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Factors influencing owner-reported approaches to training dogs enrolled in the Generation Pup longitudinal study

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ABSTRACT

The majority of owners use rewards (e.g. treats and praise) when training their dogs. However, many additionally use aversive methods (e.g. physical reprimands, sound/spray distractions) which can compromise the welfare of dogs. The aim of this study was to identify factors associated with owner-reported use of aversive training methods.

A study was conducted using data provided by owners living in the UK or Republic of Ireland participating in a longitudinal study (Generation Pup). Data from a registration questionnaire completed when puppies were ≤16 weeks of age, and a follow-up questionnaire completed when dogs were nine-months of age were analysed. Responses to questions about owners’ intended/actual use of different training methods at each time point were grouped into two categories, ‘Reward only’ training: positive reinforcement (PR; increasing behaviour through application of rewarding stimulus) and/or negative punishment (NP; decreasing behaviour through removal of rewarding stimulus), and ‘reward and aversive’ training: >2 methods of positive punishment (PP; decreasing behaviour by application of aversive stimulus) and/or negative reinforcement (NR; increasing behaviour through removal of aversive stimulus). Associations between training approach (‘reward only’ / ‘reward and aversive’) and potential owner-related risk factors were modelled using multivariable logistic regression.

Data from 2154 owners at registration were collected, and a follow-up questionnaire for 9-month-old dogs were completed by 976 owners. At registration, 99.7 % of owners reported their intention to use PR and/or NP, and 84.1 % intended to use PP and/or NR. At 9 months, 99.7 % of owners reported using PR and/or NP, and 74.2 % used PP and/or NR. Data were available for 161 owners at both time points, of which 80 % reported the same training approach in both questionnaires. At 9 months, not attending training or puppy classes in the previous 2-months (Odds Ratio = 3.16, 95 % Confidence Interval = 2.18–4.59, P < 0.001), and not having dog-related employment (Odds Ratio = 2.70, 95 % Confidence Interval = 1.53–4.77, P = 0.001) were associated with increased odds of reporting a reward and aversive approach. Owners aged 55 years or more were twice as likely as those younger than 55 (Odds Ratio = 1.93, 95 % Confidence Interval = 1.29–2.87, P = 0.001), and male owners were three times as likely as female owners (Odds Ratio = 3.10, 95 % Confidence Interval = 1.52–6.36, P = 0.002) to use a reward and aversive training approach.

Owners reporting a reward and aversive training approach was common within this cohort. Increased awareness of optimal training approaches for dogs is needed, especially for older, male owners, who have not accessed puppy training classes.

1. Introduction

Studies on owner perception of what makes an ‘ideal dog’ suggest that training is an important aspect of a successful human-dog bond (King et al., 2009) and undertaking some form of training is reported to improve the relationship between owners and dogs (Clark and Boyer,
However, owners often appear to associate ‘training’ with organised classes and obedience for tasks such as sitting or walking to heel (Hiby et al., 2004), rather than as an element of everyday life to ensure dogs are well adapted to a domestic environment.

Training methods are typically categorised into four types, based on the principles of operant conditioning. These are: positive reinforcement, negative reinforcement, positive punishment, and negative punishment (Blackwell et al., 2012). Positive/negative describes whether a stimulus is added or removed, and reinforcement/punishment describes whether the frequency of a target behaviour is increased or decreased on its application (Blackwell et al., 2012). Because these terms describe the effect of an action on a single target behaviour, the ‘opposite’ definitions will always occur in the same context. Positive punishment and negative reinforcement describe the application and removal of an aversive stimulus. Positive reinforcement and negative punishment describe the application and removal of a positive (rewarding) stimulus. Hence when training a dog to walk to heel, walking on a loose lead may be positively reinforced with a treat resulting in an increase in this behaviour – but simultaneously, pulling on the lead is negatively punished by withdrawing treats resulting in a decrease in this behaviour. Where an aversive stimulus is used, jerking back on the lead positively punishes pulling, whereas stopping pressure would negatively reinforce walking on a loose lead.

Studies suggest that a using a mixture of reward and aversive based approaches in achieving training goals is not more effective than a reward only based approach (Ziv, 2017) and can compromise the welfare of dogs (Fernandes et al., 2017). Hence large animal welfare charities in the UK recommend the use of exclusively reward-based methods for training and rehabilitation (Dogs Trust, 2020; RSPCA, 2020). However, the use of aversive training methods (positive punishment and negative reinforcement) is widespread (Blackwell et al., 2008; Herron et al., 2009; Rooney and Cowan, 2011). Owners have been shown to rely on their own knowledge when making decisions about their training approaches, and this knowledge will be influenced by inconsistent and conflicting information available to the public (Todd, 2018). Dog owners use a range of methods attempting to alter behaviours which they may find problematic or incompatible with their expectations (Wells and Hepper, 2006; Kobelt et al., 2003; Hiby et al., 2004; Blackwell et al., 2008). In attempting to stop unwanted behaviour, owners may also select approaches involving positive punishment or negative reinforcement.

Although causation cannot be inferred, compared to positive reinforcement and negative punishment approaches, many studies provide evidence of an association between aversive training methods and a breakdown in the relationship between the dog and owner (Herron et al., 2009; Rooney and Cowan, 2011; Deldalle and Gaunet, 2014), owner-directed aggression (O’Heare, 2007; Herron et al., 2009; Casey et al., 2014), and a reduced capability of dogs to learn new tasks (Rooney and Cowan, 2011).

A number of studies have also highlighted the link between aversive training methods and signs of negative emotional states in dogs. For example, dogs trained by military dog handlers had a significantly lower body posture, associated with anxiety and appeasement (Schilder and Van Der Borg, 2004), after the use of aversive methods like pulling on the lead and verbal scolding compared to following reward-based methods like physical praise (Haverbecke et al., 2008). Sound blasts, like those used as a tool for correcting unwanted behaviour, have been shown to cause physiological stress responses in dogs (Sandoval et al., 1998). Dogs trained using negative reinforcement, for example the use of physical manipulation to encourage a sit behaviour, have also been shown to express more stress-related behaviours compared to those trained with positive reinforcement (Deldalle and Gaunet, 2014; Ziv, 2017; Vieira de Castro et al., 2020).

Although the use of aversive training methods has been associated with negative impacts on welfare, little research has investigated factors that are associated with owners choosing to adopt and use these methods. One such study found that male owners and those who had attended agility classes were more likely to use electronic training collars for training recall / stopping chasing behaviour in dogs, and those who had attended puppy classes were more likely to use reward-based methods (Blackwell et al., 2012).

The aim of this study was to investigate factors that influenced the training methods which owners reported they intended to use for their ≤16-week-old puppies, and that they reported having used when their dogs were nine months of age. Identifying and quantifying the factors associated with selecting different training methods within this cohort highlights the potential for targeted interventions or tailored training advice for groups at risk of using aversive training approaches.

2. Materials and methods

2.1. Study participants

A study was conducted on a sample of owners of puppies recruited to a longitudinal study – ‘Generation Pup’. Owners living in the UK or Republic of Ireland signed up to the study before their puppy reached 16 weeks of age and were asked to complete questionnaires at multiple time points throughout their dog’s life. A range of data were collected, including basic demographics about owners (see Table A1 in supplementary information) and dogs, information about dog health and behaviour, and training approaches used. Owners were recruited through a variety of mediums including flyers at veterinary practices, social media, dog training classes and canine publications (e.g. Dogs Trust WAG magazine). Further details of the study methodology, including recruitment and participant demographics has been reported previously (Murray et al., 2021). The study has been approved by the Dogs Trust Ethical Review Board (ERB009), Social Science Ethical Review Board at the Royal Veterinary College (URN SR2017-1116), and the University of Bristol Animal Welfare Ethical Research Board (UIN/18/052).

2.2. Data collection procedure

Training information from two questionnaire time points were used for this analysis. The first was a registration questionnaire collecting information about the dog, and the owner’s reported intentions for training their puppy. This questionnaire could be completed up until the puppy reached 16 weeks of age. Data regarding the owner’s training intentions can therefore be considered as intentions for training a puppy, recorded between the time of acquisition and reaching 16 weeks of age. Completing the registration questionnaire was mandatory in order to continue with the study. The second was a questionnaire issued when the puppy was 9 months of age which collected data on the training approaches which owners reported using at the time. Owners had 42 days from when their dog reached 9 months of age to complete the questionnaire. The 9-month data is a subset of the owners who provided registration data. For owners with more than one dog registered on the study, one dog was randomly selected for analysis and the other dog(s) removed to control for clustering at the level of the owner.

2.3. Questionnaire

At registration, owners were asked: “Thinking about my puppy’s training, I intend to use…” At the 9-month questionnaire, owners were asked for more detail using two questions that also indirectly provided information about the owner’s intention for the training method: “When training my dog, I use the following rewards…” and “When correcting my dog for doing something wrong, I would…” Owners could select one or more responses from a list of training approaches (shown in Table 1). A greater range of responses were available in the 9-month questionnaire to gain a more detailed understanding of owners’ training approaches. For example, ‘Praise’ was an available response in
owners participating in ‘Generation Pup’. This group was more likely to include owners who tended towards the use of positive punishment and/or negative reinforcement, or used these methods routinely. In addition, on reviewing descriptive statistics, a large proportion (83.4% at registration and 63.9% at 9-months) of the sample reported ‘telling off’ their dog (for example using ‘No’ or ‘ah-ah’ to indicate something wrong). As ‘telling off’ may be perceived differently by dogs, depending on the context and nature of the interaction, including owners who just told their dogs off may not have offered sufficient discrimination between owner groups.

Owners were therefore categorised into two groups at each of the timepoints according to their responses:

1. Those who reported intending to use/using one or more positive reinforcement and/or negative punishment training methods only (i.e. no positive punishment and/or negative reinforcement-based methods at all). This group is termed ‘Reward only’ hereafter.
2. Those who reported intending to use/using two or more positive punishment and/or negative reinforcement) training methods, as well as at least one positive reinforcement and/or negative punishment approach. This group is termed ‘Reward and Aversive’ hereafter.

Some owners did not fall into the two defined groups as they reported only one positive punishment and/or negative reinforcement training method in combination with positive reinforcement and/or negative punishment (1534 at registration, 436 at 9 months), using only positive punishment and/or negative reinforcement (one at registration, three at 9 months), or did not report using any of the training approaches listed (five at registration). Therefore, 1540 owners were removed from analysis at the registration time point, and 439 owners were removed from the analysis at the 9-month time point. The distribution of owners remaining in the two defined groups is described in Table 2.

2.5. Statistical analysis

Statistical analysis was conducted using IBM SPSS Statistics (v.26 for Windows). Using the sample size calculator Epitools (Ausvet, 2020), this study had 80% power to detect odds ratios of ≥2 (alpha ≤ 0.05) at both registration and 9-month time points, assuming a one case to one control ratio, and an expected exposure of 10–40% of puppies to the various risk factors of interest. Associations between the outcome at the registration and 9-month time points and potential risk factors were initially tested using univariable logistic regression models. In addition, longitudinal data were available for 161 owners categorised into the two comparison groups at both the registration and 9-month time points. A McNemar’s test was conducted using R Studio (v.R-4.0.2 for Windows) on this subset of paired data. Based on observed distributions and univariable screening, owner age was recoded as a binary variable, with one group comprising 16–54 years old, and the other group as those aged 55 years or older. Similarly, dog origin was recoded as a binary variable, where one group was defined as dogs coming from breeders/individuals (kennel club assured/registration ≤ 16 weeks of age) and 9 months of age to a cohort of dog owners participating in ‘Generation Pup’.

### Table 1

<table>
<thead>
<tr>
<th>Training Category</th>
<th>Training method responses available to owners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Reinforcement</td>
<td>Verbal praise (for example ‘good boy/girl’), Physical praise (for example pat/stroke/cuddle), Any praise (combined), A toy, A ball, Positive Punishment</td>
</tr>
<tr>
<td>Negative Punishment</td>
<td>Time outs (periods of isolation/exclusion), Words to indicate something wrong, such as ‘no’, ‘ah-ah’, Physical reprindings such as smacks, rolling him/her over, Physical praise (for example pat/stroke/cuddle), Water spray, Rattle can, Sound or spray to interrupt unwanted behaviour or correct him/her (for example pet corrector, water spray, rattle can), 9-month Questionnaire</td>
</tr>
</tbody>
</table>

### 2.4. Questionnaire response categorisation

Questionnaire responses for 2154 dogs at registration, and for 976 dogs at 9 months were available. On initial examination, 2148 / 2154 (99.7 %) of owners intended to use positive reinforcement and/or negative punishment at registration, and 973 / 976 (99.7 %) used one or more types of positive reinforcement and/or negative punishment when their dog was 9 months. Groups were therefore categorised for analysis by whether owners also reported that they intended to use (at registration), or used (at 9 months), positive punishment and/or negative reinforcement. To create comparison groups for analysis, owners were excluded if they reported only one of the methods from the categories of positive punishment and negative reinforcement. As these data were binary, no indication of the frequency with which owners used each method was available. To ensure a reasonable differentiation between the training groups, excluding owners that may have used a single method only once, the criteria of two or more methods from the categories of positive punishment and/or negative reinforcement was chosen. This group was more likely to include owners who tended towards the use of positive punishment and/or negative reinforcement, or used these methods routinely. In addition, on reviewing descriptive statistics, a large proportion (83.4% at registration and 63.9% at 9-months) of the sample reported ‘telling off’ their dog (for example using ‘No’ or ‘ah-ah’ to indicate something wrong). As ‘telling off’ may be perceived differently by dogs, depending on the context and nature of the interaction, including owners who just told their dogs off may not have offered sufficient discrimination between owner groups.

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### Table 2

<table>
<thead>
<tr>
<th>Time point</th>
<th>Reward Only (%)</th>
<th>Reward and Aversive (%)</th>
<th>Other (%)</th>
<th>Total (100 %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>337 (15.6)</td>
<td>277 (12.9)</td>
<td>1540 (71.5)</td>
<td>2154</td>
</tr>
<tr>
<td>9 months</td>
<td>252 (25.8)</td>
<td>285 (29.2)</td>
<td>439 (45.0)</td>
<td>976</td>
</tr>
</tbody>
</table>
professional/hobby) and the other group was defined as dogs who had been acquired from a rehoming centre (rescue/charity/adopted). Both recoded variables were reanalysed at the univariable stage. Intention to compete/show the dog was a variable created from the owners’ responses concerning their intentions for their dog, including: taking the dog to agility/ flyball classes or competitions, taking the dog to ring craft (in preparation for dog shows), showing the dog at dog shows, and participating in heel work to music.

Risk factors with a P-value of <0.2 at univariable analysis were included in the multivariable model building process. Multivariable logistic regression models were built using forwards and backwards stepwise procedures. A final model for each timepoint was created, and discarded variables were added individually but remained statistically insignificant (P > 0.05). There was no evidence of effect modification for any interactions, and therefore these were not included in the final multivariable models.

3. Results

3.1. Reported training approaches

At registration 99.7 % of owners reported their intention to use positive reinforcement and/or negative punishment, and 84.1 % reported intention to use positive punishment and/or negative reinforcement, compared to reported use at 9 months of 99.7 % and 74.2 % respectively. The three most common training methods owners reported intending to use at registration were praise (98.1 %), food rewards (96.5 %) and using words to indicate something wrong such as ‘no’ (83.4 %). At 9 months, 98.2 % and 86.7 % of owners reported using verbal and physical praise respectively, 80.1 % reported using dog treats, and 63.9 % of owners reported telling off their dog. The training intentions and approaches used at registration and 9 months are shown in Table 3.

3.2. Longitudinal data

Data were available for 161 owners at both time points where assignment to one of the training groups was possible. These data are summarised in Table 4. Between registration and 9 months, 75 (47 %) owners reported intending to use reward only training at registration and using the same training approach at 9 months. Similarly, 53 (33 %) owners reported a reward and aversive training at both time points. The remaining owners intended to use reward only training and reported using reward and aversive training at 9 months (N = 23, 14 %) or intended to use reward and aversive training at registration but reported using reward only training at 9 months (N = 10, 6 %). Overall, 80 % of this subset of owners reported the same training approach in the registration and 9 month questionnaires, and 20 % reported a different training approach at 9 months compared to their initial intentions. The McNemar’s statistic (Chi-squared = 4.36, P = 0.04) showed a statistically significant finding among owners (N = 33) who changed their training approach, where 23 owners (70 %) changed from a reward only approach to reward and aversive compared to 10 owners (30 %) who changed from reward and aversive to reward only at 9 months.

3.3. Univariable analysis

Variables that showed an association with the outcome at either timepoint with a P value of less than 0.2 (and were thus taken forward to multivariable model building) are summarised in Tables 5 and 6.

3.4. Multivariable analysis

Remaining in the final multivariable model at the registration time point (Table 7), owners aged 55 years or older (OR = 1.79, 95 %CI = 1.06–3.01, P = 0.028), those without dog-related employment (OR = 4.21, 95 %CI = 1.79–9.87, P = 0.001) or children in the household (OR = 1.65, 95 %CI = 1.04–2.61, P = 0.034), those who acquired their puppy from a kennel club assured, professional, hobby or occasional breeder (OR = 3.23, 95 %CI = 1.38–7.57, P = 0.007), or did not intend to show or compete with the dog (OR = 1.71, 95 %CI = 1.12–2.60, P = 0.013) had increased odds of reporting the intention to use both reward and punishment approaches. Variables that showed an association with the outcome at either timepoint with a P value of less than 0.2 (and were thus taken forward to multivariable model building) were assigned to one of the training groups and therefore these were not included in the final multivariable models.

### Table 3

<table>
<thead>
<tr>
<th>Training Category</th>
<th>Training method</th>
<th>Reported use/ intention to use (%)</th>
<th>Did not report use/ intention to use (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration Questionnaire</td>
<td>Food rewards</td>
<td>2078 (96.5)</td>
<td>76 (3.5)</td>
</tr>
<tr>
<td></td>
<td>Clicker training</td>
<td>729 (33.8)</td>
<td>1425 (66.2)</td>
</tr>
<tr>
<td></td>
<td>Praise (such as petting, stroking or vocal cues such as ‘good boy/girl’)</td>
<td>2114 (98.1)</td>
<td>40 (1.9)</td>
</tr>
<tr>
<td></td>
<td>Toys as a reward</td>
<td>1370 (63.6)</td>
<td>784 (36.4)</td>
</tr>
<tr>
<td></td>
<td>Time outs (periods of isolation/exclusion)</td>
<td>527 (24.5)</td>
<td>1627 (75.5)</td>
</tr>
<tr>
<td></td>
<td>Words to indicate something wrong, such as ‘no’, ‘ah-ah’</td>
<td>1797 (83.4)</td>
<td>357 (16.6)</td>
</tr>
<tr>
<td></td>
<td>Physical reprimands such as smacks, rolling him/her over</td>
<td>84 (3.9)</td>
<td>2070 (96.1)</td>
</tr>
<tr>
<td>Positive Punishment</td>
<td>Sound or spray to interrupt unwanted behaviour or correct him/her (for example pet corrector, water spray, rattle can)</td>
<td>227 (10.5)</td>
<td>1927 (89.5)</td>
</tr>
<tr>
<td>9-month Questionnaire</td>
<td>Verbal praise (for example ‘good boy/girl’)</td>
<td>958 (98.2)</td>
<td>18 (1.8)</td>
</tr>
<tr>
<td></td>
<td>Physical praise (for example pat/stroke/cuddle)</td>
<td>846 (86.7)</td>
<td>130 (13.3)</td>
</tr>
<tr>
<td></td>
<td>Any praise (combined)</td>
<td>960 (98.4)</td>
<td>16 (1.6)</td>
</tr>
<tr>
<td></td>
<td>A toy</td>
<td>348 (35.7)</td>
<td>628 (64.3)</td>
</tr>
<tr>
<td></td>
<td>A ball</td>
<td>205 (21.0)</td>
<td>771 (79.0)</td>
</tr>
<tr>
<td></td>
<td>A clicker</td>
<td>199 (20.4)</td>
<td>777 (79.6)</td>
</tr>
<tr>
<td>Positive Punishment</td>
<td>Some of his/her normal dog food</td>
<td>297 (30.4)</td>
<td>679 (69.6)</td>
</tr>
<tr>
<td></td>
<td>A dog food other than his/her own kibble/biscuit</td>
<td>264 (27.0)</td>
<td>712 (73.0)</td>
</tr>
<tr>
<td></td>
<td>Dog food treats</td>
<td>782 (80.1)</td>
<td>194 (19.9)</td>
</tr>
<tr>
<td></td>
<td>Human food (for example cheese/sausage)</td>
<td>492 (50.4)</td>
<td>484 (49.6)</td>
</tr>
<tr>
<td></td>
<td>Any food reward (combined)</td>
<td>943 (96.6)</td>
<td>33 (3.4)</td>
</tr>
<tr>
<td></td>
<td>Move away or withhold affection</td>
<td>298 (30.5)</td>
<td>678 (69.5)</td>
</tr>
<tr>
<td>Negative Punishment</td>
<td>Withhold treats</td>
<td>374 (38.3)</td>
<td>602 (61.7)</td>
</tr>
<tr>
<td></td>
<td>Ignore him/her</td>
<td>385 (39.4)</td>
<td>591 (60.6)</td>
</tr>
<tr>
<td></td>
<td>Tell him/her off</td>
<td>624 (63.9)</td>
<td>352 (36.1)</td>
</tr>
<tr>
<td></td>
<td>Use a physical reprimand/correction (for example smack or tap him/her on the nose or bottom)</td>
<td>65 (6.7)</td>
<td>911 (93.3)</td>
</tr>
<tr>
<td></td>
<td>Make a distraction (for example rattle can)</td>
<td>187 (19.2)</td>
<td>789 (80.8)</td>
</tr>
<tr>
<td></td>
<td>Use physical manipulation (for example put him/her into a sit or pushing him/her off if he/she jumps up)</td>
<td>162 (16.6)</td>
<td>814 (83.4)</td>
</tr>
<tr>
<td></td>
<td>Hold him/her still</td>
<td>76 (7.8)</td>
<td>900 (92.2)</td>
</tr>
</tbody>
</table>
and aversive training. The number of dogs in the owner’s household had a protective effect, where each additional dog in the household reduced the odds of the owner intending to use reward and aversive training methods (OR = 0.77, 95 %CI = 0.63–0.93, P = 0.006).

In the multivariable model at 9 months (Table 8), male owners (OR = 3.10, 95 %CI = 1.52–6.36, P = 0.002), those age 55 years or over (OR = 1.93, 95 %CI = 1.29–2.87, P = 0.001), those who did not have dog-related employment (OR = 2.70, 95 %CI = 1.53–4.77, P = 0.001), or who had not attended a puppy training class in the two months before completing the questionnaire (OR = 3.16, 95 %CI = 2.18–4.59, P < 0.001) had increased odds of reporting the use of both reward and aversive training methods.

4. Discussion

4.1. Training approaches

In this cohort, owners commonly reported the use of aversive training methods as well as reward-based ones, both when recording their intentions on first acquiring a puppy (12.9 %) and when reporting training methods as well as reward-based ones, both when recording 4.1. Training approaches

4. Discussion

4.1. Training approaches

In this cohort, owners commonly reported the use of aversive training methods as well as reward-based ones, both when recording their intentions on first acquiring a puppy (12.9 %) and when reporting training methods used at 9 months (29.2 %). A larger proportion of owners were able to be categorised as either reward only, or reward and aversive at 9 months (25.8 % and 29.2 % respectively) compared to the registration questionnaire (15.6 % and 12.9 % respectively). This may indicate that owners change or develop their training approaches in response to their dog’s behaviour over time. It is also possible that more owners could be categorised by their training approach due to a greater variety of available training responses acting as prompts in the 9-month questionnaire. This may have resulted in a greater proportion of owners selecting training methods where they might not have otherwise provided the same information if not prompted. A quarter of owners reported using reward only training approaches at 9 months, in contrast to findings of Rooney and Cowan (2011), where none of 53 dog owners, recruited from veterinary practices and direct communication, used exclusively reward-based training.

The proportion of owners reporting the use of specific training approaches is comparable to those in a previous study that investigated the relationship between training methods and the occurrence of behavioural problems in a convenience sample of 192 dog owners in the UK (Blackwell et al., 2008).

Among Generation P participants, 99.7 % of owners reported using positive reinforcement or negative punishment, and 74.2 % reported using positive punishment and/or negative reinforcement at 9 months, compared to 100 % and 84 % respectively in Blackwell et al. (2008). The use of ‘telling off’ the dog was also comparable with previous research: here 63.9 % of owners used this approach at 9 months, compared to 64 % reporting this method in another study (Blackwell et al., 2008).

In contrast, physical reprimands in training were much less commonly reported in the present study, with only 6.7 % of owners at 9 months correcting their dog for doing something wrong with this approach, compared to 37 % reported in a previous study (Blackwell et al., 2008). This may represent a change in attitude over the last decade or reflect a more welfare-conscious cohort studied here compared to the convenience sample in Blackwell et al. (2008). One other reason for this difference could be an effect of owner gender on
longitudinal data were available for a subset of 161 owners, the ratio of dogs in households showed dog competition/organisation adoption/charity/rescue/adoptive. The reward only approach to reporting use of a reward and aversive approach was more likely than the contrary. It could be that owners choose to adopt aversive training methods in response to their dog’s behaviour or for training particular needs. Data for only a small sub-sample were available for this analysis, and future studies should use a larger sample to explore the change in training approach over time and investigate influential factors such as the dog’s behaviour.  

Table 6 Univariable analysis of the variables of interest from responses to the ‘9-month’ questionnaire issued to dog owners in the ‘Generation Pups’ cohort (N = 537). Only variables that showed an association with the outcome with a P value of less than 0.2 (included at the multivariable stage) are shown. Analysis was conducted using logistic regression where the outcome was coded as 0 = Reward only, 1 = Reward and Aversive.

Table 7 Variables in the final multivariable logistic regression model for training approach reported by the cohort of owners participating in ‘Generation Pups’ in the registration questionnaire (N = 441). Analysis was conducted using logistic regression where the outcome was coded as 0 = Reward only, 1 = Reward and Aversive.

Table 8 Variables in the final multivariable logistic regression model for training approach reported by the cohort of owners participating in ‘Generation Pups’ in the 9-month questionnaire (N = 535). Analysis was conducted using logistic regression where the outcome was coded as 0 = Reward only, 1 = Reward and Aversive.

reward only approach to reporting use of a reward and aversive approach was more likely than the contrary. It could be that owners choose to adopt aversive training methods in response to their dog’s behaviour or for training particular needs. Data for only a small sub-sample were available for this analysis, and future studies should use a larger sample to explore the change in training approach over time and investigate influential factors such as the dog’s behaviour.

4.2. Origin of dog

Owners who acquired their dog from an individual were more likely to intend to use both reward and aversive training methods compared to those who obtained their puppies from a rehoming organisation. This may be due to the type of advice given to owners at the time of acquiring their dog. Information available to owners regarding their puppy’s
training is varied and conflicting (Todd, 2018). The RSPCA’s general dog training advice states that “All training should be reward based” (RSPCA, 2020), and Dogs Trust advocate the use of only reward-based methods and recommend where appropriate, that new adopters attend training classes, for example at Dogs Trust Dog School (Dogs Trust, 2020). It is therefore possible that owners who rehomed a puppy instead of acquiring a puppy from a breeder may be more likely opt for a reward only approach based on the advice received at the time of adoption.

4.3. Owner intentions for dog

Intending to compete or show the dog (agility/flyball, ring craft and heel work to music) was associated with increased odds of owners intending to use a reward only approach for their dog’s training. Owners wishing to compete may have a working knowledge of the current advice in dog training, and again, may be more aware of the potential risks of using aversive training methods. This may contribute to these owners intending to use only positive reinforcement and negative punishment from the outset in their puppy’s training.

4.4. Presence of children

Owners with children in the household were also more likely to report an intention to use reward only training approaches. There is a large evidence base for parenting strategies and that corporal punishment of children is associated with behaviour problems (Durrant and Ensom, 2012; Todd, 2018), which is analogous to the link between aversive training in dogs and the number of reported behaviour problems (Blackwell et al., 2008). Owners may gain experience and an understanding of which training methods or parenting strategies work best, and which do not work as well, after having children and then may apply these principles to dog ownership.

4.5. Other household dogs

Similarly, owners with other dogs in the household were also more likely to report an intention to use reward only training approaches. Owners may choose a reward only approach after having experience of training other dogs they own. There was no relationship in this analysis however, between an owner’s training intentions and their previous dog ownership history. Apparent reasons for this are unclear. It could be that owners decide to take the same initial approach for every new puppy and then adapt their training approaches over time in response to their puppy’s individual behavioural characteristics. Alternatively, owners’ training approaches could be shaped by exposure to different methods, for example at puppy training classes.

4.6. Owner career effects

In both analyses of registration and 9-month questionnaire data, owners working with dogs for a career was a strong predictor for the use of a reward only training approach. Working with dogs encompassed a range of different roles, including working within the veterinary profession and as a dog trainer. This result is perhaps another indication that experience, or frequent interaction with dogs discouanges owners from using aversive approaches in their training. Owners who work in these sectors may have had a greater understanding of animal behaviour and welfare, including the benefits of reward-based training methods, which may explain this relationship between working with dogs and an increased use of exclusively reward-based training.

4.7. Owner age effects

Owner age was also a factor that was associated with the outcome in both models. Specifically, older owners were more likely to use, and intend to use reward and aversive methods in their training. This may be due to the historic tendency to use aversive methods in training, in part as a result of misconceptions around the ‘dominance theory’ underlying some approaches to dog training (Bradshaw et al., 2009; Wlodarczyk, 2017). One analysis of five previously best-selling dog training books found that all encouraged the use of aversive training methods including positive punishment (Browne et al., 2017).

4.8. Owner gender effects

Owner gender was significantly associated with training approaches reported at 9 months. Male owners were more likely than female owners to use reward and aversive methods in their training. A previous study reported that male owners were more likely than female owners to use e-collars than reward-based training approaches (Blackwell et al., 2012).

The findings in this study may reflect attitudinal differences between male and female owners in how they perceive their dog’s behaviour and their relationship with their dog. Bennett and Rohlf (2007) reported that male owners viewed their dogs as more disobedient compared to the views of female owners. Examining dog-owner interactions across a range of unfamiliar controlled scenarios, female owners were found to talk to their dogs significantly more than male owners, and their utterances more closely resembling infant-directed speech (Prato-Previde et al., 2006).

Dogs can also behave differently towards individuals of different genders. Wells and Hepper (1999) showed that dogs in a shelter environment barked for a longer duration when men stood in front of the kennel, compared to women. The attitude of male and female owners towards their dog could be in response to behavioural differences expressed by the dog depending on their owner’s gender. This difference between male and female owners could translate into the adoption of different training practices observed in this study.

4.9. Training class attendance

Owners who reported that they had not attended a class within the 2 months prior to completing the questionnaire at 9 months had 3 times the odds of using reward and aversive methods in their training. Previous studies have mainly looked at the association between training class attendance and problem behaviours, with varied findings. Some studies have found that puppy class attendance was associated with a reduction in the number of some problem behaviours (e.g. Gonzalez-Martinez et al., 2019), and others finding no such association (e.g. Blackwell et al., 2008). One study found an increased likelihood of human-directed aggression in dogs attending more than five puppy classes compared to dogs not attending or attending between one and five classes, which could be explained by continued attendance of owners with puppies showing early behavioural problems (Lord et al., 2017).

The relationship between training approach and dog behaviour was not examined in this study. There was, however, a clear association between training class attendance and the use of reward only training approaches. Whether this finding is due to changed attitudes after attending a class, or because owners using reward only training are more likely to attend a training class requires further investigation. Interestingly, intention to attend training classes with a puppy or adult dog was not a statistically significant factor when looking at intended training approaches at the registration questionnaire. This perhaps indicates that training class attendance does positively impact the training decisions of dog owners.

4.10. Study limitations and future research

Due to the nature of this questionnaire-based project, there may be some social desirability bias (Fisher, 1993) in the self-reporting of training approaches if owners feel uneasy about admitting to using positive punishment or other aversive approaches. The study design may
mitigate some of this effect, as the second outcome group included owners using two or more methods of positive punishment and/or negative reinforcement in their training. This is assumed to be more indicative of a training approach, creating a distinction between the two outcome groups. Nevertheless, it is possible that some owners may have been reclassified as being in the reward only group if they did not report their use of aversive training approaches. The effect of this misclassification would be to underestimate effect sizes, thus we are confident that the presence and direction of associations reported here are reliable.

A large proportion (72% at registration and 45% at 9 months) of the sample was removed from analysis due to only reporting the use of one method of positive punishment / negative reinforcement. This was required to ensure differentiation between the training approach comparison groups. In the future, the consistency of owner self-reporting of training approach can be evaluated by comparing situational-based responses to owners’ general reported training approach. Data from the ‘Generation Pup’ project can also be used to evaluate particular training tasks, to establish whether owners resorted to using methods other than reward-based training in order to teach their dog a particular skill e.g. training a sit compared to loose-lead walking.

The present study did not investigate the relationship between the reported use of training approaches and the presence of problem behaviours, evidence of which has been found previously (e.g. Blackwell et al., 2008). Future work using the ‘Generation Pup’ cohort data can examine this relationship with respect to temporality; exploring how owner’s training methods change over time in relation to reported behavioural problems at different time points.

5. Conclusions

In conclusion, several owner factors were associated with the use of positive punishment and/or negative punishment within an owner’s training repertoire, including age, gender, working with dogs in the animal sector, the origin of the dog, and whether they chose to attend training classes with their dog. Owners, especially those older than 55 years of age, should take care to observe the most up-to-date, evidence-based training methods as there has been a shift away from ‘dominance theory’ involving aversive training approaches, and towards reward only training. Based on the evidence presented in the current study, owners should be encouraged to attend training classes with their dog as they are more likely to use a reward only training approaches without the inclusion of aversive training methods.

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Declaration of Competing Interest

None.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.applanim.2021.105404.

References


