptions of sentience flagged up the importance of investigating how children understand different kinds of 'feelings' and which feelings are attributed to particular species.

In conclusion, the present study reveals considerable variation in children's knowledge of animal needs and differences according to species and welfare need. Children often express confusion and report being able to identify hunger and injury, but recognise few other cues of welfare state in their pets. As certain types of animals may not have the behavioural

repertoire or reinforcement history to give clear cues of need, it seems important that educators cultivate some form of emotional concern for the specific animal they want children to understand better. Perhaps most at risk of negative welfare experiences are animals that are not perceived by children to be reciprocal in their interactions or appear less dependent on them for daily care and attention.

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References

Almeida, A., Vasconcelos, C. & Strecht-Ribeiro, O. 2014. Attitudes toward animals: a study of portuguese children. *Anthrozoös* 27(2): 173-190.

American Veterinary Medical Association. 2014. Animal Welfare: What Is It?

<https://www.avma.org/KB/Resources/Reference/AnimalWelfare/Pages/what-is-animal-welfare.aspx> Accessed on June 16, 2014.

Barbour, R.S. & Kitzinger, J. (eds). 1999. *Developing Focus Group Research: Politics, Theory and Practice*. SAGE: London.

Bousfield, B. & Brown, R. 2010. Animal Welfare. *Veterinary Bulletin - Agriculture, Fisheries and Conservation Department Newsletter* 1(4) November. http://www.afcd.gov.hk/english/quarantine/qua_vb/files/AW8.pdf Accessed on June 16, 2014.

Boyatzis, R.E. 1998. *Transforming Qualitative Information: Thematic Analysis and Code Development*. Thousand Oaks, CA: Sage.

- Broom, D.M. 2010. Cognitive ability and awareness in domestic animals and decisions about obligations to animals. *Applied Animal Behaviour Science* 126: 1-11.
- Bryant, B.K. 1990. The richness of the child-pet relationship: a consideration of both benefits and costs of pets to children. *Anthrozoös* 3(4): 253-261.
- Carey, S. 1985. *Conceptual Change in Childhood*. MIT Press: Cambridge, MA.
- Charlesworth, L.W. & Rodwell, M.K. 1997. Focus groups with children: a resource for sexual abuse prevention program evaluation. *Child Abuse and Neglect* 21(12): 1205-1216.
- Chawla, L. 1988. Children's concern for the natural environment. *Children's Environments Quarterly* 5(3): 13-20.
- Dawkins, M.S. 2006. Through animal eyes: What behaviour tells us. *Applied Animal Behaviour Science* 100: 4-10.
- Department for Environment, Food and Rural Affairs (Defra). 2008. Animal Welfare Laws – it's your duty to care. <https://www.gov.uk/government/publications/animal-welfare-act-2006-it-s-your-duty-to-care> Accessed August 11, 2013.
- Driscoll, J.W. 1992. Attitudes toward animal use. *Anthrozoös* 5(1): 32-39.
- Farm Animal Welfare Committee. 2009. *Farm Animal Welfare in Great Britain: Past, Present and Future*. FAWC advice to government. <https://www.gov.uk/government/publications/fawc-report-on-farm-animal-welfare-in-great-britain-past-present-and-future> Accessed on August 1, 2015.
- Gelman, S.A. 2009. Learning from others: children's construction of concepts. *Annual Review of Psychology* 60: 115-140.
- Herzog, H.A. 1988. The moral status of mice. *American Psychologist* 43(6): 473-474.
- Inagaki, K. 1990. The effects of raising animals on children's biological knowledge. *British Journal of Developmental Psychology* 8: 119-129.

- Inagaki, K. & Hatano, G. 2002. *Young Children's Naïve Thinking About The Biological World*. Psychology Press: Hove, UK.
- Jamieson, J., Reiss, M.J., Allen, D., Asher, L., Wathes, C.M. & Abeyesinghe, S.M. 2012. Measuring the success of a farm animal welfare education event. *Animal Welfare* 21: 65-75.
- Kellert, S. R. 1996. *The Value of Life: Biological Diversity and Human Society*. Washington: Island Press.
- Krippendorff, K. 1980. *Content Analysis: An Introduction to its Methodology*. SAGE: London.
- Lakestani, N.N., Donaldson, M.L. & Waran, N. 2014. Interpretation of dog behaviour by children and young adults. *Anthrozoös*, 27(1): 65-80.
- Mariti, C., Papi, F., Mengoli, M., Moretti, G., Martelli, F. & Gazzano, A. 2011. Improvement in children's humaneness toward nonhuman animals through a project of educational anthrozoology. *Journal of Veterinary Behavior* 6: 12-20.
- Medin, D.L. & Atran, S. 1999. *Folkbiology*. MIT Press: Cambridge, Massachusetts.
- Melson, G.F. 2001. *Why The Wild Things Are: Animals in the Lives of Children*. Harvard University Press: Cambridge.
- Miklósi, A., Pongrácz, P., Lakatos, G. Topál, J. & Csányi, V. 2005. A comparative study of the use of visual communicative signals in interactions between dogs (*Canis familiaris*) and humans and cats (*Felis catus*) and humans. *Journal of Comparative Psychology*, 119: 179–186.
- Morrow, V. 1998. My animals and other family: children's perspectives on their relationships with companion animals. *Anthrozoös* 11(4): 218-226.
- Muldoon, J.C., Williams, J.M. & Lawrence, A. 2015. 'Mum cleaned it and I just played with it': Children's perceptions of their roles and responsibilities in the care of family pets. *Childhood*, 22: 201-216.

- Myant, K.A. & Williams, J.M. 2005. Children's concepts of health and illness: Understanding of contagious illnesses, non-contagious illnesses and injuries. *Journal of Health Psychology*, 10(6), 805-819.
- Myant, K.A. & Williams, J.M. 2008. What do children learn about biology from factual information? A comparison of interventions to improve understanding of contagious illnesses. *British Journal of Educational Psychology*, 78(2), 223-244.
- Myers, O.E. Jr & Saunders, C.D. 2002. Animals as links toward developing caring relationships with the natural world. In Kahn, P.H. Jr and Kellert, S.R. (eds). pp 153-178. *Children and Nature: Psychological, Sociocultural and Evolutionary Investigations*. MIT Press: Cambridge, Massachusetts.
- Myers, O.E. Jr, Saunders, C.D. & Garrett, E. 2004. What do children think animals need? Developmental trends. *Environmental Education Research* 10: 545-562.
- Palmer, J.A. 1993. From Santa Claus to sustainability: emergent understanding of concepts and issues in environmental science. *International Journal of Science Education* 15(5): 487-495.
- Patrick, P. & Tunnicliffe, S.D. 2011. What plants and animals do early childhood and primary students name? Where do they see them? *Journal of Science, Education and Technology* 20: 630-642.
- Paul, E.S. & Podberscek, A.L. 2000. Veterinary education and students' attitudes towards animal welfare. *Veterinary Record* 146: 269-272.
- Paul, E.S. & Serpell, J. 1993. Childhood pet keeping and humane attitudes in young adulthood. *Animal Welfare* 2: 321-337.
- Phillips, C.J.C. & McCulloch, S. 2005. Student attitudes on animal sentience and use of animals in society. *Journal of Biological Education* 40(1): 17-24.

- Prokop, P., Prokop, M. & Tunnicliffe, S. D. 2008. Effects of keeping animals as pets on children's concepts of vertebrates and invertebrates. *International Journal of Science Education* 30: 431–449.
- Prokop, P., Prokop, M, Tunnicliffe, S.D. & Diran, C. 2007. Children's ideas of animals' internal structures. *Journal of Biological Education* 41(2): 62-67.
- Reid, P.J. (2009). Adapting to the human world: Dogs' responsiveness to our social cues. *Behavioural Processes* 80(3): 325–333.
- Rigney, J.C. & Callanan, M.A. (2011). Patterns in parent-child conversations about animals at a marine science center. *Cognitive Development* 26(2): 155-171.
- Siegal, M. 2008. *Marvelous Minds: The Discovery of What Children Know*. Oxford University Press.
- Solomon, J. 1987. Social influences on the construction of pupils' understanding of science. *Studies in Science Education* 14: 63-82.
- Tipper, B. 2011. 'A dog who I know quite well': everyday relationships between children and animals. *Children's Geographies* 9(2): 145-165.
- Toyama, N., Lee, Y.M. & Muto, T. 1997. Japanese preschoolers' understanding of biological concepts related to procedures for animal care. *Early Childhood Research Quarterly* 12(3): 347-360.
- Weber, R.P. 1985. *Basic Content Analysis*. SAGE: London.
- Williams, J.M. & Affleck, G. 1999. The effects of an age-appropriate intervention on young children's understanding of inheritance. *Educational Psychology*, 19, 259-275.
- Williams, J.M. & Binnie, L.M. 2002. Children's concepts of illness: An intervention to improve knowledge. *British Journal of Health Psychology*, 7, 129-147.

Williams, J.M. & Smith, L.A. 2006. Social and environmental influences on the development of inheritance concepts during childhood and adolescence. *International Journal of Behavioural Development*, 30, 148-157.